

PARENT EDUCATION IN PHONOLOGICAL AWARENESS AND EARLY  
LITERACY: A QUALITATIVE MULTIPLE CASE STUDY ON THE PERSPECTIVES OF  
PARENTS OF YOUNG CHILDREN WITH HEARING LOSS

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## **Abstract**

Decades of research document that children with hearing loss struggled to achieve reading and writing skills that are on par with their hearing peers. Many graduated from high school functionally illiterate. In the past decade, however, early hearing detection and intervention efforts, including advances in hearing technologies, have improved a child's ability to access spoken language and to develop listening and spoken language skills. These skills serve as a vital foundation for a child's ability to learn to read and write. There is evidence that demonstrates that appropriate and early intervention make a significant and positive impact on the language development of young children with hearing loss. Early childhood research also demonstrates the benefit of parental involvement in a young child's early literacy development. In this qualitative multiple case study, I investigated (a) parents' (of young children with hearing loss) knowledge about the connection between hearing/hearing loss and early literacy, (b) their perspectives regarding their child's early literacy development, and (c) their families' routine literacy activities. I also developed an internet-based parent education module that teaches a speech sound-based (phonological) early literacy strategy, specifically how to teach their child about rhyming. This study also aims to understand parents' perspectives and experiences with utilizing the online module as a parent resource and opportunities for guided practice of the targeted early literacy strategy. Although audiologists' traditional scope of practice has not explicitly included early literacy, the findings of this proposed study may provide ideas for how audiologists can provide early literacy support for families of young children with hearing loss.

## **Chapter 1: Introduction**

### **Background**

Proficient reading is an arguably critical skill for students to acquire in order to maximize their potential and to become fully contributing members of society. As such, there has been a national focus on improving the reading outcomes of all students. My study focuses on a unique student population, young children who have hearing loss (CHL). Although there are skilled readers who have hearing loss, many others struggle to achieve reading skills that are commensurate with their same age peers. Low reading achievement has resulted in generations of students with hearing loss exiting secondary school functionally illiterate over the past several decades (Allen, 1986; Spencer & Tomblin, 2009).

Within the U.S. educational system, there have been focused efforts to address reading acquisition early on in a child's life, during the early childhood period. The National Early Literacy Panel (NELP; National Institute for Child Health and Human Development [NICHD], 2010) determined that teaching young children fundamental early literacy skills during the preschool years is one of the key means for addressing reading outcomes. The NELP also conducted a meta-analytic review that investigated the impact of home and parent programs on typically developing children's early literacy outcomes. Their results suggested a positive and statistically significant effect of home and parent programs on the early literacy outcomes in young children (NICHD, 2010). These findings highlighted the vital role that parents play in supporting their child's early literacy development.

In this chapter, I discuss the research problem and significance of the proposed study. Thereafter, I discuss the purpose of the study and the research questions that will guide this study. This chapter concludes with a section on definition of terms.



## **Statement of the Problem and Significance of the Study**

One cannot overstate the importance of intervening early for young CHL when one considers historical outcomes for these students. Several decades of research have demonstrated that the average high school student with hearing loss graduates with roughly third to fourth grade reading skills (Furth, 1966; Traxler, 2000; Yoshinaga-Itano & Downey, 1996). Qi and Mitchell (2012) reviewed the results of large-scale Stanford Achievement testing for students with hearing loss, ages 8 to 17 years. They determined that the median performance for reading comprehension never exceeded the fourth-grade level over the previous three decades.

Hearing loss poses a fundamental challenge to becoming a literate individual by hindering one's full access to spoken language. This is a critical issue if the goal is for the child to develop listening and spoken language skills, also referred to as auditory-oral communication. Hearing loss is an access problem. Sounds cannot reach the brain in the same manner as in hearing individuals. There are indeed deaf children born to deaf parents, who access language through signed languages and develop language skills that are on par with those of their hearing counterparts (Lederberg et al., 2013). *However, this study focusses on the subgroup of young CHL whose primary mode of communication is auditory-oral.* The rationale for this approach is that listening provides the most readily available avenue for developing spoken language skills (Easterbrooks & Estes, 2007).

## **Early Intervention Services**

Recognizing the need to intervene early, states within the U.S. have implemented a system for providing early hearing detection and intervention. This includes universal newborn hearing screening, followed by early intervention (EI) services for children, birth through 3 years, who are identified with hearing loss (Joint Committee on Infant Hearing [JCIH], 2007).

As of the year 2016, there were 45 states which have laws that mandate newborn hearing screening (American Academy of Pediatrics, 2016). The impetus for early hearing detection and intervention is the recognition that the first five years of a child's life represent a critical period for auditory and language development (Cole & Flexer, 2010; Easterbrooks & Estes, 2007; Yoshinaga-Itano et al., 1998). According to the JCIH (2019), the primary program goal of early hearing loss detection identification and intervention is to maximize the language, communication, literacy, and social-emotional skills of CHL. For families who elect auditory-oral communication, EI services begins with providing the child with maximal auditory access to spoken language through appropriately fit hearing technologies (e.g., hearing aids or cochlear implants). Audiologic habilitation follows immediately, which includes auditory skills training to help the child make sense of spoken language (Easterbrooks & Estes, 2007). There is evidence that young CHL who receive timely and appropriately fit hearing devices that provides optimal access to spoken language and EI services may acquire language skills that approximate those of hearing peers upon entering formal schooling (Nicholas & Geers, 2006; Moeller, 2000; Yoshinaga-Itano, et al., 1998).

In this study, the age range of participating CHL are preschoolers, from 3 to 5 years of age. To maximize listening and spoken language development during this brief and critical early childhood period, it is vital that intervention efforts continue beyond EI and into the preschool period in order to promote auditory, language, and school/literacy readiness. Part B of the Individuals with Disabilities Education Improvement Act of 2004 (IDEA, 2004) mandates transition services out of EI programs and into special education preschool programs for children with developmental delays/disabilities, including those with hearing loss, who are deemed eligible. However, preschool CHL who do not qualify for Part B special education program

services, based on comprehensive developmental/educational assessment results, also will continue to need intervention to promote school readiness during this critical early childhood period (e.g., a child with a unilateral or minimal hearing loss, with no other disabilities, whose speech and language skills are broadly within the range of normal for his/her age).

According to the NELP, to address reading outcomes for all students, it is important that foundational early literacy skills be incorporated during the preschool period of a child's life (NICHD, 2010). Although there has been substantial improvement in knowledge about evidence-based early literacy interventions for typically developing young children (NICHD, 2000, 2010), there has been less evidence available regarding effective literacy interventions for young CHL (Lederberg et al., 2014). Most reading intervention studies in the past were conducted on school-aged CHL (Easterbrooks & Beal-Alvarez, 2013). However, a large-scale, multi-site research project was conducted by researchers at the Center for Literacy and Deafness to determine the instructional and child-related factors that lead to improved early literacy skills such as vocabulary, narrative skills, alphabetic knowledge, phonological awareness, and beginning decoding. One of their initial studies demonstrated standard score improvements, on average, of 9 to 10 points on each of the aforementioned early literacy outcome measures. This initial study and the Center's more recent studies utilize a newly developed preschool early literacy intervention called *Foundations for Literacy*, which was developed for preschool CHL (Easterbrooks et al., 2015; Lederberg et al., 2014) and will be instrumental in guiding future instructional practices for young CHL.

### **Parent's Role**

It is also important to recognize the critical role that parents play in promoting their child's growth and development, including school readiness (National Association for the

Education of Young Children, 2009; NICHD, 2010; Taylor et al., 2009). Efforts to support parents of young CHL are essential to ensure that they are empowered with the knowledge and the necessary skills to foster their child's development. As noted previously, the NELP review of early literacy research validated the benefits of preschool early literacy instruction. Receiving explicit, systematic early literacy instruction that is code-focused predicted both the early literacy skills of alphabet knowledge, phonological awareness, phonics as well as the later literacy skills of decoding, spelling, comprehension (NICHD, 2010). In addition, the NELP also reviewed the literature on the effect of home and parent literacy programs. These findings revealed that parent and home intervention programs yielded statistically significant and positive effects upon young children's oral language and general cognitive skills.

With regard to young CHL, some parents may not feel as though they possess the knowledge and skills to adequately support their child's literacy development; they also express desire for such guidance from knowledgeable professionals, such as their child's deaf educator (Watson & Swanick, 2008). The Alexander Graham Bell Association conducted a national survey of parents of CHL under the age 15 years, to gain insight into parents' perspectives on the quality and availability of private and public services related to their child's hearing loss. Parents disclosed that looking back at the services they had received, they would have preferred additional information during the early childhood years, akin to a road map, that could aid them in setting long-term expectations and decision-making regarding their child's future development (Alexander Graham Bell Association, 2013).

Without question, parents, including those who have young CHL, desire and expect their child to become literate (English, 2014). Providing parent education on early literacy during the preschool years may provide tools that empower parents to support their young child's readiness

for formal literacy instruction as the child enters primary school. Before providing this instruction to parents, it is important to understand what they know about literacy and their perspectives about literacy.

### **Audiologists' Role in Early Literacy**

As a group, audiologists lack formal training to provide parent education on the topic of hearing loss and early literacy (English & Snyder, 2010). Addressing this topic is not currently mentioned within audiologists' scope of pediatric practice. A review of audiology pediatric clinical practice documents on the American Academy of Audiology's website reveals no mention of parent education in literacy development in children. This is understandable since a major part of pediatric audiologists' responsibilities includes identification of childhood hearing loss and subsequent evaluation/fitting of hearing devices. According to the Academy's "Clinical Practice Guidelines: Pediatric Amplification" (June, 2013), audiologists should also provide patient/family education regarding adjustment counseling, which refers to social and emotional support as it relates to the child's hearing loss/hearing device use. This support is intended to be ongoing, during routine audiological follow-up and management of the pediatric patient. However, there is no recommendation stating that this patient/family education should include a discussion about language or literacy. According to the American Speech-Language-Hearing Association practice guidelines, services related to childhood speech, language, and literacy development fall under the scope of practice and responsibility of the speech-language pathologist (American Speech-Language-Hearing Association, 2001); there is no explicit mention that links the audiologists' role and literacy development in children.

Audiologists are first responders who evaluate hearing in young children and subsequently provide treatment for hearing loss (American Academy of Audiology, 2013;

English et al., 2012). The ability to hear the sounds of spoken language is foundational to learning to read and write, particularly for those children/families who use listening and spoken language as a primary communication modality. Although audiologists are not literacy specialists, they can play a vital role in supporting early literacy development of young CHL by acquiring fundamental knowledge about early literacy and the connection between hearing and early literacy (English et al., 2012; Wiley & English, 2010). Equally important is the need for practitioners to understand parents' current knowledge base and perspectives about early literacy. Therefore, as a licensed clinical audiologist and primary researcher of this study, I assert that it is important to gain insight into what parents know about early literacy development and its connection to hearing/hearing loss, their perspectives about early literacy development with regard to their CHL, and their families' literacy activities at home. With this insight, audiologists will then be better positioned to determine how to provide parent education and support families' efforts to facilitate their child's early literacy acquisition.

### **Theoretical Perspective**

Supporting parents' quest to promote their child's literacy development requires an understanding of parents as adult learners. Adult learning principles provide a theoretical framework for understanding how parents learn best. This understanding will equip professionals to be effective at helping parents develop competencies to support their child's development. Knowles et al. (2015) describes several assumptions that characterize adult learning, a few of which are relevant to this study. First, adults are prepared to learn when dealing with a real-life need. Being confronted with challenges involved in moving from one developmental stage to the next creates a "readiness to learn" (Knowles et al., 2015, p. 45), as is the case with parents of preschool CHL who face the urgent need of preparing their child for school. Second, adult

learners have a need to be self-directed in their learning experiences. While there is need for professionals to share new knowledge with parents, parents desire to direct their learning experiences and goal setting, rather than being directed by another individual. Third, adults are task or problem-centered learners who learn most effectively when the learned content or skill applies to their real-life situation. This learning-in-context is the premise for home-based EI services, in which parents learn new knowledge and skills to facilitate their child's development in their natural environment. In addition, as cited by Rush and Shelden (2005), a research synthesis on human learning compiled by the National Research Council (Bransford et al., 2000) stated that meaningful adult learning experiences also include opportunities for the learner to reflect on his/her level of understanding and progress.

Rush and Shelden (2005, 2020) propose a conceptual model for parent education and training, known as coaching, which has been widely used in early childhood/EI settings. A basic tenet of the coaching model is that the professional/facilitator is a help giver who assists parents/caregivers in utilizing existing knowledge and skills and in developing additional competencies to support their child's development. Adult learning principles undergird the coaching model, which I will describe in Chapter 2.

### **Purpose of this Study**

There are several purposes of this dissertation study. The first purpose is to understand what parents of young CHL know about early literacy development. Related to this issue, the study aims to discover what parents understand about the connection between hearing and early literacy development. This will include determining what parents understand about the impact that hearing loss has upon their child's early literacy development. In addition, the study aims to

gain understanding about parents' perspectives (e.g., thoughts, feelings, experiences) regarding early literacy development of their CHL and to discover their family literacy activities.

The second purpose is to develop a parent education module on (a) the connection between hearing/hearing loss and early literacy and (b) parent strategies for facilitating the skill of rhyming. Rhyming is an example of a phonological awareness (PA) skill, which is one component to early literacy development. In this study, I will investigate parents' perspectives and experiences after having received this parent education (and guided practice) with the targeted PA strategies.

My interest in studying parental perspectives and experiences concerning early literacy and parent education (of parents who have young CHL) derives from my professional experience working with such families, as a pediatric audiologist. Over 15 years ago, as I worked with families of young CHL, I developed an interest in literacy development in this subpopulation. Subsequently, as I pursued a clinical doctorate in audiology, I continued to study the topic of early literacy development in young CHL. I also am a parent of a son with developmental disabilities that impact learning. During his early years of learning to read and write, he received reading intervention. My professional and personal experiences fueled this study.

### **Pilot Study Results**

During the spring semester of 2015, I conducted a pilot study that included development of an instructional module for EI and communication disorders professionals. I delivered the instructional module via a website that I created. My purpose was to explore the feasibility/practicality and effectiveness of delivering auditory learning information to professionals via an online instructional module. EI professionals and communication disorders professionals on Oahu who work with young CHL and their families were the participants of the



pilot study. Participants viewed online instructional module that involved strategies for facilitating a child's auditory detection ability, the first skill on the auditory learning continuum. I used qualitative methods to collect and analyze data from participants who completed an online survey after viewing the online module. The survey assessed the feasibility/practicality and effectiveness of the online module as a method of delivering professional education and included 13 items (12 closed-set and one open-set). The findings suggested that EI/communication disorders professionals judged this online format of instruction to indeed be both feasible/practical and effective. I used aspects of this pilot study when developing the parent education module for the current dissertation study. In Chapter 2 of this paper, I discuss the pilot study in greater detail.

### **Research Questions**

In this study, I sought to answer the following questions:

1. What explicit knowledge do parents of young CHL possess about the following:
  - a. early literacy development?
  - b. the connection between hearing/hearing loss and early literacy?
  - c. preschool PA skills (e.g., rhyming, alliteration, and blending) and their relationship to literacy.
2. What are parents' perspectives (e.g., beliefs, feelings) about their child's early literacy development?
  - a. What are their experiences with engaging their CHL in activities that promote early literacy development?
3. What early literacy activities, including those involving PA, do parents/families incorporate into their daily routines with their CHL?

4. What are parents' perspectives and experiences after having received parent education related to hearing/hearing loss, early literacy development, and PA strategies?

### **Definitions**

*Auditory-Oral communication:* This term is often used synonymously with “listening and spoken language” and refers to a communication modality in which the child is exposed to the home language through listening, with the goal of the child developing spoken language for use in the home, school, and among peers (ASHA, 2011).

*Child/children with hearing loss (CHL):* A child who has been diagnosed as having a hearing loss, based on a pediatric audiologic assessment using a test battery approach that combines behavioral and physiologic/electrophysiologic measures.

*Deaf:* A hearing disorder that limits an individual's oral communication performance to the degree that the primary sensory input may be other than the auditory channel (ASHA, 1993).

*Dialogic reading:* In this interactive approach to shared storybook reading, the adult engages the child in dialogue while reading the story or passage. (NICHD, 2010; Pentimonti et al., 2013)

*Early childhood period:* According to the National Association for Education of Young Children (1997), this refers to the childhood period from birth to age 8 years.

*Early literacy:* This term includes the components of oral language, PA, and print knowledge, all of which begin to develop during the birth through 6-year period of childhood (Paulson & Moats, 2010) prior to the child's entry into kindergarten/primary school.

*Hearing loss/impairment:* A hearing disorder, whether fluctuating or permanent, which adversely affects an individual's ability to communicate. The individual relies on the auditory channel as the primary sensory input for communication (ASHA, 1993).

*Parent:* In this manuscript, this term refers to the parents or caregivers/legal guardians of young children with hearing loss, ages 3 to 5 years.

*Parent education:* In this manuscript, this term specifies the triad of the following three activities: sharing information about hearing/early literacy and providing instruction on how to help their CHL develop rhyming skills, providing opportunities for guided practice with coaching support, and providing parents with an online parent education resource on hearing and early literacy.

*Phonological awareness (PA):* The conscious awareness of speech sounds of one's language and the ability to manipulate them in meaningful ways (Paulson & Moats, 2010).

*Preschool (age/period):* In this manuscript, this term will describe the developmental period of childhood, from 3 to 5 years of age, just prior to the child's entry into kindergarten/primary school.

*Joint Committee on Infant Hearing (JCIH):* Established in 1969, the JCIH is composed of representatives from audiology, otolaryngology, pediatrics, and nursing. The mission of JCIH is to address issues related to the early identification and intervention of infants and young CHL (JCIH, 2007, 2019).

*Listening:* I define listening as attending to sounds (i.e., environmental or speech) in order to try to make sense of them.

*Shared reading or shared storybook reading:* A joint reading experience during which an able reader, such as a parent or teacher, uses picture books to read the story, discusses story details, and talks about the pictures (Moeller et al., 2016).

## Chapter 2: Literature Review

### Introduction

There are several important fields of inquiry that undergird this study, which I summarize in this section. This summary begins with an historical accounting of the reading skills of students with hearing loss. I then describe Early Hearing Detection and Intervention efforts in the U.S. and their significance in supporting skills requisite to literacy acquisition in CHL. Thereafter, I discuss the close connection between hearing/listening and spoken language. I then describe the task of assisting the CHL to learn to listen; this includes learning to listen to the specific sounds that comprise spoken language, also known as PA. I discuss the vital role that parents play in their child's literacy development and parent education, including parent training and coaching. This section concludes with a description of another model for online parent education that served as an inspiration for my study.

I used several means to conduct a literature search. I concurrently searched seven databases within EBSCOhost, which included Academic Search Complete, ERIC, MEDLINE, Professional Development Collection, Psychology and Behavioral Sciences Collection, Teacher Reference Center, and Vocational and Career Collection. During the first search, I searched the terms *reading achievement* and *deaf* simultaneously; subsequently, I added *cochlear implant* as a third search term. During the second search, I first combined the terms *phonological awareness* and *deaf*; I then added *cochlear implant* as a third search term. Next, I conducted an ancestral search based on reference lists from two of the articles that emerged from the database searches. I also contacted three authors and obtained additional references on parental involvement in early literacy development in young CHL, family-centered audiologic care, and phonological awareness (PA) and deaf children. Finally, I utilized information found in relevant textbooks and

searched the websites of the American Academy of Audiology, the American Speech-Language-Hearing Association, and the Centers for Disease Control and Prevention (CDC) for relevant position statements, clinical practice guidelines, and incidence of disease data.

### **History of Reading Skills of Students with Hearing Loss**

It is difficult to overstate the importance of early hearing detection and intervention for young children with hearing loss (CHL) when one considers historical outcomes for these students. Several decades of research demonstrated that the average high school student with hearing loss graduates from high school with roughly third to fourth grade reading skills. An early study by Furth (1966) indicated that only 25 percent of students with hearing loss attained at least a fourth grade reading level by age 16. Similarly, Trybus and Karchmar (1977) noted, as cited in Yoshinaga-Itano and Downey (1996), that the Center for Assessment and Demographic Studies at Gallaudet University's Research Institute reported in 1991 that 18-year-old students with hearing loss who also received special education services had reading skills below third grade level. Traxler (2000) determined that roughly one-half of students with hearing loss had fourth grade reading vocabulary and comprehension levels upon graduating from high school. Qi and Mitchell (2012) reviewed the results of the large-scale Stanford Achievement testing for students with hearing loss, ages 8 to 17 years, which revealed that the median performance for reading comprehension never exceeded the fourth-grade level over the previous three decades. Educators and clinicians who work with this student population commonly referred to this phenomenon as the "fourth grade ceiling" for reading skills.

Given these statistics, many students with hearing loss graduated without requisite literacy skills. Low reading achievement resulted in generations of students with hearing loss exiting secondary school functionally illiterate (Allen, 1986; Spencer & Tomblin, 2009). Allen

(1986) estimated that roughly one-third of students with hearing loss left high school functionally illiterate. *Functional (reading) literacy* is defined as “the ability to understand, use, and reflect on written texts in order to achieve one’s goals, to develop one’s knowledge and potential, and to participate effectively in society” (Spencer & Tomblin, 2009, p. 1). The impact of functional illiteracy is far reaching. Literate adults are more apt to be productive citizens who read to their children and engage in school-related discussions, receive full time employment with higher income levels, utilize the internet and email, and participate in local or national activities (National Coalition for Literacy, 2009). Past history of student outcomes, among those with hearing loss, warrants concern that those who struggled with reading skills may exit high school unable to experience these vital activities that are typical experiences of literate adults.

### **Infant Hearing Loss and the Significance of EHDI**

Based on a 2017 survey, the CDC reported prevalence data in the U.S., based on the 47 states and 3 U.S. territories that responded. The survey suggested that diagnostic audiological evaluation identified 1.7 newborns, out of every 1,000 screened for hearing loss (CDC, 2017). The CDC’s survey responses also revealed that 97.4% of newborns in the U.S. underwent newborn hearing screening. At the state level in Hawaii, roughly 3 out of every 1,000 babies are born with hearing loss every year; this translates to 55 infants born with hearing loss in Hawaii each year (Hawaii Department of Health Newborn Hearing Screening Program, 2014).

Statewide implementation of universal newborn hearing screening functions as part of early hearing detection and intervention efforts across the U.S. The U.S. Maternal Child Health Bureau provided initial funding to support states’ development and implementation of universal newborn hearing screening. In 1989, the Rhode Island Hearing Assessment Project became the pioneer newborn hearing screening program. In 1991, the Rhode Island project expanded to

include a pilot site in Hawaii; Hawaii also became the first state to enact legislation to mandate statewide universal newborn hearing screening (Johnson et al., 2001). In 1999, federal legislation provided additional federal funding and support to pave the way for other states to develop statewide screening programs (Johnson et al., 2001).

Once hearing loss is confirmed, children who are birth through 36 months of age and who meet eligibility criteria, should receive EI services (JCIH, 2007). Children eligible for EI services are those diagnosed with hearing loss, of any degree, in either or both ears (JCIH, 2007). The goal of early hearing detection and intervention is “to maximize the linguistic competence and literacy development for children who are deaf or hard of hearing” (JCIH, 2007, p. 898). This statement highlights an imperative goal: proficiency in language and literacy.

JCIH (2007) recommends a 1-3-6 benchmark, which is as follows: (a) hearing screening for all infants by 1 month of age, (b) audiological and medical evaluations for all infants who do not pass the initial screening and rescreening by 3 months, and (c) EI services implemented as early as possible, preferably within 2 days of confirmation of hearing loss, but no later than at 6 months of age. When a child is identified with hearing loss, the need for a hearing device may become evident, which will allow the child to obtain maximum access to spoken language and environmental sounds. Although there are other kinds of sensory devices, the most commonly prescribed and appropriate device for many CHL are hearing aids. Without access to meaningful language-learning opportunities, CHL will be delayed relative to their hearing peers in the areas of communication, literacy, cognition, and socio-emotional development (JCIH, 2007).

### **Hearing Aids**

Although hearing aids cannot cure hearing loss, they provide individuals with auditory access to spoken language for the majority of hearing losses of mild, moderate, and severe



degree. The goal of amplification is to raise the volume of the auditory signal (amplify) so that soft, moderate, or loud signals are audible, yet not uncomfortably loud. The amplified signal must be of excellent sound quality under various listening situations (American Academy of Audiology, 2003). Individuals with hearing loss today have the advantage of advanced signal processing, such as digital noise reduction and speech enhancement circuitry, capable of delivering high fidelity of the speech signal. Hearing aids of previous generations lacked this level of sophistication, resulting in poorer quality of the amplified speech signal. Undoubtedly, the enhanced quality of the amplified speech signal in current devices has the potential to impact development of a child's speech and language abilities.

In accordance with JCIH (2007), when a CHL is identified as a candidate for amplification, and if the parent(s) desire for the child to develop his/her auditory skills, the goal is to have the child fitted with hearing aids as soon as possible, but no later than at 6 months of age. In fact, many CHL are fit with hearing aids within the first few weeks of life (Eisenberg, 2009). Children fit with amplification before the 6-month benchmark have better expressive and receptive language skills than those who are fit later (Yoshinaga-Itano et al., 1998). A child's "hearing age" begins the moment the child first uses the hearing device full-time (Eisenberg, 2009). During the EI process with a child/family, parents must be informed that once the child receives his or her device (whether hearing aid, cochlear implants, or other auditory sensory aid), the process of auditory skill development can then begin, through individualized audiologic habilitation. The child does not automatically acquire the hierarchy of auditory skills simply by placing the device on the child. The child, along with family members, must undergo intensive auditory habilitation provided in the context of EI services to facilitate development of hearing, speech, and language skills. In some cases, ongoing audiological management may reveal that a

particular child with severe-profound hearing loss may be receiving little or no functional auditory benefit from hearing aids. For such children, cochlear implants are then explored as an option with the family, as I will describe in a subsequent section.

### **Cochlear Implants**

For individuals with severe-to-profound hearing loss, cochlear implantation may be a viable option. The decision to proceed with cochlear implants is complex and requires consideration of multiple child and family factors. For many families who explore cochlear implant candidacy for their child, the expressed goal is for their child to have maximal access to spoken language to attain functional, oral language skills. Parents must understand, however, that the benefits obtained through cochlear implants vary among individual users. The decision to pursue cochlear implantation requires thorough consideration and counseling throughout the process of determination. A child's candidacy for cochlear implantation can only be determined through a comprehensive and multi-faceted evaluation process completed by a multi-disciplinary team. These evaluations include, but may not be limited to audiological, CT/MRI, medical, speech and language, developmental/cognitive/psychological, social work, and educational (Houston et al., 2017). A collaborative effort among the members of cochlear implant team, which includes the family as an equal team member, is essential when determining the appropriateness of cochlear implant(s) for a given child.

Cochlear implants provide significantly improved audibility of spoken language and enhanced speech perception benefit for the majority of users who have severe to profound bilateral hearing loss in comparison with the degree provided by their hearing aids (Spencer & Tomblin, 2009). A major goal of cochlear implantation is to facilitate oral communication skills (JCIH, 2007); for children, this in turn may potentially yield a significant positive effect on

literacy and overall educational outcomes. In terms of reading skills, bottom-up models emphasize the decoding of discrete phonological units (speech sounds). This poses challenges for children with severe-to-profound hearing loss because they cannot perceive the desired speech signal, even with hearing aids, due to the severity of their hearing loss and the limitations of amplification provided by hearing aids (Geers, 2003). Children with severe-to-profound hearing loss who use cochlear implants perform better on speech perception measures than those who use other hearing devices (Eisenberg, 2009). An individual's speech perception ability has direct bearing upon the quality of the speech sounds stored in phonological memory. The term "phonological representation" (Paulson & Moats, 2010) refers to the quality or distinctness of words stored in one's memory and the ability to access the word representations in a conscious manner. A child who cannot hear speech sounds or hears them inaccurately develops marred phonological representations, which in turn, compromises reading development. Cochlear implants improve the quality of these phonological representations (Johnson & Goswami, 2010). The potential benefits include greater accuracy in the representations of sounds being stored and retrieved in one's lexical bank, and accurate phonological representations are fundamental to reading skills acquisition.

### **Communication Options**

Families of young children with hearing loss (CHL) elect from a variety of communication options, which include communicating through spoken language (an auditory-oral approach), Cued Speech, American Sign Language, Total Communication, and manually coded English (American, Speech-Language, and Hearing Association, 1993). In this project, I will investigate the perspectives of families who have chosen the auditory-oral communication modality. The premise of this modality is that listening provides the most readily available

avenue for developing spoken language skills (Easterbrooks & Estes, 2007). Consequently, for families who elect an auditory-oral approach, EI services begin with providing the child with maximal access to spoken language through appropriately fit hearing technologies (e.g., hearing aids, cochlear implants). Audiologic habilitation includes auditory skills training to help the child make sense of spoken language (Easterbrooks & Estes, 2007). Infants identified with hearing loss by 6 months of age and who are fit appropriately with hearing technologies and receive EI services may acquire language skills that approximate those of hearing peers upon entering formal schooling (Moeller, 2000; Yoshinaga-Itano et al., 1998). With early identification of hearing loss and appropriate individualized EI services, there is improved likelihood that a CHL will enter formal schooling with age-appropriate language skills foundational language skills to support reading-readiness.

### **Hearing/Listening, Spoken Language, and Literacy**

The goals of early hearing detection and intervention (EHDI) are to maximize the linguistic, communicative, and literacy competence of CHL in addition to supporting their psychosocial well-being (JCIH, 2019). For families that elect an auditory-oral communication approach, maximizing the development of the child's auditory skills early in life is crucial for the child to be able to differentiate the sounds of spoken language that later will become important for learning to read and write.

To facilitate listening skills and spoken language development, it is essential to provide necessary acoustic input for the auditory pathways of the child's brain-- spoken language. Hearing children have the ability to hear spoken language that surrounds them. In contrast, to learn spoken language, CHL must first achieve optimal auditory access (i.e. through appropriately fit hearing aids and/or cochlear implants) to be able to *hear* environmental sounds

and speech. Then they also must also receive systematic instruction to learn to *listen*. For this study, I define *listening* as attending to sounds (i.e., environmental or speech) in an effort to make sense of them. According to Cole and Flexer (2011), hearing and the ability to consciously attend to what one hears (listening), are the bases upon which subsequent development of spoken language, and later, reading and writing depend. Thus, with the goal of proficiency in reading and writing, a predominant emphasis in EI service provision is the development of a child's auditory/listening skills, for families who elect auditory-oral communication.

Infants' brains are neurologically wired to develop spoken language through the stimulation of the central auditory system (Cole & Flexer, 2011). Easterbrooks and Estes (2007) explain that auditory stimulation, through exposure to incoming speech, creates the development of the child's auditory perceptual system, which acts as a supportive base for the child's ability to learn language, even before s/he understands the meaning of words. The early development of the auditory perceptual system in hearing children underscores the importance of early and regular auditory stimulation of spoken language for CHL. The first 5 years of a child's life represent a critical period for auditory and language development (Yoshinaga-Itano et al., 1998). The human brain has a natural propensity for the uptake of language; therefore, for the CHL, the process of learning to listen in order to make sense of incoming spoken language should ideally begin at birth and continue thereafter (Easterbrooks & Estes, 2007). Hearing children begin to hear sounds in utero beginning around the 20<sup>th</sup> gestational week. Therefore, children who are born with hearing loss encounter auditory deprivation of spoken language and must play auditory catch up.

During the first six months of life, hearing babies have the capacity to distinguish between a variety of speech sounds, both those of the language that s/he hears daily and those of

an unfamiliar language (Cole & Flexer, 2011, Easterbrooks & Estes, 2007). Over time, with regular auditory exposure to spoken language, the child's developing auditory perceptual system becomes more sophisticated. About the age of 1 year, through regular exposure to a repertoire of speech sounds of his/her native language, a hearing baby develops the ability to discriminate speech sounds of his/her native language from those of other languages. The ability to discriminate between contrasting phonetic (speech) sounds in a language is a significant developmental milestone that assists the child with the ability to learn new words. Furthermore, regular auditory stimulation essentially creates an auditory perceptual system that is uniquely tailored to facilitate language learning. A strong auditory-language base, in turn, facilitates the learning of new words and is also a critical base for learning to read (Cole & Flexer, 2011; Easterbrooks & Estes, 2007). *It is important to note, however, that children with profound hearing loss that are culturally Deaf and who are born to Deaf parents, can develop language skills through manual communication (e.g., American Sign Language) that are commensurate with their hearing counterparts* (Lederberg et al., 2013).

### ***Hearing/Listening and Reading***

As I will discuss in a later section, a child's conscious awareness of the sounds of a spoken language (PA) is closely correlated with a child's reading skills. This connection between one's phonological skills and reading skills further confirms the significant connection between hearing/listening and reading. There also is evidence from central auditory research that supports this connection. Evidence from brain imaging indicates that reading activities cause neural activation of the auditory portion of the brain, known as the auditory cortex (Cole & Flexer, 2011). Research by Tallal (2004) suggests that the ability to read depends upon one's ability to detect temporal (timing) aspects of the speech signal and that hearing is the most effective

modality for learning to read. The evidence from such studies corroborates the importance of early and regular auditory stimulation of spoken language. Children need 20,000 hours of listening to spoken language during these first few years of their lives in order for the auditory neural pathways to be sufficiently primed for formal literacy instruction (Dehaene, 2009). A child's "hearing age" begins on the day that s/he has optimal and consistent auditory access to sounds via appropriately fit hearing device(s). To be as reading ready as their hearing peers, a CHL must consistently use his/her hearing device(s) so that exposure to spoken language is relentless, day in and day out.

### **Organizing the Learning-to-Listen Task**

The task of learning to make sense of spoken language extends beyond the ears and hearing. It is generally understood that we listen with our brain; our ears and peripheral hearing are just an entry point for sound. Auditory stimulation with spoken language, when introduced with regularity, engraves important neural pathways that are critical for learning spoken language. This points to the neuroplasticity of the central auditory system and underscores the role of cognition in our ability to listen to make sense of incoming sounds (Cole & Flexer, 2011; Kraus & Slater, 2016). The seminal work of Erber (1982) described the steps that CHL undergo when learning to listen and to develop spoken language and referred to these stages of learning as auditory training. A synonymous term "auditory brain development" (Easterbrooks & Estes, 2007) captures the important cognitive aspect of learning to listen.

The complexities of learning to listen necessitate that sounds be introduced to the CHL in an organized fashion (Easterbrooks & Estes, 2007). Consequently, the role of the parent or clinician is to facilitate this learning by presenting sounds (speech and environmental) in an organized fashion so that the acoustic world becomes comprehensible to the child. Typically

developing children learn spoken language naturally and incidentally because they hear it all day, every day. However, CHL must be explicitly and systematically taught to listen. Providing structure in the presentation of incoming sounds in the listening environment allows the child to develop listening skills and spoken language as naturally as possible. There are exceptions, such as those with general learning challenges who will require more intensive intervention to develop spoken language skills. (Easterbrooks & Estes, 2007). Early and intensive language intervention during the first few months of life may produce significant language gains for the CHL (Yoshinaga-Itano, et al., 1998). Infants are hard-wired to listen to speech, and with increasing stimulation, an infant's auditory system develops the ability to detect certain acoustic features of their native language even before word learning occurs (Easterbrooks & Estes, 2007). Through systematic presentation of the acoustic world, we facilitate the child's listening abilities and spoken language development. Starting this process early capitalizes on the neuroplasticity of the auditory pathways in the child's developing brain.

The eventual goal in auditory learning is for the child to comprehend a spoken message. In addition, a child must learn to listen to the fine differences between distinct speech sounds, also known as phonemes, in his/her language. Both skills are higher-level tasks on the auditory learning continuum. A developmental issue to consider when helping a child learn to listen is that organization proceeds from large to small units—children must first learn to discern broader differences in sound such as differences between the telephone ringing and the doorbell. Eventually, as the child's auditory perceptual skills develop, the child will be able to discern smaller differences in sounds, such as the difference between speech segments (e.g., baseball versus late fall). The auditory continuum includes the following phases, from simple to complex: detection, discrimination, identification, and comprehension (Erber, 1982). These represent the



range of auditory learning tasks. This process of teaching/learning is often called auditory training and is a predominant emphasis in audiologic habilitation during the EI period. Auditory detection includes teaching the CHL to become aware of the presence or absence of sound as early as possible, preferably mastering this skill within the first year of life. According to Erber's model, the salient issue with discrimination is the child's growing ability to determine if two sounds, whether speech or environmental, are the same or different. The child also must learn to respond differently when two sounds are different. A relatively simple, yet important, discrimination task with speech stimuli is that CHL must be able to distinguish between short words (e.g., one syllable) and longer, multi-syllable words even though they may not comprehend the meaning of those words. The third level in the auditory continuum is identification, which introduces the idea that sounds have meaning (Easterbrooks & Estes, 2007). The essential teaching point with identification tasks is for the child to recognize that a specific spoken word, phrase, or sentence serves as a label for an object, person, category, action, etc. For example, a child demonstrates his/her identification ability by repeating the speech stimulus that was presented or by pointing to the corresponding word or picture. The highest auditory learning task is comprehension- understanding a spoken message and is the ultimate goal of all auditory learning. A child must respond to a spoken message in some way that demonstrates understanding, such as following a directive or answering a question appropriately.

### **Expanding Audiologists' Role**

Learning to listen and acquiring spoken language happens naturally for the majority of people but learning to read and write does not. Typical learners acquire the language of their environment simply by being surrounded by good models of that language, but exposure to a literacy-rich environment does not guarantee acquisition of reading and writing skills (Lieberman

& Shankweiler, 1979). Given the historical challenges that most CHL encounter with reading acquisition, we cannot assume that simple exposure to a text-rich environment is sufficient to stimulate their literacy development. An expressed intent of early hearing detection and intervention, for young CHL, is to maximize their competency in literacy (JCIH, 2019). There is recognition of the need to intervene early with a child's developing literacy skills. This accounts for the strong emphasis on developing listening and spoken language skills as a foundation for literacy, for those CHL and families who elect the auditory-oral communication modality. Audiologists play a critical role in this endeavor.

Within the field of audiology, audiologists' role in supporting literacy and language development has been through providing routine audiological evaluations, hearing aid/cochlear implant evaluation/fitting and follow-up, and audiological case management to ensure that their young clients with hearing loss receive optimal auditory accessibility to sounds. According to the American Academy of Audiology's "Clinical Practice Guidelines: Pediatric Amplification" (June, 2013), audiologists are to provide parent education regarding adjustment counseling, which refers to social and emotional support as it relates to the child's hearing loss/hearing device use. As part of audiologists' scope of practice, they provide parent education about the critical connection between hearing/listening and their child's speech and language development, and relatedly, the importance of achieving full-time hearing aid/cochlear implant use. Despite audiologists' efforts, many families of young CHL struggle to achieve consistent hearing aid use during the early stages when timing is critical for listening and spoken language stimulation. English (2014) notes that audiologists' message to parents regarding the necessity of full-time hearing device use in order for "speech and language to develop as normally as possible" may appear as little more than jargon to parents, a phrase that audiologists-in-training learn in

graduate training programs. English (2014) conjectures that if our message fails to motivate/inspire families toward full-time hearing device use, we must consider changing this message. One possibility is to help parents look further down the developmental ladder, beyond speech/language—to developing reading skills. Parents must understand that hearing/listening skills is tied to a child's literacy development. The speech sounds that a child hears is a critical foundation for understanding letter-sound association; the child will be required to map the speech sounds to alphabet letters. The idea of one's child attaining proficiency in reading/writing is a more concrete goal than “normal speech/language development.”

To align with the goal of promoting proficiency in language and literacy (JCIH, 2019), I assert that audiologists can expand the scope of their efforts to support literacy. According to the American Speech-Language-Hearing Association practice guidelines, treatment of the child's speech, language, and literacy development fall under the scope of practice and responsibility of the speech-language pathologist (American Speech-Language-Hearing Association, 2001). Traditionally, audiologists' primary point of discussion with families of young CHL currently involves hearing/listening for the purpose of speech and language development. Typically, a speech/language pathologist is the professional who implements auditory training with the CHL and his/her family and addresses the topic of early literacy during the EI phase. However, audiologists can play a more active role in supporting literacy, than in the past. Audiologists can expand upon their discussions to include helping families understand how essential it is for their child's auditory pathways to be sufficiently developed and primed for literacy learning in school (English et al., 2012; Wiley & English, 2010). This priming entails ensuring that the child hear the sounds of spoken language relentlessly during all waking hours of the day. This basic

understanding may be an important linchpin for parents in helping their child achieve full-time hearing device use to maximizing spoken language exposure.

### **The Role of Phonology in Literacy Development**

In the previous section, I discussed the practice of systematic teaching (i.e., auditory training) in order to develop the hierarchy of listening skills. This brings us to the discussion of a term relevant to literacy, phonology, which is the study of the speech sounds that comprise a given language. Since this study deals with the preschool population of CHL, the discussion that follows will broadly cover aspects of early literacy. Paulson and Moats (2010) conceptualized early literacy as encompassing these three foundational components: oral language, print awareness, and phonological awareness (PA).

Of the three early literacy components, print awareness and PA may be less familiar. Print knowledge refers to an individual's recognition that printed alphabet letters represent spoken words and encompasses the following three elements: concepts about print, alphabet knowledge (AK), and the earliest stages of writing and drawing (Paulson & Moats, 2010). Concepts about print refers to a general understanding about printed symbols and the conventions of print (e.g., that we read and write from top to bottom and from left to right). AK refers to one's ability to recognize and produce the names and sounds of letters (Phillips & Piasta, 2013). Roughly during the preschool period, reading and writing begin to develop simultaneously. Children learn to connect spoken language with print in their environment as they draw, scribble, and write pretend letters or real letters (Paulson & Moats, 2010; Riley-Ayers, 2013). Drawing is an important area to develop on the journey to literacy; a child's drawing, or intentional marking on paper, is a significant development, as it demonstrates his/her understanding that printed symbols can be used to convey meaning (Paulson & Moats, 2010).

Parents can support writing and drawing skills by providing writing materials (pencils, crayons, markers, paper), modeling writing and/or drawing, encouraging the child's attempts to write/draw, and providing assistance as the child develops these skills (Riley-Ayers, 2013; Neuman et al., 2008).

PA refers to the conscious awareness of the sounds of one's language and the ability to manipulate those sounds in a meaningful way (Paulson & Moats, 2010). PA skills fall on the more complex end of the auditory skills developmental continuum. Like all listening skills on this hierarchy, children must receive PA instruction systematically and explicitly in order to develop a conscious awareness of the speech sounds of spoken language. According to the meta-analysis conducted by the NELP, several components of early literacy demonstrated medium to large predictive relationships with later conventional reading and writing skills (NICHD, 2010). These components included PA and AK, in addition to rapid automatic naming of letters, digits, colors, or objects, writing/writing one's name, and phonological memory.

According to a meta-analytic review (Luckner & Handley, 2008), reading instruction methods for CHL in prior decades lacked an evidence base to support their efficacy. Luckner and Handley (2008) postulated that in the past, there was an assumption that CHL cannot make use of phonological or "sound-based" cues due to the constraints of hearing loss. As a result, reading instruction for CHL in previous decades lacked attention to phonology (Luckner & Handley, 2008; Spencer & Tomblin, 2009). Phonology is defined as the study of speech sounds in a language and the rules that govern how to put those sounds together to form words (Paulson & Moats, 2010). A related term is phonological processing (PP). PP occurs when one uses phonological (speech sound-based) cues to understand spoken or written language when decoding words (Paulson & Moats, 2010; Wagner et al., 1994). The construct of PP is complex

in that it is expressed through several domains, each of which is important to the development of reading and writing. These PP domains include the following: (a) PA, (b) phonological coding in working memory, also known as phonological memory, and (c) phonological code retrieval/rapid naming (Anthony et al., 2007; Wagner, et al., 1994). Furthermore, a range of subskills comprises each of these three PP domains. Phonological memory is an individual's ability to code phonological information in short term (working) memory and to be able to immediately recall that information (Paulson & Moats, 2010; Wagner et al., 1994) and is involved during all cognitive tasks that require processing of auditory information. Phonological code retrieval describes an individual's ability to quickly retrieve familiar phonological information that is already stored in long-term memory. Rapid (automatic) naming for digits, letters, or pictures are commonly used phonological naming tasks. The topic of PP is significant when considering reading instruction since PP skills appear to be predictive of reading ability in hearing children (Anthony et al., 2007; Moeller et al., 2007; Spencer & Tomblin, 2009; Wagner et al., 1994). The question, then, is whether or not CHL utilize phonological aspects of language to facilitate reading and writing tasks.

Under the umbrella of PP, PA refers to an individual's awareness of the sounds in words in one's language and an ability to think about and manipulate these sounds in some way (Paulson & Moats, 2010; NICHD, 2010). Sound manipulation tasks to develop PA skills vary in complexity and may involve words, syllables, onsets/rimes, or discrete sounds within words. There is a general developmental progression with which children develop PA skills and several of these skills apply to preschool age children. Rhyming is one example of a rudimentary skill (Wagner et al., 1994) that begins at about age 2 to 3 years in typically developing children; a child detects the "sameness" in the ending pattern of words that rhyme (Paulson & Moats, 2010).

Rhyming is the point of entry for higher level PA skills. The ability to detect the *sameness* of the beginning sound in a string of words is known as alliteration. Alliteration also is a PA skill that develops early on, during the preschool period (Edelen-Smith, 1997). In terms of task complexity, blending is one example of an intermediate level PA task (Stahl & Murray, 1994) that involves combining a series of syllables or speech sounds together to form a word (NICHD, 2010; Paulson & Moats, 2010). An example of a PA task of higher complexity is elision (Stahl & Murray, 1994). Elision tasks typically involve an individual being asked to listen to a word, subsequently delete a specified sound in the word, and to say the remaining part of the word (NICHD, 2010; Spencer & Tomblin, 2009; Wagner et al., 1994). In summary, a child's PA skills- the ability to consciously think about and manipulate the sounds of language in a meaningful way- correlate with a child's early literacy and conventional literacy skills (NICHD, 2000, 2010).

Interest in the contribution of PP skills to reading acquisition coincided with federal education initiatives at the turn of the 21<sup>st</sup> century. The NCLB Act (2001) and IDEA (2004) promulgated the need for evidence-based reading instruction for all students. In addition, the National Reading Panel (NRP), commissioned by Congress, undertook a comprehensive review of current reading research. Their review included research on phonemic awareness, which is the ability to think about and manipulate the smallest units of spoken language (phonemes). Phonemic awareness falls within the larger domain of PA (Paulson & Moats, 2010). The NRP's review revealed a strong causal relationship between phonemic awareness skills and reading achievement. Furthermore, the NRP found that explicit phonemic awareness instruction had a significant causal and long-range effect upon phonemic awareness, reading, and spelling abilities for a variety of learners across age and grade levels (NICHD, 2000). The NRP findings

resulted in the recommendation that comprehensive reading instruction should incorporate explicit instruction in phonemic awareness for a variety of learners.

The obvious question that remained is whether the NRP's recommendation for phonemic awareness instruction warrants application to CHL. In the recent past, the literature in deaf education presented opposing views concerning whether or not CHL use phonological knowledge during reading and the extent to which phonology is necessary as an entry point for early reading (Allen et al., 2009; Paul et al., 2009; Spencer & Marschark, 2010; Wang et al., 2008). There are data which suggest that CHL indeed are able to utilize phonological processing strategies (Colin et al., 2007; Geers, 2003; Geers & Hayes, 2011; Spencer & Tomblin, 2009), and this is particularly true for those who are more skillful readers (Schirmer & McGough, 2005; Trezek et al., 2010). In summary, there is ample evidence which supports the assertion that CHL exhibit PA skills that are qualitatively similar, but quantitatively delayed compared to their typical peers (Spencer & Tomblin, 2009; Trezek et al., 2010).

Some CHL may need additional sensory cues to access the various sounds of spoken language. For these children, parents may explore supplemental strategies. As previously mentioned, past reading instruction with CHL reflected an intuitive belief that they do not use phonology for decoding because of their limited ability to access the sounds of spoken language (Luckner & Handley, 2008). CHL today, however, have access to enhanced hearing technology that improves access to the sound structure of spoken language. Although electing the auditory-oral communication mode, some parents also utilize a supplemental visual communication system known as Cued Speech, to support their child's reading acquisition. Cued Speech consists of eight different handshapes positioned in one of four different locations near the mouth of the speaker (Trezek et al., 2010). One can simultaneously use Cued Speech with spoken language to



disambiguate phonemes that look alike on the mouth when articulated, thereby providing the child with another means to access phonological cues. An alternative supplemental method for accessing phonemes is through Visual Phonics, which consists of 46 handshapes and corresponding written symbols that represent the phonemes of a language (Narr, 2008; Trezek et al., 2010). Each hand cue is positioned near the mouth and represents the articulatory features of the spoken phoneme. Thus, although it is presumable that hearing technology today offers vast improvement in delivering audibility of the sounds of spoken language, if a preschool age CHL demonstrates difficulty with accessing the various speech sounds, parents may consider utilizing a supplemental visual system.

### **Parent Involvement in Early Literacy**

Parent involvement in the development of the listening, language, and literacy development of CHL is a principle that is lockstep with early hearing detection and intervention efforts (JCIH, 2019). In the area of early literacy research, Phillips et al. (2013) note that experimental research suggests a child's early literacy development benefits from parental involvement in reading activities at home. Senechal and Young (2008) conducted a meta-analysis of reading research on the impact of parent involvement (of those with children in kindergarten through third grade) on children's acquisition of early and conventional reading skills. Parental involvement led to positive outcomes on children's reading outcomes. More specifically, interventions in which parents executed targeted literacy activities and strategies produced positive and larger effect sizes than other strategies (e.g., reading books to their child, listening to their child read). These findings are akin to those from related studies on children's academic achievement; parent involvement activities have a larger impact on a child's academic achievement when their involvement is directly related to a particular content area (Sheldon &

Epstein, 2005). These findings highlight the benefit of parent involvement that includes focused, direct instruction. DesJardin et al. (2011) reported similar findings in their study on the relationship between the literacy skills of young children with cochlear implants and maternal involvement in the home environment. Parent teaching activities (e.g., language and rhyming games, questioning during joint book reading, and pointing to words on the page) showed significant positive correlation with children's literacy skills such as PA, letter-word identification, and passage comprehension. In contrast, exposure to a literacy-rich environment (e.g., checking out books at the library, listening to books on tape, encouraging child to practice writing letters/name) and mother-child home literacy activities (e.g., reading aloud to one's child, singing rhymes/songs) did not show significant correlations with the literacy skills of the children with cochlear implants in this study. These findings regarding young children with cochlear implants suggest the possibility that, like their typical peers, young CHL also may benefit from parental involvement that includes direct teaching of skills that support their literacy acquisition, in contrast with a more general exposure to a literacy-rich home environment.

Explicit, systematic literacy instruction for preschool CHL was the topic of an investigation conducted by the Center on Literacy and Deafness (Miller et al., 2013). Their multiple baseline study included five preschoolers with hearing loss who communicated through spoken language or simultaneous communication (i.e., spoken language supplemented with manual communication) and who received explicit instruction in PA over the course of a school year. Instruction in PA included tasks of syllable segmentation, initial phoneme isolation, and rhyme discrimination embedded within a comprehensive emergent literacy curriculum. The findings indicated an improvement in participants' PA scores at the end of the school year. The researchers concluded that through explicit PA instruction, young CHL who have functional

hearing (i.e., sufficient accessibility to the sounds of spoken language) can indeed develop PA skills through explicit PA instruction. This finding is significant in that, in the past, even with good functional hearing, many CHL did not develop age appropriate PA skills (Easterbrooks et al., 2008; Spencer & Tomblin, 2009; Webb & Lederberg, 2014). Yet, PA skills, as mentioned previously, along with knowledge of letter-sound correspondence, forms an important foundation for learning how to read. Although this study conducted by CLAD occurred in a classroom setting, the CLAD's study findings point to the possibility of the positive impact of explicit PA instruction by parents in the home setting.

### **Family-Centered Audiologic Habilitation**

A task force of experts within the field of audiology is currently exploring how hearing professionals might better engage family members of their patients who have hearing loss, a term which is now referred to as family-centered audiologic care (Singh et al., 2016). Family-centered care is an extension of patient-centered care that places a greater emphasis on the significant role that family members play in planning, executing, and monitoring intervention. This clinical framework recognizes the patient and family members' as experts who are most knowledgeable about the patients' needs. The audiology task force embraces the description of family-centered care, which holds that this type of care is respectful of and responsive to patients' and family's preferences, values, and needs and that these should guide all aspects of intervention (Institute of Medicine, 2001).

DesJardin and Ambrose (2010) advocate for a coaching model in which parents and professionals work collaboratively to support the CHL. The model views both parties as equal members of the partnership, each having unique expertise that can inform their efforts. A vital step in the coaching process occurs during the initial stage when the professional and parent

discuss their own beliefs and perspectives about literacy. For example, the professional may share his/her belief that parents play an important role in nurturing early literacy development at home (DesJardin & Ambrose, 2010). This is an important discussion because some families may view literacy instruction as the sole responsibility of the school/childcare program. In the methodology chapter of this paper, I describe how the first step in the data collection process was to investigate parents' beliefs and perspectives about early literacy development relative to their CHL through the initial semi-structured interviews with families. As a professional, it was important to empower parents by educating them regarding evidence-based early literacy strategies that can be adapted to suit their child's/family's needs and interests in the home setting. However, this instruction must be applied in a way that accounts for and is sensitive to family's beliefs, values, and interests.

According to this coaching model, it also is important that professionals recognize a family's strengths and plan intervention that builds upon them (DesJardin and Ambrose, 2010). JCIH (2007) also advocates for intervention that builds upon the child's and families' strengths. Families need professionals to listen with unconditional positive regard (Rogers, 1961) and for professionals to recognize and encourage the positive things that they are doing at home to promote their child's development (Swanwick & Watson, 2007). In this study, I aimed to support the positive practices that families are already engaging in routinely and give them tools that expand upon their current repertoire. I sought to implement parent education in a manner that adheres to these principles of family-centered audiologic care.

### **Parent Education**

The term "parent education" typically denotes an educational effort by which the professional provides parents with pertinent information related to a specified area of child

development. The intent is to positively influence the child's developmental outcomes (Steiner et al., 2012). Kaminski et al. (2008) use the term "parent training" in their meta-analytic review of the program components associated with effective parent education. In particular, these authors distinguish between the terms "parent education" and "parent training." Parent training goes beyond providing information to parents since parents receive instruction to actively acquire a skill(s) that will presumably have a positive impact upon an area of their child's development. In the current study, the parent education module incorporated both parent education and what Kaminski et al. describe as parent training since the intent is to provide an information resource to parents. In addition, during a home visit, parents had an opportunity to practice an evidence-based PA strategy, specifically teaching rhyming to their CHL. In this study, I use the term parent education to specify the delivery of the following triad of activities that occurred during "parent education"/session 3: face-to-face parent instruction on hearing/listening skills and early literacy and how to teach their CHL about rhyming, opportunities for families to practice teaching rhyming to their CHL while receiving coaching, and providing parents with a learning resource- an internet-based instructional module on how to teach rhyming to one's CHL. In another section, I will describe a parent coaching model, which accounts for adult learning principles (Rush & Shelden, 2005, 2020). I used this coaching model as a conceptual framework to guide my parent education efforts in the current study.

Parent involvement to address maladaptive childhood behaviors has spanned over four decades. (Steiner et al., 2012). After the 1970s, there was recognition of parents' capacity to effect change, resulting in positive behaviors in their child. This led to a shift towards interventions that aimed to modify parents' behaviors. (Kaminski et al., 2008). Throughout the decades that followed, parent training programs expanded their targeted objectives to include

programs that target children's developmental outcomes (e.g., cognitive, health, communication) and improving parenting practices, for example, to reduce the risk of child maltreatment.

Literature in the fields of early childhood, special education, and related fields support the efficacy of training parents to implement interventions with their young child. In their meta-analytic review, Kaminski et al. (2008) presented a substantial body of evidence which demonstrated that parent training approaches yielded significant, positive effects on childhood behavior in young children. The literature related to childhood autism spectrum disorders (ASD) also yields positive findings. Ingersoll & Dvortcsak (2006) reviewed studies on training parents to participate in intervention efforts for their child with ASD. Their review cited a seminal study conducted by Lovaas et al. (1973), which was the first study to highlight the importance of training parents as interventionists for their child with ASD. Their study demonstrated that children, whose parents were trained to implement intensive interventions with their child, continued to make gains post-intervention. However, children who returned to an institutional setting after intervention, regressed in skills. Moreover, it is well-documented that parent training in intervention techniques, when incorporated into a comprehensive treatment program for children with ASD, improved generalization and maintenance of skills over the course of time (Koegel et al., 1982). In the related field of childhood communication disorders, studies also investigated the impact of parent-implemented language interventions. Roberts and Kaiser (2011) conducted a meta-analysis to investigate the effects of parent-implemented language interventions for children who were between the ages of 18 and 60 months. Some studies included children with developmental delays who had secondary language impairments and others included children with language impairment alone. They concluded that parent-implemented language interventions yielded a significant positive effect on children's receptive

and expressive language skills. In addition, there were no significant differences in outcomes between children with and without intellectual disabilities. There are similar findings in the early childhood/early literacy literature. Reese et al. (2010) reviewed studies of parent training programs to facilitate typically developing preschool and kindergarten children's language and emergent literacy development. The studies reviewed included those that were experimental by design and that included a direct parent training component of a skill in one of three areas: parent-child book-reading, parent-child conversations, and parent-child writing. Reese et al. concluded that programs that incorporated direct parent training of skills in each of these areas were effective means to improve various language and emergent literacy outcome measures of this population of typically developing preschool and kindergarten children. Furthermore, outcomes were specific to the type of skills training provided to the parents. For example, although there were fewer studies that focused on parent intervention in emergent writing (with the bulk of studies focused on parent-child book-reading and parent-child conversations), writing-specific interventions yielded improvements in children's emergent print and writing skills. Although their analysis only included studies with typically developing children, through their review of the literature, they noted that interventions that were effective for typically developing children shared similar features to interventions that were designed to help children with language delays. In fact, dialogic reading (a parent-child book reading technique used in many of their reviewed studies), actually was initially developed for use with children with expressive language delays and their parents.

It is important to note that this dissertation study is not an intervention study; the parent education module that I developed is not an intervention, but rather it is intended as a parent resource that provides instruction on how to facilitate development of a child's PA skills,

specifically rhyming. However, much can be gleaned from past intervention studies that include parent education. Parent education has long been used as an intervention tool in child behavioral health and for children with developmental disabilities. Thus, there is an abundance of literature that discusses various formats of parent education. This literature provides useful guidance for developing a parent education resource for my dissertation study on families of young CHL. Phaneuf and McIntyre (2011) describe three general formats of delivering parent education that have commonly been used in early childhood populations. These include self-administered, group-based, and individually- administered formats. Self-administered parent education programs generally disseminate information to parents with literature via print, audiovisual means, or computer delivery. There is minimal or no contact with the professional/therapist. Group-based programs, with small groups of families (i.e., 8 to 12 participants), affords families with more contact with the professional/therapist compared to self-administered programs. With individually administered programs, professionals have the opportunity to provide parents with specific feedback, individually tailored to their family's needs in a natural setting. As one can imagine, each of these delivery formats has its advantages and disadvantages. According to Phaneuf and McIntyre, it is clear that families do not benefit uniformly. Professionals must consider which delivery format (or combination of formats) is feasible and most beneficial, given the needs of the particular family and the constraints of the work setting (i.e., clinic, school setting, home).

Kaminski et al. (2008) analyzed several meta-analytic reviews, conducted prior to their review, on parent training programs in childhood behavior management. These reviews investigated issues such as the various effects associated with specific parent education programs, delivery settings, or theoretical approaches to parent education. Kaminski et al.



identified program components (i.e., content covered, delivery format) and strategies that were associated with larger effect sizes. These included programs that (a) included parent training on how to facilitate positive parent-child interactions, and (b) required parents to practice targeted skills with their child during therapy sessions.

The results of Kaminski et al. (2008) have implications for this dissertation study. These results underscore that an active learning approach to parent training includes both information-sharing and direct teaching/practice of skills in the context of the session. This approach yields better learning outcomes than programs that are solely didactic. As I will discuss in Chapter 3, I developed a parent education module that includes an information-sharing component, followed by skills training, and opportunities for parents to practice the targeted strategy.

### **Parent Coaching**

An important facet of providing parent education is the therapeutic approach used by the professional to engage parents/families. According to Steiner et al. (2012), a collaborative model is one in which the professional and parent work in partnership with one another to develop and execute the intervention goals, as opposed to more hierarchical, expert-driven approach. Professionals engage parents by asking about their perspectives and soliciting recommendations regarding their child and/or the intervention, thereby demonstrating receptivity to parental input. This type of engagement actively fosters a mutual learning environment in which parents and professional alike recognize one another's expertise. Importantly, professionals recognize the parent as being an expert of their own child (Knowles et al., 2017). Collaborative partnerships afford parents not only with opportunities to give input, but also make room for individualizing the program/intervention in a way that accounts for family's needs and skill level and honors family's choices, values, goals, preferences, and routines (Knowles et al., 2017).

The literature on ASD provides an abundance of guidance on how to structure individual parent education efforts. As stated in the meta-analytic review by Kaminski et al. (2008), parent training for parents of children with ASD incorporates three basic elements into their home-based parent education sessions with parents of children with ASD. First, the professional describes the new content/targeted strategy. Second, s/he illustrates the targeted strategy with the child or models the strategies via video demonstration. Finally, the professional provides the parent with an opportunity to practice the new skill with their child during the session (Curtiss et al., 2016; Ingersoll and Dvortsak, 2006). The advantage of this approach is that the professional provides immediate reinforcement and feedback to aid in skill mastery. I incorporated these three basic elements into the development of the parent education module.

Ingersoll and Dvortsak (2006) give additional guidance to enhance learning and the quality of the collaborative relationship between professional and parents. In particular, they share five areas of parent *coaching*. First, they emphasize the importance of *building rapport* with families through balanced turn-taking during conversations and highlighting what the parent is doing correctly throughout the training effort. The second coaching area is *reviewing* or *sharing new information*). Ingersoll and Dvortsak recommend limiting the amount of information shared in any one session and to present only one or a few techniques at a time. This step also includes describing any critical elements of the strategy, stating the rationale behind the technique, and checking for understanding. The third coaching area is to *model the strategy*, taking up no more than 25% of the session time. Thereafter, the professional should give the parent the opportunity to practice the strategy. The fourth coaching area is to *provide immediate feedback* to the parent. The authors recommend that the feedback be specific and succinct, with greater emphasis on positively reinforcing parents' efforts as opposed to corrective feedback.

The final coaching area is to *build parents' independent use of the strategy*. This includes decreasing the amount of feedback given over time and to provide opportunities for independent practice. The professional should also include discussion aimed at helping the parent with brainstorming other routine daily activities during which the parent/child can implement the strategy beyond the session.

Rush and Shelden (2005, 2020) developed a conceptual framework for parent education and training, which they also referred to as “coaching.” Coaching, which is well-utilized in early childhood/EI settings, is a help giving, collaborative interactional process between the professional “coach” (professional/facilitator) and the “coachee” (parent). The intent is to build parents’ capacity to support a specific area of their child’s learning and development. This is accomplished by helping families to utilize and refine their current skills and acquire new skills and knowledge in order to meet parents’ self-identified goals. An important facet of this relationship-based coaching model is the priority placed on promoting parents’ sense of confidence and competence. Importantly, five components undergird the coaching model and are based on adult learning principles (Rush & Shelden, 2005, 2020). They are as follows:

1. *Joint planning*: the agreed upon actions to be taken prior to the next session, for both the coach and the parent.
2. *Observation*: observing the others’ (parent and coach) implementation of the learned strategy/activity.
3. *Actions*: real-life situations that present opportunities to implement the learned strategy/activity.
4. *Reflection*: self-reflecting on one’s progress and learning and brainstorming ideas for refining one’s practices.

5. *Feedback*: information shared by the learner regarding his/her progress or information shared by the coach based on observing parents' implementation of the strategy/activity.

### ***Evidence for Parent Coaching***

In the EI/early childhood literature, there is evidence which demonstrates that through parent training and coaching, parents can effectively implement evidence-based facilitative communication strategies, which in turn, yield improvements in their child's communication skills. For example, Meadan et al. (2014) examined the effects of parent training and coaching, using a program called Parent-Implemented Communication Strategies, which is also known as PiCS. Through parent training and coaching, mothers of young children with Down's syndrome showed improvements in the rate and quality of their use of the targeted facilitative language strategies in families' naturalistic contexts. Correspondingly, there was growth in their child's communication skills. In their single-subject multiple baseline study, Roberts et al. (2014) EI professionals used a training and coaching approach known as Teach-Model-Coach-Review to teach parents how to use facilitative language strategies (e.g., matched turns, expansions, time delays) with their child with language impairment who was between 24 and 42 months. As its name suggested, this caregiver intervention included teaching, modelling, coaching, and review of the targeted evidence-based language strategies. Roberts et al. demonstrated that parents increased their use of each of the targeted facilitative language strategies following training/coaching. Wong et al. (2013) reviewed the literature on intervention studies on young children with autism spectrum disorders. They sought to identify intervention practices that demonstrated evidence for improving learner outcomes for students with ASD. Parent training and coaching programs for parents, as parents implemented interventions with their child, were

found to be among 27 identified evidence-based practices; this was the case specifically when parent training and coaching were delivered consistently and with high fidelity.

In the current study, adult learning theory combined with the parent coaching model provided a framework for developing the online parent education module and delivering parent education in session 3. In addition, the framework provided a lens for analyzing parents' perspectives and experiences after having received parent education.

### ***Coaching and Telehealth in Communication Disorders***

A review of the literature revealed that use of the internet and multi-media technology for clinical service delivery in the communication disorders field began around 20 years ago and has steadily increased. The American Speech Language Hearing Association defines telehealth practice as the use of telecommunication technology to deliver professional services remotely by linking the clinician to the client to provide assessment, treatment, or consultation (American Speech, Language, and Hearing Association, n.d.). Application of telehealth practice may be described as synchronous, whereby the patient/client and clinician interact in real time. An example of pediatric adaptation of synchronous practice is coaching parents/families remotely and/or presenting instructional content live through videoconferencing in order to help parents learn new skills to support their child's hearing, speech, and language development (Edwards et al., 2012; Lalios, 2012; Snodgrass et al., 2017). The advantage of this method of service delivery is the accessibility to professional services for families who live in geographically remote areas. Telehealth services also may be asynchronous, whereby data or images are collected and transmitted to later be viewed and interpreted by the audiologist or speech-language pathologist. A few examples include hearing screening in young children, hearing aid evaluation/fitting, and CI mapping (McCaslin & Tharpe, 2015). Parent training and coaching also may be

asynchronous. One example would be an audiologist or speech-language pathologist providing parents with access to online instructional material/resources such as online modules or YouTube demonstration videos of how to perform a facilitative language technique (Snodgrass et al., 2017). The obvious benefit is that parents can view the materials/resources independently at their convenience. Some practice settings utilize a hybrid model in which there is a combined usage of telehealth practices and face-to-face encounters with patients/clients.

As discussed in Chapter 3, my dissertation study includes parent education (both training and coaching) delivered in a hybrid format. In the EI/early childhood literature, Snodgrass et al. (2017) described a hybrid model that includes parent training and coaching and has and continues to be used to improve the communication function of young children with various disabilities. The authors explained that the PiCs program had initially been used as a parent training and coaching program in face-to-face sessions with families, as described by Meadan et al. (2013). Children were between two and five years of age and diagnosed with developmental delays/disabilities, autism, and had limited verbal communication abilities. The goal of the PiCS program was to provide training (i.e., teaching) and coaching to participating parents on how to implement two targeted intervention strategies to facilitate their child's verbal social communication. Parent training included instruction in the steps of the targeted strategy along with illustration of the strategy through YouTube demonstration video clips of parents implementing the strategies with their child. The targeted strategies included arranging the communication environment, modeling, mand-model, and time delay. By improving parents' facilitative skills, they sought to improve children's communication skills (Snodgrass et al., 2017). In addition, Meadan et al. (2013) incorporated the key coaching components identified by the Rush and Shelden (2005, 2020) coaching model. First, interventionists provided parent

training in the targeted strategies. Thereafter, coaching parents included jointly developing an action plan, observing the parent-child interaction while parents implemented the facilitative strategy, the coach asking the parent to reflect on their implementation of the strategy, and the coach providing feedback to the parent. The authors concluded that through parent training and coaching using the PiCs program, parents learned to implement the facilitative strategies with high fidelity and also reported improvement in their child's social communication skills.

Subsequently, Meadan et al. (2016) transformed the PiCS program procedures to deliver parent training and coaching through telehealth, which they referred to as Internet-Based Parent-Implemented Communication Strategy (iPiCS) program. The intent of the iPiCS program were the same as the face-to-face version (PiCS). However, interventionists (coaches) delivered parent training (i.e., teaching of content on communication skills and steps the parent facilitative communication strategy) via telehealth in one of two options: (a) synchronously online with parents in a 45-minute session, or (b) asynchronously through a series of five online self-directed online modules. Interventionists provided the various steps in the coaching process synchronously to each family through videoconferencing. Importantly, during the observation time, coaches recorded each step of the strategy that the parent implemented with accuracy/fidelity. In addition, coaches collected data on the child's communication attempts in response to the parents' implementation of the strategy. These procedures allowed coaches to determine parents' level of mastery of each targeted facilitative strategy. The criteria for mastery was parents' accurate use of the targeted strategy during 80 percent of their attempts, over three consecutive sessions. As with the in-person implementation of the face-to-face implementation of parent training and coaching using the PiCs program, Meadan et al. (2016) determined that

parents implemented the targeted strategy with a high level of fidelity and that there was improvement in their child's corresponding communication skill.

In addition, the authors' conclusions are relevant to this dissertation study. First, based on their study's evidence, Meadan et al. (2016) determined that the parent training and coaching practices, executed via telehealth while using the PiCS program, was effective. Second, their study's findings also provided evidence that the PiCS/iPiCS program, delivered in both face-to-face and hybrid formats, was an effective model for parent training and coaching (using the coaching steps described by Rush and Shelden (2005, 2020)).

In this dissertation study, I delivered parent education, which included parent training and coaching components (Rush and Shelden, 2005, 2020) using face-to-face and asynchronous delivery as described in Chapter 3. Unlike the program described by Meadan et al. (2013, 2016), the online parent instructional module that I developed for the current study was not intended as an intervention, but rather as a parent resource, which I describe in Chapter 3. However, the findings of Meadan et al. (2016) lent broad support for the effectiveness of parent training and coaching through hybrid formats. The authors also concluded that more research is needed to further build the evidence for use of this framework (iPiCs with parent training and coaching) to build parents' capacity to promote the social communication development of their young child.

**Development and Delivery of Parent Education Modules.** The inspiration for my proposed study derives from "InfantNet," a pilot-tested internet-based method for delivering an existing evidence-based parenting intervention in a hybrid format to improve parenting behaviors, infant developmental outcomes, and reduce childhood maltreatment (Feil et al., 2008). The results of the study demonstrate the benefits of leveraging the internet, multimedia technology, and software to create supplemental instructional resources for parents of CHL.



In the spring semester of 2015, I conducted a pilot study in which I delivered online instructional modules as done by Feil et al. (2008). I explored the feasibility/practicality and effectiveness of delivering auditory learning information to EI and communication disorders professionals who provide direct clinical services to families of young children with hearing loss and to those who oversee service provision. Through collaboration with a colleague who was an EI deaf educator, I created a learning module to disseminate information regarding auditory detection, the first skill on the auditory learning continuum. The instructional module included a brief video segment that depicts a simulated session during which a deaf educator teaches a 2-year old girl with cochlear implants how to respond when she hears a speech sound. Instructional text and still images in the sidebar of the website explained and illustrated the sequence of steps in the targeted strategy. I used qualitative methods to collect and analyze data from participants who completed an online survey after viewing the online module. The survey assessed the feasibility/practicality and effectiveness of the online module as a method of delivering professional education and included 13 items (12 closed-set and one open-set). The findings suggested that EI and communication disorders professionals judged the online format of instruction to indeed be both feasible/practical and effective. Additionally, participants noted on the survey that the one-to-two-minute video-clips demonstration videos were an effective means to illustrate the targeted auditory learning strategy. The module development required me to consider how to present instructional content (i.e. an evidence-based strategy) in a step-by-step manner for adult learners.

Based on the literature and on the pilot study findings, I proposed this dissertation study to explore parents' knowledge and perspectives of early literacy, its connection to literacy, and family's early literacy practices. The survey responses from my pilot study yielded favorable

feedback from participants' regarding the effectiveness of both the online learning format and brief demonstration video clips. Therefore, for this dissertation study, I again developed a parent education module and incorporated short demonstration videos (one-minute or less). The module instructed parents on these two main topics: (a) the connection between hearing/listening and literacy development, and (b) a rhyming strategy and activities on how to facilitate development of their child's PA skills. Based on best practices derived from the literature on working with families, I collected data from families, used internet-based methods for delivering parent education with coaching both in person and asynchronously, and collaborated with the families to tailor the targeted strategy in the instructional module to make the information relevant to the needs of their CHL/family. Thereafter, I explored parents' perspectives and experiences with receiving parent education and using the module. In the next chapter, I provide details on the methods for this study.

### **Summary**

In this section, I summarized literature that contextualizes my proposed study. I discussed the following topics: (a) the history of reading skills of students with hearing loss, (b) early hearing detection and intervention efforts in the U.S. and their significant role in developing foundational listening and spoken language in young CHL, (c) the connection between hearing/listening, spoken language, and reading (d) organizing the learning-to-listen task (e) PA development, (f) parent involvement in early literacy development, and (g) parent education with coaching and telehealth, and (h) a model in the existing literature that provides an evidence basis for a hybrid model of parent training and coaching. I concluded with discussion about my pilot study, which informed the production of a parent education module for this dissertation study.

## **Chapter 3: Methodology**

### **Introduction**

For this study, the research design that I used was a qualitative case study. A case study is an empirical inquiry that uses a set of qualitative procedures to explore a bounded system over a period of time (Plano Clark & Creswell, 2010; Yin, 2009). The bounded system is the unit under study and is referred to as “the case” (Merriam, 2009). The case may be a program, event, activity, process or one or more individuals that is investigated over a sustained and specified period of time (Creswell, 2009). A hallmark of case study research is that the case is clearly delimited in terms of time, place, or some other physical boundary. In the following sections, I describe my rationale for using a case study methodology and the cases that I examined.

### **The Qualitative Paradigm**

Qualitative research methods are instrumental when the researcher desires to understand how people interpret their experiences and the meaning that they construct about these experiences (Merriam, 2009). In the current study, I aimed to understand parents’ knowledge and perspectives regarding early literacy, and thus, qualitative methods were well-suited for the purposes of this study. Characteristic of qualitative studies, my study was subjective and interpretive in nature since there was a central focus on understanding participants’ perspectives and their interpretations related to the topic of early literacy and hearing/hearing loss. In contrast with quantitative research methodology, the study did not intend to test a hypothesis. Instead, qualitative research questions are characteristically open and general. Qualitative researchers only have a general idea of what the findings may be in advance. Qualitative studies are also naturalistic; there is an emphasis on participants’ views as experienced within natural settings (Plano Clark & Creswell, 2010). Qualitative researchers become immersed in the subject matter

and with participants, and the data collected is typically in the form of words and objects. Qualitative studies are time intensive; the end result is an in-depth, detailed description of the central phenomenon (Merriam, 2009). Accordingly, as an end product of this study, I sought to arrive at a rich, thick description of themes related to parents' knowledge, perspectives, and activities in the home settings, with regard to early literacy and their CHL.

### **Defining the Unit of Study (Case)**

In this study, an individual case was a single participant-family, comprised of the young CHL and his/her parent(s). Clear boundaries delimited each case. Each family consisted of a CHL who was between 3 to 5 years of age and participated previously in Hawaii State's EI program. Each family participated in the study over a three month period. Furthermore, the participant families each utilized auditory-oral language in English as their child's/family's predominant communication modality. However, in one of the cases, the mother was Japanese and spoke both Japanese and English fluently. This family also was raising their CHL/daughter to be bilingual.

There are several other defining features of case study research that made this a suitable design for this study. Case study research involves an in-depth investigation of a contemporary phenomenon (Yin, 2009). Importantly, the contextual conditions are highly relevant to understanding the phenomenon, and thus, case study research is conducted within real-life settings and contexts (Merriam, 2009; Yin, 2009). This is in contrast with experimental designs for which the context is controlled and disengaged from the phenomenon under study (Merriam, 2009). In this study, the phenomenon under investigation encompassed a contemporary educational topic, early literacy. Through this investigation, I sought to gain insight into parents' knowledge base, perceptions, and family activities related to early literacy as situated within the

real-life context of the family's home environment. Case study research also relies on the use of multiple data sources, as a means of triangulating the evidence. The end result is an in-depth description and analysis of the bounded system. In the current study, I used the following three data collection tools: interviews, observations, and document review.

### **Multiple Case Study**

This study included three cases (families of CHL), and therefore, was a multiple case study. According to Yin (2009), multiple-case designs may be preferable over single-case designs. Employing two or more cases can lead to significant analytic benefits. The evidence from multiple cases, as opposed to a single case, may lead to more powerful conclusions by way of direct replication or through cross-case analysis of the data from multiple cases. In this regard, the description and comparison of multiple cases may lead to greater insight about the central phenomenon, namely parents' knowledge, perspectives, and their family's routine literacy activities (Plano Clark & Creswell, 2010).

### ***Sampling Criteria and Sampling Strategy***

I used a purposeful sampling strategy for this study. Merriam (2009) noted that information-rich participants are called upon for their special experience and/or competence. The assumption is that data from such participants will yield maximal, in-depth understanding of the phenomenon. Purposeful sampling is non-probabilistic; I recruited participants who were thought to be rich informants and from whom much could be learned regarding the phenomenon (Plano Clark & Creswell, 2010).

Merriam (2009) recommended that qualitative researchers specify the important participant criteria a priori and explain the significance of the criteria. For this study, the criteria for participant families included the following: the parent(s) or legal guardian(s) who are primary

caretakers had a CHL who is 3 and 5 years of age, had previously participated in Hawaii State's EI program (from diagnosis of hearing loss up through the child's third birthday), and who utilized auditory-oral language, in English, as their predominant mode of communication. Participant families may or may not have also used manual communication, (e.g., ASL) as a supplement to auditory-oral language. With regard to hearing technology, the inclusion criteria specified that a participant child could have been a user of hearing aids and/or auditory implant (e.g. cochlear implant) and that the child's hearing devices had been evaluated by their child's audiologist within three months prior to participating in the current study.

To recruit participant families, I enlisted the help of a colleague who provided services to young children with hearing loss and their families. The participants were somewhat homogenous since the individuals selected were members of a particular subgroup. The sampling strategy I used also involved snowball sampling in that I recruited participants that were referred by the aforementioned colleague who viewed these prospective participant families as being "hands on" (Plano Clark & Creswell, 2010). Out of five families who were referred by my colleague and that I contacted through email and/or a phone call, three families responded and consented to participate in the current study. To complete this study in a reasonable time frame, I limited the timeframe for data collection and parent education to three months, during which I conducted four sessions with each individual family. I conducted the study with a sample of only three families in order to delve as deeply as possible into each case. The small number of cases also helped to minimize the threats of participant attrition and maturation that can happen in studies of a longer duration.

### **Participants**

I recruited three families to participate in the current study. Table 2 in Chapter 4 contains child and family demographic information.

### **Data Collection and Parent Education**

For each of the case studies, I conducted a series of activities that involved data collection and development and implementation of a parent education module. These activities occurred in the following order: development of the parent education module, initial meeting, initial interview, document review, observation, parent education home visit, and final interview. I used the following data collection instruments for this study: interviews, observations, and document review. Data collection and the parent education session occurred over a three-month period.

Interviews were a major source of data for the case studies. I conducted two interviews with each individual parent or set of parents. Kvale (1996) described the “inter view” (p. 14) as an interchange of views from two parties that hold a conversation about a topic of interest, whereby human interaction is the mechanism for gaining knowledge. This highlights the dual nature of interviews- personal interrelation and the knowledge that results as a by-product. Within this research situation, I sought to connect with the interviewees in a manner that facilitated open sharing. This required carefully balancing knowledge-seeking efforts with the emotional aspect of personal interrelation (Kvale, 1996). For this reason, I began efforts to establish rapport with each family starting with the initial meeting.

### ***Initial Meeting and Initial Interview***

The initial meeting was informal with the goal of both parties (the families and me) becoming acquainted with one another and to begin establishing rapport between the family (i.e., the parent(s) and their CHL) and the researcher. This meeting took place at a suitable location of the family’s choosing, such as their home or an alternate location. I anticipated that parent(s) and

their CHL might be apprehensive during this initial meeting. To ease the child's apprehension, I brought developmentally appropriate toys to put him/her at ease. In addition, during this visit, I asked parents what kinds of toys and activities were of interest to their child to become acquainted with their child and family and to prepare for future sessions. I also explained the study, addressed any questions or concerns they had, and obtained written consent for their family to participate in the study. I obtained parents' written consent to audio-record the initial and final interview sessions and to video-record the observation sessions.

Within one to two weeks of the initial meeting with each family, I conducted a semi-structured interview. I offered each family a copy of the interview questions prior to the interview. The interview allowed me to ask pre-determined questions based on an interview guide (see Appendix A), and the semi-structured nature of the interview allowed for greater flexibility to change the sequence of questions, ask relevant follow-up questions, and address any parental concerns. Since I audio-recorded the sessions, I refrained from taking notes during the interviews and observations but wrote field notes after the interviews. Toward the end of the initial interview session, I explained the next step, which was an observation of each individual family as they engaged in early literacy activities. I encouraged them to do activities that are part of their typical routine. To allay any anxieties that families might have about feeling evaluated during the observation visit, I shared that my goal was to learn from each family with the hope of developing parent education that would be useful to families in the future. Finally, I addressed any questions or concerns they had.

### ***Observation***

Within two weeks after the interview with each individual family, I conducted an observation in their home. This observation provided an opportunity to gather and record open-



ended, firsthand information about each participant family's routine literacy/literacy-related activities as they occurred naturally in the home. Being in the home setting also provided contextual information about the physical environment, the family members, and other aspects of the families' lives. I used this observational data to triangulate the data that parents reported during interviews and to directly address this research question: What early literacy practices do parents/families incorporate into their daily routine with their CHL? In addition, by conducting an observation, I recorded aspects of participants' perspective that may have been difficult for them to share or simply challenging to acquire in an interview (Maxwell, 2005). Yin (2009) supported the development of an observation protocol to structure observations and to systematize data collection both within and across cases. As such, I adapted the Child/Home Early Language and Literacy Observation Tool (CHELLO) to systematize data collection across the three families (Neuman et al., 2007). The CHELLO was developed to evaluate the quality of the language and literacy environment in one particular early childhood setting- home-based early childcare settings for children, birth through five years. Although the CHELLO evaluates the language and literacy environment and home-based early childcare professionals' service delivery, I adapted this checklist to gauge my data collection on families' literacy activities in their homes. The CHELLO includes a checklist of 13 items that fall under these three categories: (a) physical environment for learning, (b) support for learning, and (c) adult teaching strategies. I customized a new observation checklist for my study by adapting eight of the thirteen items from the published CHELLO. These eight items were most pertinent to what I sought to observe. I also changed the wording on the items to align with the intent of my study- to record information on existing family literacy behaviors. In addition, the published CHELLO requires that the observer rate each item on a scale from 1 (deficient) to 5 (exemplary). Observers qualitatively

evaluate items related to the learning environment, learning supports, and teaching strategies of trained professionals in a classroom setting. In contrast, in the observation checklist that I developed, observers rate the behaviors as “present” or “not present.” I adapted the CHELLO to assist with collecting data related to this project’s intent—to learn about families’ literacy practices in their home environments (see Appendix B). Immediately following the observation, I recorded field notes to describe the activities, people, setting and to document my reflections and preliminary insights (Plano Clark & Creswell, 2010).

During the observations, my role was that of a participant observer; to be a completely uninvolved observer would have been unnatural since the session took place in the family’s home, and they welcomed my participation. My participation at various points during the observation, while still collecting data, put the families at greater ease even though they knew they were being observed and videotaped. As anticipated, there were opportunities to interact with the parents and their CHL. My intent was to further build a relationship with the family and to collect data regarding the home environment (the physical layout), family members present, the families’ literacy-related routines/activities, and any other interactions that occurred at the time. The acoustical environment was a critical factor to address. Competing noise adversely affects the ability of individuals with hearing loss to listen for comprehension and, therefore, affects a child’s ability to engage meaningfully with his/her parent(s). Parents were cognizant of the impact of noise and therefore, often independently took steps to minimize noise and distractions when feasible. When environmental noise was present, we attempted to minimize it.

### ***Document Review***

I asked parents for copies of their child’s relevant clinical and educational service documents. Parents provided their child’s past EI/Individualized Family Service Plan (IFSP),

audiologic evaluation, speech and language, and Individualized Education Program (IEP) reports. Document review helped me to gain deeper insight into the child/family relative to the central phenomenon and provided a means for triangulating the collective data.

### ***Development of Parent Education Module***

I developed an internet-based parent education module entitled “Hear to Read” (<https://wileyla.wixsite.com/heartoread>) and reviewed it with each family during the third home visit, the parent education session. Table 1 includes key information contained in the online module. I also made the module available online via a dedicated website so that families could continue to have access to the information after the home visit. Coaching parents included the following three components to support parents’ learning: (a) introduction and description of the main topic, in particular, rhyming as a listening/speech sound-based (PA) skill that prepares a child to learn to read, (b) illustration of the parent facilitative strategy of teaching rhyming to their child using demonstration videos, (c) opportunities to practice the learned content/strategy (Curtiss et al., 2016).

Table 1

#### *Components “Hear to Read” Online Module*

	Key Information
Home	Introduction to the connection between hearing/listening and reading and the importance of rhyming skills
Part 1	Activity 1: Singing nursery rhymes and songs Activity 2: Finding objects/words in the home that rhyme Activity 3: Reading books with rhyming words Activity 4: Follow the steps- <u>Green Eggs and Ham</u>
Part 2	Activity 1: Rhyming game- <i>Stand Up or Lie Down</i> game Activity 2: Steps to rhyming while using a favorite book

Part 3	Activity 1: Identifying rhyming words Activity 2: Matching pictures of rhyming words
Frequently Asked Questions (FAQ)	More information about how the amount of time spent listening to spoken language impacts future learning and reading, the importance of rhyming skills, and how these skills positively impact the development of reading in young children.
Resources	Links to websites with information on hearing/listening and early literacy development and a parent education handout on early literacy activity ideas

Knowles et al. (2015) noted that adults are characteristically goal-oriented and purposeful learners. Real-life circumstances in which there is a need to learn provide motivation for learning. Instruction must then embed appropriate rationale and motivators for the adult to learn the content presented (Knowles et al. 2015). Because hearing loss poses a risk to successful reading achievement, parents must understand the connection between hearing loss and literacy development. Thus, the parent education module necessitated instructional content in these two main areas: (a) the connection between hearing/auditory skills and literacy development, and (b) strategies and activities on how to facilitate development of their child's rhyming skills, which is a rudimentary PA skill. The sequential ordering of these two main topics is important. Parents want and expect their child to learn to read. Therefore, they must first understand that reading acquisition is incumbent upon all day, every day listening to the sounds of spoken language. This understanding should enhance parental motivation to learn about how to teach the listening skill of rhyming to their child. PA skills broadly develop along a continuum from simple to complex, with rhyming being the simplest and earliest of PA skills that children develop. Due to their age (preschool), I presumed that for each child, rhyming would be an appropriate PA skill to begin with. Based on data collected from the interview and observations, I determined that the module

was at an appropriate skill level for the children. I also sought to present the content in parent-friendly manner.

When instructing parents about the construct of PA, I first emphasized the that their child's ability to listen continually to the sounds of spoken language is an important foundation for literacy. The ability to think about the sounds of spoken language and to manipulate them in systematic ways (PA) is closely related to attainment of reading and writing skills. Relative to PA skills development, I included a description of the targeted parent strategy, how to teach the concept of rhyming to their CHL. The module included three different "Parts," each of which contained a few demonstration videos of real-life families doing specific rhyming activities and instructional steps for teaching one's child about rhyming. Parts 1 through 3 each included videos of sample rhyming activities. The complexity level of the rhyming task progressed from simple to more complex, Part 1 to Part 3. The videos were each less than one-minute long. The module also included written narrative text, corresponding to each demonstration videos, that provided instructional steps on how to teach rhyming using the activities. I introduced the module to each family during the third session. In collaboration with an educational website design consultant, I developed a website for the delivery of the module. The advantage of internet-based delivery of information is that parents can access the module to review repeatedly at their convenience, if desired.

### ***Parent Education Home Visit***

Within two weeks of completing the observations with an individual family, I conducted a home visit for the purpose of parent education. I introduced the module, reviewed the main points of the content, and engaged parents in a dialogue about the content. To incorporate principles of adult learning, I adhered to the following steps when instructing parents while

utilizing the module: (a) introduced the content by describing the information with sufficient detail, (b) illustrated the relevant literacy strategy by showing families demonstration video(s) and modelled the rhyming strategy with their child , and (c) provided opportunities for parents to practice the new strategy with their child.

Each CHL and his/her family had unique strengths and areas for growth along the auditory/literacy continuum. Thus, to provide education that was family centered, I adapted the parent education session to meet parents' learning needs. I reviewed the content presented via the internet-based module, yet assisted each family with brainstorming ideas for how to best adapt the learned strategy and activities to suit needs of their individual child/family (DesJardin & Ambrose, 2010).

Families needed time to independently implement the strategy they had learned, to problem solve, and to reflect on their learning (Knowles et al., 2015; Rush & Shelden, 2020). I conducted a follow up email within one week's time to check on parents' progress with the learned content and parent strategy. The purpose of this email was to see if the family had any questions regarding the parent education content and to provide further coaching guidance. During the gap between sessions, families had the opportunity to practice the rhyming strategy and activities independently.

### ***Final Interview***

Within one to two weeks after the parent education home visit, I conducted a final semi-structured interview with each family. Two weeks post-parent education was a short window of time for CHL to go from introduction to rhyming to full mastery of rhyming. However, during this final home visit, each family had an opportunity to share their stories, ask questions, participate in a final group rhyming activity, and to receive additional coaching feedback.

Another intent of this final interview was to collect evidence to address the fourth research question (RQ#4): “What are parents’ perspectives and experiences after having received parent education related to hearing/hearing loss, early literacy development, and PA strategies?”

### **Data Analysis**

This multiple case study involved two major levels of data analyses, within case analysis and cross case analysis. I began with the first level of analysis, the within case analysis, by examining the data from each case. As is characteristic of qualitative research, data analysis occurred simultaneously with data collection procedures and was inductive, moving from detailed data to searching for broader themes. As described by Plano Clark and Creswell (2010), I executed the following four major steps to data analyses: preparing the data, exploring and coding the data, developing descriptions and themes, and validating the findings.

#### ***Preparation of the Data and Development of Themes***

Each case was handled as a whole comprehensive unit in itself (Merriam, 2009). The data were in the form of words. The first step of the data analysis process was to prepare the data by transcribing responses from participants, including all field notes, soon after each interview and observation session. I thoroughly read through each data set multiple times thoroughly and reviewed documents provided by the families (i.e., clinical reports, educational reports).

The formal data analysis involved a preliminary exploration to gain a broad sense of the collective data. This included making memos of preliminary insights as I reviewed each set of data. I then segmented the data into discrete units and labeled each with a code that represented the meaning of a given data segment. I aggregated units of data with similar codes into distinct categories.

The third data analysis step was to describe and develop themes from the coded data with the intent of finding answers to the research questions. I built detailed descriptions to assist the reader with visualizing the families, their home environments, and each family's literacy routines and activities. Themes are major ideas that emerged from the collective data. I aggregated similarly coded data into themes relative to the central phenomenon; the goal was to answer the research questions, which are related to the following: parents' knowledge about early literacy and the connection to hearing, parents' perspectives about early literacy, each family's literacy activities, and parents' perspectives and experiences with the parent education module and implementing the rhyming strategy and activities with their CHL.

After completing the analysis of each case, I completed the next level of analysis, the cross-case analysis. This entailed analyzing the collective data for unified descriptions and theme that conceptualized the data across the cases (Merriam, 2009). Through this multi-case study, I sought to arrive at a general explanation that fit the cases collectively.

### ***Ensuring Validity***

A fourth step in the data analysis process was to validate the findings. Ensuring validity entailed corroborating the accuracy of the findings in order to establish trustworthiness of the study's findings (Creswell, 2009). The design of this study incorporated several strategies to enhance the validity of the findings (Creswell, 2009), which I describe in the paragraphs that follow.

One strategy for validating the findings was through triangulating the evidence using multiple sources of data (i.e., interviews, observations, and document review). Converging evidence across the various data sources and among the cases strengthened the credibility of the developed themes. A second strategy that I implemented to enhance validity was to conduct



member checks. This strategy entailed taking portions of data units and/or developed themes that were unclear back to the respective parent to check for accuracy in my interpretations and rendering of their perspectives (Plano Clark & Creswell, 2010). Furthermore, to enhance validity of the study's findings, I developed rich, thick descriptions of the participants, their setting, and their family activities and interactions to convey a compelling portrait of the central phenomenon. According to Creswell (2010), conveying detailed descriptions affords the reader with a sense of a shared experience of the participants in their settings. Creswell also noted that spending prolonged time in the field with participants in their natural settings facilitates the development of an in-depth account of the central phenomenon and participants, thereby increasing the validity of the study's findings. For this study, the timeframe for data collection was necessarily limited to a three-month period. However, I devoted an extensive amount of time during each of the sessions (initial interview, observation session, parent education, and final interview) with each family to ensure that I would capture key details about the participant families in their home settings. The extensive time spent with each family during each session positioned me to obtain deep insight into family's perspectives and experiences and enhanced the validity of themes developed.

### **Position of the Researcher**

As the researcher, I brought biases to my interpretation of the findings because of my personal and professional background and experience. As an audiologist, I could draw upon my professional knowledge and experience of working with families of young CHL. While this is advantageous, the downside was the potential to *assume* that I already understood certain aspects of families' experiences and perspectives. However, it was essential for me to remember that each CHL and family was unique. Although there were commonalities among the participant

families, I attempted to actively listen to their unique stories and perspectives with unconditional positive regard (Rogers, 1961). This posture of listening was critical in order to me to accurately grasp each individual family's knowledge, perspectives/experiences, and routine activities related to literacy.

As a parent of a child with disabilities (ADHD and specific learning disability) and three children who were developmentally delayed during the birth through 3 year period, I have experience with rearing children who previously received EI services, one of whom also receives special education services. From this standpoint, I understand some of the concerns that families of young CHL face with regard to their children. Beyond all the concerns I have about my children's academic and overall development, I understand the "bottom-line" concern that parents universally share- for their child to be successful and live a happy, productive life. This shared experience with parents in this study facilitated my understanding of parents' goals, hopes, struggles, and concerns.

Qualitative research has the advantage of providing opportunities for the researcher to construct understanding directly from the participants' perspectives (Tufford & Newman, 2010). I shared with participant families about my experiences as a mom of a child with developmental disabilities who receives special education services and whose children/family also received EI services. This fostered a comfortable atmosphere in which parent-participants appeared to feel comfortable sharing their own perspectives/experiences and their concerns. My professional experience as both a pediatric audiologist and a parent of a child with developmental disabilities, provided an advantageous lens for understanding parents' perspectives.

On the other hand, this sense of shared experience was one that I was cautious about, for each family comes with their own experience, goals, and values/beliefs. I attempted to refrain

from ascribing my personal perspectives to participant families. Qualitative research is characteristically subjective, with the researcher often being involved in data collection and acting as the instrument for data analyses. There is potential, therefore, for the researcher's personal perspectives to unknowingly and adversely affect how he or she interprets the data.

I implemented a method known as bracketing- as the researcher, I systematically reflected upon my own personal viewpoints and biases about the research topic to minimize the chance that these would overtake parents' perspectives (Plano Clark & Creswell, 2010). Credible qualitative research necessitates that researchers acknowledge their beliefs in order to bracket, or suspend, them throughout the research endeavor (Tufford & Newman, 2010). Bracketing is one strategy that qualitative researchers utilize in order to improve the validity of the findings of a study.

I used two methods of bracketing, as described by Creswell and Miller (2000). Throughout data collection and analysis, I wrote memos as an avenue for examining my engagement with the data. Glaser (1998), as cited by Creswell and Miller, states that writing memos can lead to important insights, which may include acknowledging one's preconceptions. Creswell and Miller highlight the importance of the process of writing memos. The act of explicitly acknowledging and putting into writing, rather than constraining, one's hunches and presuppositions, affords the researcher with the freedom necessary to more deeply engage with the data. The second method of bracketing that I used was reflexive journaling, which I began prior to data collection. According to Creswell and Miller, this process of reflecting upon the social, cultural, and historical influences that shape data analyses and interpretation should also include disclosure in narrative form. Through reflexive journaling, I sought to identify my preconceptions throughout the research process. Tufford and Newman (2010) noted that the

process of maintaining a journal assists the researcher in sustaining a reflexive posture and demonstrates an ongoing commitment to allow one's preconceived notions to surface throughout the research process. They also recommended that researchers consider several issues in their journaling process. A few of these issues were relevant to my study and warranted consideration. These topics included the researcher's reasons for pursuing the topic of the study, personal value system, and preconceived notions regarding socio-economic status.

### **Limitations of the Study**

Creswell (2009) noted that spending prolonged time in the field is required to develop and convey an in-depth understanding of the central phenomenon. In addition to an initial meet-and-greet visit, I conducted a total of four home visits with each family, which included an initial interview, an observation of the family's activities related to early literacy in the home, a parent education session, and a final interview. Visits with each family occurred over an approximate span of three months. I limited the study to this duration in order to make completion of my dissertation research practicable and to avoid the issues of participant attrition and maturation that can occur in a lengthier study involving young children and families. Delimiting the number of total sessions over a short period could potentially limit the validity of the findings.

One measure of the credibility of a study's findings is the size of the sample (McMillan, 2012). In general, a small sample size will limit the generalizability of a study's findings, as in this study, which consisted of only three cases. The small sample size in the current study limited the opportunity to adequately characterize the perspectives of the broader population of parents of young CHL. However, according to Merriam (2009), the sample size depends on a number of factors, including the questions posed and practical considerations (e.g. resources). Although this multiple case study involved a small sample size, for each case, I devoted a considerable amount

of time with each family. This intensive time in the field allowed me to develop detailed and rich descriptions of each family's literacy routines and parents' knowledge and perspectives; this may provide the audiology community with information to substantiate first steps in providing explicit early literacy support to CHL and their families.

## **Chapter 4: Findings**

In this chapter, I present the findings of this study and describe each of the three individual cases. Each case is a single participant-family who met the inclusion criteria described in Chapter 3 (Methods), which includes a preschool age CHL and his/her parents (or an adult family member who is close to the child and parents). Each case presentation begins with a description of the child and family, the child's hearing loss and communication profile, and relevant EI and educational program services. I intended to find answers to these proposed research questions:

1. What knowledge do parents of young CHL possess about the following:
  - a. early literacy development?
  - b. the connection between hearing/hearing loss and early literacy?
  - c. preschool PA skills (e.g., rhyming, alliteration, and blending) and their relationship to literacy.
2. What are parents' perspectives (e.g., beliefs, feelings) about their child's early literacy development?
  - a. What are their experiences with engaging their CHL in activities that promote early literacy development?
3. What early literacy activities, including those involving PA, do parents/families incorporate into their daily routines with their CHL?
4. What are parents' perspectives and experiences after having received parent education related to hearing/hearing loss, early literacy development, and how to teach their CHL about rhyming (a PA skill)?

Following the description of each individual case, I present results obtained from data collection. After the results section for each of the three case, I discuss findings from my cross-case analysis.

I used the following data collection tools with each of the three families: initial interview (session 1), systematic observation (session 2), final interview (session 4/final session), document review, and writing field notes. Session 3 was a parent education session during which I presented instructional content from my newly developed web-based parent education module on how parents can facilitate their child's rhyming ability, an early PA skill. I introduced and demonstrated how to use the website and provided instruction using the content from the module. Toward the end of session 3, I also allotted time for parents to have an opportunity for guided practice, with coaching as they implemented the learned strategy and activity. Within one week after the parent education session, I checked in by email with each family to answer any questions that parents might have had and to offer additional suggestions as needed. I conducted the final interview with each family, within two weeks after the parent education session 3.

### **Case One: Cade and Family**

When I met Cade (pseudonym) and his family, Cade was 4 years and 5 months. Cade lived with his family, which included his father "Walter" (pseudonym), his mother "Tanya" (pseudonym), and 7-year-old brother "Ben" (pseudonym). Both parents were of Japanese descent and grew up on Oahu and resided in East Oahu. The family had close ties with relatives on both sides of the family, who also live on Oahu. In the section that follows, I share information about Cade's hearing loss, speech/language skills, and EI and preschool services and provide a description of Family A. I obtained pertinent data through interviews and document review of

clinic and school reports provided by Cade's parents. Table 2 contains child and family demographic information.

Table 2

*Child and Family Demographics*

	Cade's Family	Kaila's Family	Bella's Family
Child's Gender and Age	Male; 4 years, 5 months	Female; 3 years, 2 months	Female, 3 years, 10 months
Type and Degree of Hearing Loss	Congenital profound bilateral sensorineural hearing loss	Congenital mild sloping to severe bilateral hearing loss	Congenital moderate to profound sensorineural hearing loss
Type of Hearing Device	Bilateral cochlear implants	Bilateral hearing aids	Bilateral hearing aids
Language and Communication Mode	English; Auditory/oral (supplemental beginning ASL signs used early on, but discontinued)	English; Auditory/oral (supplemental beginning ASL signs used early on, but discontinued)	English and Japanese; Auditory/oral (supplemental beginning ASL signs early on, but discontinued)
Family Members With Regular, close connection	Resides with father, mother, brother who 2 years older than Cade	Mother, father, 3 siblings, maternal aunt and grandmother (resides in multi-generational household)	Resides with mother and father; regular contact with paternal grandmother; resides a few months each year with maternal grandparents who speak Japanese
Parent(s)' Highest Level of Education	4-year college degree	Mother: high school diploma Father: Two years of high school	4-year college degree
Preschool Setting	Public, special education classroom for CHL who use auditory/oral communication	Public, special education classroom for CHL who use auditory/oral communication	Private, mainstream classroom



### ***Developmental History and Family Background***

Cade had profound sensorineural hearing loss bilaterally, which was detected at birth through the state's Early Hearing Detection and Intervention program. A diagnosis of profound bilateral hearing loss, from a functional standpoint, means that without amplification or assistive listening devices, he was unable to hear conversational speech and daily environmental sounds. Within the first two months of life, Cade and his family began receiving services through Hawaii State EI program, which continued up until Cade's third birthday. Notably, his parents elected to use auditory/oral communication early on in Cade's life in order to develop his ability to use listening and spoken language to communicate and gain information. The family spoke only English at home. Cade was fitted with bilateral ear-level hearing aids during the third month of life. However, his parents noted that Cade still did not respond to conversation and environmental sounds while wearing his hearing aids. For this reason, they decided to pursue cochlear implants for Cade. Cade underwent cochlear implant surgery for the right ear at one year of age and for the left ear one month later.

A unique aspect of Family A's story is that Cade's mom, Tanya, also has congenital, bilateral severe to profound sensorineural hearing loss, which was reportedly identified when she was two years old. Tanya utilized bilateral hearing aids and her parents had also elected for her to use auditory/oral communication rather than manual communication. Within the first few months of Cade using the hearing aids, it became evident to Cade's family and other members of the EI team (early interventionists, audiologist, etc.), that he was not receiving sufficient auditory benefit from hearing aids to support listening and spoken language development. Cade and his family underwent extensive evaluation by Kapiolani Medical Center's pediatric cochlear implant team to determine his candidacy for cochlear implants. Cade's ENT physician also

recommended that Tanya consider cochlear implantation for herself. Tanya and Walter decided for Tanya to undergo the process of cochlear implantation surgery and subsequent aural rehabilitation ahead of Cade. They felt that Tanya's personal experiences with cochlear implants would equip them to guide Cade through his cochlear implant journey.

Through review of Cade's EI reports, the Individualized Family Support Plan (IFSP) and discussion with Cade's parents, it was evident that the primary concern and emphasis for EI was to facilitate development of Cade's hearing, speech, language, and communication skills since hearing loss adversely impacts development in these areas. A review of his audiological evaluation reports indicated that in the unaided condition, Cade's hearing sensitivity fell in the 90 to 110 dBHL range (severe to profound hearing loss). Testing in the aided condition suggested significant improvement in hearing sensitivity, with aided thresholds between 25 to 30 dBHL for each ear when using his cochlear implants. These aided results roughly coincided with hearing levels in the borderline normal to mild hearing loss range. Cade's parents noted that Cade could hear well enough that even when they were not facing Cade or if he is in the adjacent room, Cade often was able to hear and understand them. Walter reported that many times, unless an individual saw that Cade was wearing his cochlear implants, they were not aware that he had profound hearing loss because he heard well enough in many listening situations. Yet, cochlear implants cannot completely restore hearing to normal levels. For this reason, ongoing aural habilitation is required for cochlear implant recipients to learn to make sense of sound. Walter and Tanya noted that there were many listening situations that present difficulty for Cade. These include noisy environments, hearing at a distance, and large group listening environments, such as a classroom setting. Indeed, this is precisely what I observed this during the four sessions with

Family A; Cade sometimes needed me or others to repeat and/or needed to look at the face of his conversational partner in order to understand.

Following cochlear implantation surgery, Cade and his family received family-centered aural rehabilitation through home visits with an EI speech-language pathologist and a deaf educator. The predominant EI goal, as indicated by a speech and language evaluation report, was for Cade to increase his auditory, speech, oral language, and communication skills. Just before Cade's third birthday, some of the speech and language objectives noted in Cade's EI clinical reports included being able to articulate a set of three different vowels and three different consonants, to show communicative intent by vocalizing to get his wants and needs met, and to use two-word utterances. A few of the auditory goals included auditory identification of a closed set of words/objects, responding when his name was called within a background of noise, and auditory discrimination among various environmental sounds and linguistic sounds (e.g., one-syllable words with the same initial consonant but different vowels).

In an EI report from Cade's final two months in the EI program, the speech-language pathologist noted that although Cade's speech, oral language, and communication skills overall had improved significantly over time, they were still delayed with respect to his peers. Accordingly, Cade transitioned to receive preschool special education services through Hawaii Department of Education (DOE) at age 3 years.

**Description of Cade's Family.** Both parents earned college degrees at the University of Hawaii at Manoa. Walter was a human resources administrator for the State of Hawaii Judiciary. Tanya was a state-licensed part-time teacher for a public elementary school in Honolulu. Cade's older brother Ben had just completed his first-grade year at their local public home school.

The family had a routine structure to their daily life. Tanya took Cade to school on her way to work. Cade attended a special education preschool program for CHL which utilized the auditory/oral communication modality. Walter took Ben to school on his way to work each morning. As I will discuss in more detail later, Tanya stated that this morning routine allowed plenty of opportunity for bonding and dedicated time to work on one-to-one communication with Cade. After school, there was baseball practice for Ben. The family came home after practice to have dinner together. After dinner, the family gathered in the living room area. Tanya was in charge of helping Ben with homework, while Walter read bedtime stories to Cade.

Walter and Tanya shared that nurturing family relationships was an important value to them. There was a rhythm to their family schedule, which facilitated regular times for parent-child communication and family bonding at the end of each weekday. On Saturdays, the family also visited Walter's parents who lived on Oahu. Tanya was glad that the "kids get time to communicate, to spend time with Grandpa and Grandma." Each Sunday evening, the family continues Tanya's childhood tradition of having dinner at Zippy's with Tanya's aunt. As I discuss later, the strength of their family relationships appears to facilitate Cade's language and literacy development.

When asked to describe Cade, Tanya's first descriptors were that he was a "happy person" and "very outgoing." Walter agreed with Tanya and added this description: "He's a very strong-willed person, and he's pretty much independent." He added playfully, "I don't know if it's the second child, or, more strong . . . like the mom- strong personality." Walter looked over at Tanya and they chuckled at this light-hearted comment. Tanya also noted that Cade liked to play sports, has good eye-hand coordination, and has been able to "dribble a basketball from

when he was one-and-a-half-year-old.” Both parents reported that Ben is a good role model in athletics and in the areas of reading and overall learning, being just two grade levels above Cade.

When asked to describe Cade’s personality, Mom noted that Cade is sociable and “very welcoming.” She shared, “They (Cade and Ben) just love company. You know like, we teach them that, how to appreciate people....when they come over, this is how our aloha is. Welcome to the house.” Indeed, they demonstrated this value of sharing “aloha” during each of my visits to their home. They greeted me with such warmth and cheerfulness. There were displays of hospitality throughout each visit, and their advanced preparation to make me feel welcomed was evident each time. For the initial interview session, Tanya invited me to come early to have breakfast with them, and I gratefully obliged. When I arrived on that day, Tanya had eggs, bacon, fruit, and coffee already prepared. (I made sure that I also contributed baked goods to the wonderful fare.) They also always had a “parting gift” at-the-ready for me, a freshly homemade baked good for me to take home and share with my family. Cade’s parents explained that they have felt fortunate to have various professionals, specifically early interventionists, into their home who helped to provide developmental guidance for each of their sons. As a token of appreciation, for each session, each participant family in this study received a nominal monetary gift and a food item. I explained that as a doctoral student researcher, I was grateful for the opportunity to learn from their family. They communicated their gratitude for the opportunity to participate in this research project and stated that they were excited to be able to learn whatever they could in order to support Cade’s language and literacy development.

### ***Data Analysis: Knowledge of Early Literacy and Hearing (RQ1)***

Walter and Tanya were easy to engage in conversation and expressed their desire to provide whatever information they could in order to, “Help other families.” Walter shared that

they wanted to “give back” in light of the valuable guidance they received from early interventionists, educators, and other professionals over the years. In the next two sections, I describe Walter’s and Tanya’s knowledge and perspectives about early literacy and hearing/hearing loss, their routine literacy activities with Cade, and their experiences and perspectives after having received parent education.

Both Tanya and Walter generally appeared comfortable sharing their insights, experiences, and family stories, even when a topic touched on an area of concern about their child or their child’s future success. However, there was a noticeable pause from both parents, when I posed this question to them during the initial interview: “What skills come to mind when you hear the term ‘early literacy’?” Walter responded, “... like, early intervention, yeah?” His response suggested uncertainty. I reassured them that my intent was to gain understanding from them, as parents. Walter proceeded to share their first experiences in the EI program, starting with their older son Ben who received services for his language delay at that time. He recounted their worries during the early stages; though early interventionists came week after week to provide guidance on how to stimulate Ben’s and Cade’s speech and language, “...there was this fear. Was he ever gonna get it?” He added that through the challenges of often not seeing weekly improvement, they knew how vital it was to persevere. Walter stated, “But you have to just keep on, every week.” Mom also stated that “the repetition” was critical for Cade’s auditory/oral language advancement. Clearly on display was a family value- their persistence in implementing the strategies they learned from a speech-language pathologist during EI and later, Cade’s special education teacher. To summarize what they conveyed regarding their understanding of early literacy, Tanya concluded that, “So EI really helped.” To Walter and Tanya, early literacy is the

idea of intervening early in their child's life to facilitate his/her auditory and oral language development.

The second part of RQ1 probed, "What knowledge do parents possess about the connection between hearing loss and early literacy?" I asked Cade's parents to first describe the connection between hearing and learning to read and write. Walter responded by sharing his general belief about hearing:

Hearing is essential. You have to hear . . . to do anything . . . hearing loss is more difficult than uh, vision loss. Hearing loss, you miss out on so much . . . that's why it's so important . . . in Cade's case because he has no hearing, to have that cochlear. I think if he had hearing aids today, I don't think he would be able to be, uh, his speech.

In essence, Walter expressed his belief that hearing provides critical auditory access to verbal information, and thus, is foundational to Cade's speech/language development. Furthermore, his statement that hearing loss is more difficult than vision loss and that "You have to hear . . . to do anything" is consistent with the philosophy behind their family's choice of communication modality, auditory/oral communication. Walter initially did not answer the interview question in a way that made specific reference to the impact of hearing loss on early literacy development. Instead, he shared the connection that was personally salient. He stated, "With hearing loss, you miss out on so much..." This statement communicated his belief that hearing loss limits one's auditory access to spoken language. He further added that this access, via the "cochlear" (CIs), had been essential to Cade's "speech" (and language) development. It is noteworthy that throughout the interview, both parents appeared to view speech and language as an integrated whole and used these words interchangeably.

Subsequently, I asked Cade's parents specifically to share what they understood about the impact that hearing loss has on a child's reading and writing development. Walter stated, "It (hearing loss) has a profound impact," but did not articulate specific details. Rather, my question elicited his sharing about his family's EI journey and memories of having to confront the uncertainty about Cade's future speech/language outcomes. Their older son Ben also received speech/language therapy for a language delay early on through the EI program, yet Cade's EI journey was much more intensive. Walter stated that Cade's EI home program required "definitely more time and effort" for Cade as well as for them as parents. He recounted how they trusted in the early interventionists' guidance, knowing that it was based on "research" and understood that "... it's (Cade's developmental progress) not something that's gonna happen overnight." Walter repeated the sentiment that perseverance was vital, in addition to keeping their hope for Cade's developmental growth in hearing, speech/language, and communication alive. He stated, "We can't give up hope. Just have to keep on going."

In summary, when asked to share their knowledge about the impact of hearing loss on early literacy, Walter discussed his belief that auditory access to spoken language is essential for "speech" (and language) development, that hearing loss limits this access, and that CIs provide Cade with essential auditory access to spoken language. Furthermore, he generally believed that hearing loss adversely impacts reading development.

### **Data Analysis: Perspectives and Experiences With Early Literacy (RQ2)**

As previously mentioned, when asked questions about Cade's early literacy skills and their routine literacy activities, Tanya and Walter consistently answered by making references to Cade's speech and language development. They viewed the words speech, language, and literacy synonymously; in addition, Walter used the term "verbal ability" when asked specifically about



Cade's literacy development. Oral (i.e., verbal) language development is indeed one aspect of early literacy since it is a critical foundation for reading and writing (Paulson & Moats, 2010). Notably, Cade's parents stated that when Cade and their family received EI services, the main goal was to assist Cade in developing his language and communication skills. Based on document review, their report is consistent with data I gathered from Cade's speech/language evaluation and progress reports.

During our discussion about how their family read together, Walter again answered by shifting the conversation toward discussion about Cade's "verbal ability," meaning his expressive language skills. Similarly, Tanya answered by sharing that they had asked professionals and other parents of CHL for advice. She reported that their overwhelming response was, "TALK! Talk, talk, talk! So that's what we're trying to do." As Walter and Tanya shared their beliefs, it was apparent that they viewed the development of Cade's oral/spoken language as the primary means of facilitating his reading readiness. This is consistent with their choice of communication modality, specifically auditory/oral communication philosophy, which prioritizes development of the child's listening and speaking and oral language skills, as a foundation for learning to read. Tanya continued, "He's talking more, a lot more . . . yeah, they have to talk because it's communication . . . They have to talk." Cade's daily car rides with Tanya, to and from school daily, were the times when Cade was chattiest. They valued the daily opportunity to engage in back-and-forth conversational exchange. Walter shared that Cade's ability to communicate about his day has improved due to preschool and that he had "come a long way." He is quick to credit Cade's preschool teacher, stating, "They both (Cade and Ben) had good teachers." In the section on RQ3, I share more details about the family's strategies for weaving oral language stimulation into the fabric of their daily lives.

Shared (storybook) reading was another daily early literacy activity for the family. By definition, during shared reading, an able reader, such as a parent or teacher, uses picture books to read the story, discusses story details, and talks about the pictures (Moeller, et al., 2016). Cade's parents agreed that reading books was "not a favorite activity" for Cade, whether looking at books independently or having a parent read to him. Cade would not voluntarily choose to read. Walter also stated that shared reading time with Cade was challenging. He described how Cade typically expressed boredom when they read to him by slouching and often asked, "When are we done?" and attempted other means to "get out of" reading time. Walter viewed reading as an item to be checked off the family's daily routine "before we can move on to other things."

To assuage Cade's reticence to participate in shared reading at home, Walter and Tanya implement several strategies. They had a set daily routine and structure for shared reading time, which occurred after dinner. The family sat down for what they referred to as "homework time." Walter read to Cade, while Tanya helped Ben with his homework. Structuring their shared reading time was reportedly essential in order to motivate Cade to participate. Cade attended a special education preschool classroom for CHL, which used auditory/oral communication. Walter described his teacher, Mrs. M. (pseudonym) to be "excellent" and "strict." Mrs. M. reportedly communicated "high expectations" to her students and their parents and had clear standards, including how the children should sit during shared reading time in the classroom. Walter noted that he capitalized on Mrs. M's standards and brought them to Cade's remembrance when he read to Cade by asking, "How does Mrs. M. want you to sit?" Dad chuckled that this tactic elicited a look of "fear" and at least an initial compliance to the shared reading task. Cade's parents stated that sometimes they had to incentivize book reading by

requiring Cade to sit to read with Dad before he could have ice cream or go on a special family outing for the day.

To summarize, Walter and Tanya made shared reading a daily priority. They are candid in referring to it as a struggle, yet it was evident throughout our conversation that they willingly extended effort to get it done daily. Each parent shared, at different parts of the interview, the sense that they “should read more” with Cade. Walter lauded the education and language/literacy input that Cade was receiving through Mrs. M. In terms of his language and literacy development, Walter stated, “Cade’s in a good place and I hope it continues.” Tanya shared her belief in the critical role that parents play in supporting language and literacy development. She stated that she did not recall her mom reading to her as a child and believes that this resulted in her struggle to learn to read. In the section addressing RQ3, I describe in more detail about the family’s strategies during shared reading and how Walter engages his son as he reads to him.

### ***Data Analysis: Early Literacy Routine (RQ3)***

During session 2 with each family, I observed the family in their home, as they engaged in early literacy activities. Prior to the observation session, I asked each family to think of a few literacy activities that their child enjoys and that they as a family did routinely together. I asked each family to engage in a few of these activities while I observed during session 2. This also included any language stimulation activities that the family identified as being part of their family’s literacy routine. To systematize my observation data collection, I used my adapted version of the CHELLO (Neuman et al., 2007) to help me examine the family’s literacy activities qualitatively and to determine the types of literacy activities the family engaged in. I collectively analyzed observational data with data gathered during the initial interview in session 1.

For the observation session, Walter and Tanya pre-selected three activities that they routinely engaged in with Cade. They prepared in advance to read a book with Cade, ask Cade to sing/perform a song, and engaged Cade in making a smoothie, which Tanya referred to as a routine family “language activity.” As the session progressed, Cade spontaneously initiated writing/drawing and playing a memory card game.

**Parent-Child Language Interaction.** Through observations of Walter’s and Tanya’s verbal interactions with Cade, it was clear that their main goal is to stimulate Cade’s oral language and literacy development. As I interacted with the family, I observed their intentionality to frequently and meaningfully converse with Cade. As mentioned previously, Cade was more conversant when he was with his mother, particularly during Tanya’s and Cade’s morning and afternoon commutes to and from work and school. Walter added that perhaps Cade talked most with Mom because of their closeness and that “He’s her baby.” This close relationship facilitated a nice flow of conversation between mother and son. I asked, “What kinds of things does Cade like to talk about with you all?” Tanya described conversations that occurred during car rides on their way home from school. She aimed to elicit conversation from Cade and allowed him to lead the conversation and talk about whatever was on his mind. Cade sometimes shared what he learned in school. However, Tanya said he most often discussed his social interactions with friends or share interesting facts about people at school since he was “observant.”

Whatever the topic of conversation, they adhered to professionals’ and peers’ advice to converse frequently; yet, the other piece of advice they received was to refrain from creating an unnatural, therapy-like communication environment:

Just have a regular conversation, not because he has CIs. You don't need to do something different. It's just a regular family activity so don't make something different. Normal communication environment, nothing special because he has HL or CIs.

I examined the parent-child language interactions and responsive strategies, using descriptors from the adapted CHELLO checklist (Appendix B). As a participant-observer, I observed that each of the seven characteristics of parent-child communication (listed under the *Adult-Child Language Interaction* and *Response Strategies* categories) were present in their parent-child communication exchanges. I describe some of these characteristics in the paragraphs that follow.

One hallmark of the verbal exchanges between Cade and his parents was their responsiveness whenever he expressed his ideas. For example, after he had been sitting for a sufficient length of time while Walter read a story, Cade offered an idea for a change in activity. He did not feel like singing a song, as Walter had suggested. Instead, Cade said, "Let's play a game!" Walter was receptive to Cade's initiating a change, and responded with, "Yeah, let's play a game instead." Cade proceeded to select a *Memory game* with Pajama Masks cartoon character cards. His parents also allowed him the space to give direction to his opponents (Tanya, Ben, and me) throughout the game and to tell me about each Pajama Masks character. Providing a comfortable communication environment in which children are allowed to initiate and direct the flow of conversation is an effective means to stimulate their language and literacy development (The Hanen Centre, 2016) and also is a communication feature mentioned on the adapted CHELLO checklist.

On a related note, I also witnessed Tanya providing support as a good language model for Cade to emulate. One instance occurred during the Memory game activity. Cade directed me in an authoritative voice, saying, "You go! You go!" Tanya immediately responded, saying, "You

may go first.” Cade then repeated after Tanya. Cade understood that Mom was instructing him in that moment. Tanya’s language stimulation strategy was to extend Cade’s utterance, providing a more linguistically complete utterance. Interestingly, in one of Cade’s speech and language therapy progress reports, the speech-language pathologist noted that she had concerns regarding Cade’s mother not being able to reinforce his communicative attempts. Her reasoning was that because Tanya also had hearing loss, she may not always hear Cade. While that was a valid concern, in the family’s relatively quiet home environment, this did not generally seem to be the case. Only once had I observed Tanya to not hear Cade’s comment during smoothie-making time. However, Cade demonstrated his command of communication repair strategies by assertively tapping his mom’s shoulder and then he repeated himself.

Another characteristic of the conversations between Cade and his parents was that there were typically several rounds of back-and-forth exchanges between them, rather than a one-way dialogue. When parents allow for turn-taking during conversations with their child, the child learns that communication involves a back and forth exchange between partners, each one expressing his/her idea. By intentionally responding to their child’s utterances, the child learns that communication includes verbally passing ideas back and forth. An example of this back-and-forth exchange occurred when the family chose to make smoothies. Walter and Tanya stated that they routinely make smoothies with Cade because it was an enjoyable “language activity” for Cade:

*Tanya:* Do you want to put the bananas in?

*Cade:* Yeah.

*Tanya:* Okay. Peel the banana and put it in.

*Cade:* Mommy, we forgot to cut this. (points to the peeled banana tip)

*Tanya:* Cut what? Oh, we forgot to cut the banana. Okay, Mommy will cut the ends off.

*Cade:* (Reaches for the cut banana) Can I do it?

*Tanya:* Okay, put the banana inside.

*Cade:* (puts two bananas into blender) I put two. (Tanya's back is facing him and does not hear him. So, Cade taps Tanya's back and says it again) I put two.

*Tanya:* Oh, you put two? I think one is enough.

As can be seen, there were multiple back-and-forth conversational exchanges between Tanya and Cade, each responding appropriately to the other person's comment or question. Also notable was the way Mom responded to Cade. She repeated what Cade said and then expanded upon his utterance, providing a longer, more complex linguistic utterance. For example, when Cade told her "we forgot to cut this," she clarified and said, "Cut what? Oh, we forgot to cut the banana." This type of conversational exchange, in which adult and child each have multiple turns, stimulates further language growth in the child (The Hanen Centre, 2016). The amount of expressive language growth that Cade achieved in a one-year period was substantial, when comparing his skills during the time of the observation with his skill level reported in his EI reports. Just prior to Cade's discharge from the EI program at age 3 years, one of the expressive language goals was for Cade to be able to consistently use 2-word utterances. As can be seen in the smoothie activity dialogue, Cade far exceeded this goal and is able to communicate his ideas using multiple, lengthier sentences in sequence.

**Shared Reading.** Parents, by and large, sense the importance of reading to their child. Reading aloud to a child, is one of the most important things parents can do to help build a

foundation for reading (NICHHD, 2006). Shared reading offers opportunities to converse with one's child, thereby building the child's vocabulary and overall language base in support of his/her later reading comprehension.

Reading a book to Cade was the first activity that the family chose to do during my observation visit in their home. Walter read a book aloud to Cade each night after dinner, noting that this was often challenging. Thus, Walter used several supports to facilitate Cade's engagement when they read together. Because of these supports, I observed that despite Cade's periodic gestures of boredom and asking, "Are we done?", Cade remained engaged for the entire length of the book that he chose, Bears, Bears, and More Bears (Morris, 1995).

Walter immediately structured the physical environment by minimizing noises and distractions. He asked Tanya and Ben to relocate to the adjacent play area. He then situated Cade and himself to be able to read side-by-side on their couch. As Walter mentioned during the initial interview, he also adopted Mrs. K's (preschool teacher) circle time standards. He prompted Cade by saying, "Do you sit like that with Mrs. K.?" Cade immediately sat up from slouching and said, "It's criss cross apple sauce." After a few minutes of reading together, Cade's attention drifted while he looked into the adjacent room and suggested, "Let's not read a book." However, Walter kept reading and gently tapped Cade's legs as a reminder of how to sit during book reading and said, "Uh uh, let's pay attention."

Although there is evidence for the positive impact that reading to a child has on his/her language and literacy outcomes, the majority of studies do not specify the techniques that lead to improved literacy outcomes (NICHHD, 2010). However, a few studies demonstrate a small number of empirically validated shared reading techniques (NICHHD, 2010; Pentimonti et al., 2013). One of these is *dialogic reading*, an interactive approach in which the adult engages the



child in dialogue while reading the story or passage. This approach has been found to positively impact oral language development by promoting active verbal participation from the child (NICHHD, 2010; Pentimonti et al.).

During the initial interview with Family A, Walter and Tanya shared that it was not possible to simply read through a book with Cade because he would quickly tire. They noted that Walter comes off the storyline throughout reading time to keep Cade's interest. During the observation session, Walter infused dialogue with Cade to periodically converse about details or pictures in the story. In one instance he asked, "Do you think the bear will eat the frog?" Cade shook his head and answered, "No." Walter successfully captured Cade's waning interest by continuing, "How big is the big bear?" Cade sat up and traced the profile of the big bear. Although Cade responded verbally to a simple question about a picture, Walter's intended hook was timely and grabbed Cade's attention successfully so the reading task could continue.

Relatedly, Walter utilized an evidenced-based shared reading strategy called *word elaboration*, which occurred within the context of dialogic reading. The intent of this strategy was to periodically interweave rich instruction by elaborating about a word or topic. The goal is to broaden the child's vocabulary and depth of understanding about the selected words (Justice et al., 2005; Pentimonti, et al., 2013). Although Walter did not adhere to all the steps specified for implementing word elaborations in a classroom setting, he executed the essence of this strategy in a manner that was spontaneous and natural, given their real-life context. In one part of the story, Walter drew attention to a picture of an acorn and elaborated on this key word. The following is an excerpt from the father-son discussion about acorns:

Walter: What is this? (points to a picture of an acorn)

Cade: (shrugs his shoulder, not knowing the answer)

Walter: It's an acorn. It fell from the tree.

Cade: Like the one in the bathroom!

Walter: Yeah, it's supposed to smell good. Mommy bought it at Christmas time from Whole Foods.

This scenario illustrates how Walter helped to draw a connection between the key word, *acorn*, and Cade's life experience. He did this on more than one occasion while reading. Walter's query during the acorn discussion sparked a real-life connection for Cade, which then drew Cade into the dialogue. Walter deepened Cade's understanding of acorns by providing additional information about acorns and contextualized its use in their home ("smells good" and "Christmas time"). In a similar fashion, Walter introduced the word "hibernate." This was not a key word from the story, but rather the picture of bears sleeping provided opportunities for discussing a concept relevant to bears and expanded Cade's current knowledge base about bears. Dad stated, "Bears sleep for months and months. Do you sleep that long?" Helping children to draw connections between a new word and their personal experiences is an effective technique for teaching new vocabulary.

In summary, although Walter described reading to Cade as a challenge, he was able to engage Cade in the reading task for roughly 10 minutes. This required Wade to simultaneously maintain a flow in the story, gauge Cade's interest throughout, choose and implement a strategy on the spot, periodically illuminate key words or concepts to discuss, all while enforcing Mrs. M.'s "this-is-how-we-sit" rules. Clearly, this was a routine father-son activity, not something contrived for the observation visit. It was noteworthy that the strong father-son bond they share enhanced Walter's ability to navigate this task to completion.

**Singing.** One of the easiest ways to *introduce* the skill of listening to the sounds and sound patterns in words is to sing (or play audio-recorded) children's songs and nursery rhymes. The rhythmic nature and rhyming words throughout children's songs are fun and engaging for children. This encourages paying attention to repeated sound patterns in words and, therefore, makes singing an engaging way to introduce the idea of listening to the sound pattern in words.

Walter and Tanya reported that Cade enjoyed singing songs that he learned for school performances. Cade was shy initially when Walter played musical accompaniment to "Pearly Shells" through his iPad. When he pulled out an electronic keyboard, Cade sang portions of the song, yet he was more enthusiastic about pushing buttons to generate musical accompaniment.

**Writing, Drawing, and AK.** Initially, Walter asked Cade if he would sing "Pearly Shells" for me. When Cade shrunk back shyly and shook his head, Walter instead asked Cade to draw a picture of "Baba" (Grandma). Without hesitation, Cade picked up a composition notebook and selected a colored marker from a tub of markers and colored pencils that Mom brought over to him. First, Cade drew some circles. With an encouraging tone, Walter stated, "Oh wow, you drew some circles." After his attempt to also draw a bear, Cade then asked Walter and me to draw a bear. Walter responded immediately, grabbed the little notebook, and made a simple drawing of a bear. Walter then asked, "Can you show Aunty how you can write your name, too?" Without hesitation, Cade wrote letters that recognizably spelled his name. Cade's parents shared that Cade learned how to write his name during the past preschool year, under Mrs. M.'s instruction. They added that Mrs. M. had clear standards for drawing, too. Walter said, "There are expectations. The kids cannot just draw stick figures." Mrs. M. asks parents to work with their child on the specific drawing techniques she teaches in class. Walter and Tanya also shared that prior to preschool, Cade did not enjoy drawing, but through Mrs. M's instruction and

practice, Cade now enjoyed drawing. In terms of Cade's AK, they stated that Cade had learned letter recognition in preschool as well as several pairs of letter/sound associations.

Walter expressed on more than occasion that Mrs. M. had "high standards" and "expectations" for the preschool students in her auditory/oral preschool. Walter and Tanya expressed their initial concern about the pressure placed on their son because of these high expectations. However, Walter stated that over time, the developmental progress they saw in Cade made them realize that their child could rise to Mrs. M.'s high standards. They stated that they were pleased with Cade's spoken language development and overall academic growth, including his writing and drawing skills, in the year that he had been in Mrs. M.'s class. Walter's and Tanya's support of Cade's writing, drawing and AK development was evident through their abundant verbal encouragement and the resources they provided. It was apparent that a number of preschool writing and drawing skills, noted in the early childhood literature, were in place for Cade (Riley-Ayers, 2013; Neuman, et al., 2008).

**Phonological Awareness Activities.** As mentioned in Chapter 2, PA refers to an individual's ability to hear sounds in a language and to manipulate them in some way, such as moving parts of a word around, taking them apart, and putting them back together. PA skills operate solely within the auditory realm in that one can learn to listen and play with the sounds of language, without even knowing what alphabet letters are associated with these sounds. Through systematic review of the literature on reading instruction, the National Reading Panel determined that children's PA skills had a causal relationship with their conventional reading and spelling outcomes (NCHHD, 2000). Due to this strong evidence, standards-based education today supports the inclusion of explicit PA instruction within the context of a comprehensive reading curriculum (NICHHD, 2010; NICHHD, 2000). Despite the evidence for PA

development and its essential role in literacy attainment, PA is an area of development that often is overlooked (Canizares, 2019).

Some activities that build PA skills include reading books with rhyming words and reciting tongue twisters that include strings of words that begin with the same sound. One means of explicitly teaching children to play with the sounds in words is through word play/language games, such as helping the child to come up with alternate silly words or names that rhyme with the child's name. Walter made brief mention of the book Go, Dog! Go! (Eastman, 1997), which included simple rhyming words throughout, as one book that they have read to Cade. Since Walter regularly reads children's stories to Cade, it is likely that Cade receives some general exposure to rhyming words and other sound patterns (e.g., alliteration) in words. However, Tanya and Walter did not mention any explicit PA teaching activities such as word play or language games as being a part of their literacy routine.

**Summary.** Through data collected during an interview and observation in their home, Family A's routine literacy repertoire included a variety of activities with an emphasis on oral language stimulation activities. Their literacy routines included having conversations with Cade throughout the day that included many back-and-forth verbal exchanges, shared reading, singing, and writing/drawing. Although the family did not include word play or language game activities (which stimulate PA development) to be a part of their literacy routine, they mentioned at least one preschool book in their repertoire that includes rhyming words, and thus had provided an initial exposure to listening for the sound patterns within words (PA).

***Data Analysis: Perspectives on Parent Education (RQ4)***

I asked Walter and Tanya to share their perspectives and experiences with implementing the rhyming strategy and activities with Cade after having received parent education. Given our

local culture in Hawaii, I realized that it can be uncomfortable to give feedback. I reassured them that I welcomed feedback to inform future parent education efforts. Tanya noted that she had viewed the website and videos on two different occasions with her sons who enjoyed watching the videos as if they were watching YouTube. Tanya shared, “We used the activities that you had, and we just tweaked them. The website that you had helped, um, makes it really more engaging. And we can try different things.” Walter shared the sentiment that one benefit of the internet-based parent education module was that they were able to see a variety of different rhyming activities demonstrated through the video clips and then could select a few to try with Cade. Walter noted that learning new information from the parent education module, allowed them to “add rhyming in, and not just limit ourselves to just that one thing (their usual literacy activities).”

Through our discussion in person and via email, I gathered that Tanya primarily worked on rhyming with Cade. I sent an email to Tanya within a week after our parent education session to address any questions they had about the parent education content/website. I also asked about their experiences thus far with implementing or thinking through the rhyming information and strategies. Through email, she shared about Cade’s progress, stating that Cade was “making progress each day and loves the rhyming activity you taught so we continue to use that and tweak it a bit.” The activity she referred to was a rhyming game called “Stand Up, Lie Down” and was depicted in one of the demonstration videos on the website. To share their progress with rhyming, Tanya emailed a 7-minute video clip of Cade with their adapted version of the game, “Stand and Give High-5/Take a Nap.” The home video illustrated that Cade was indeed progressing in his understanding of rhyming words, relative to when I first introduced this concept during the previous session. Although it appeared that he had not yet achieved full

mastery, he was able to correctly identify the majority of rhyming/non-rhyming word pairs presented by his mother. In addition, the video depicted Cade attempting to come up with word pairs on his own. For example, he vocalized “pillow and pillow.” Although these are not rhyming words, this attempt signaled Cade’s developing understanding that rhyming pairs of words “sound the same” (according to Tanya) rather than “sound different.” Tanya’s email contained other indicators that she had internalized the parent education content and had begun to incorporate rhyming into their daily lives. Tanya reported that, during the course of a day, “Every once in a while, I’ll throw in a rhyming pair.” She and Cade also visited the library and borrowed a few rhyming books. The demonstration videos also gave her several other ideas for teaching rhyme at home. For instance, she planned to “go back and re-read nursery rhymes and have him fill in the missing rhyme word at the end.”

As I viewed the home video that Tanya emailed, it was noteworthy that Tanya conducted the activity with ease in a playful, yet structured manner. There were several factors that seemed to enable Tanya to effectively teach her son about rhyming concept. First, she had teaching expertise. Being an experienced and state-licensed teacher, she was systematic in how she taught the rhyming concept. Tanya used good communication strategies with her son, such as gaining Cade’s attention first, providing visual cues (as she presented word pairs), and asking him to repeat what he heard. Parents learn the importance of these communication strategies during their participation in the EI program. In their home video, it is apparent that Tanya ensured that Cade watched her face while listening to her present the word pair. She then required him to say the word pair. Because rhyming requires listening to sounds, Tanya’s systematic adherence to these steps facilitated Cade’s learning. Finally, it was notable, that Cade and Tanya shared a close mother-son bond. Cade interrupted the rhyming activity several times to spontaneously

give kisses to his mom on the cheek. Tanya patiently welcomed the affection, then quickly redirected Cade back to the rhyming activity each time. Again, it is appeared that this close parent-child bond facilitated the teaching of this new concept to Cade.

Despite the successful introduction to teaching Cade about rhyming words, Tanya and Walter candidly shared their challenges. Tanya noted, “Learning something new is *always* a challenge for Cade, or if it’s too boring.” However, they found that “tweaking” the activities aided Cade’s engagement and learning. Characteristically positive, Tanya also added that they have found that “...if you keep doing it, it gets better.” Tanya’s and Walter’s sentiments highlighted their determination to persevere with teaching their son this new concept of rhyming.

**Parents’ Feedback on the Parent Education Module.** Walter and Tanya initially hesitated, each with a nervous chuckle as they thought about what to say. I reassured them that feedback is necessary to guide development of meaningful and effective parent education material. Tanya shared that she read through the website content from the first set of rhyming activities on through the final set. Her most salient feedback was that she appreciated the variety of activities and found the demonstration videos to be particularly helpful. Her advice was this: “If you find anything new (chuckles) you just add it. But so far, it’s really good training, yeah.” She clarified that she would like to see more information included on the website about additional parent early literacy strategies beyond rhyming.

Walter gave specific feedback, including the recommendation to consider varied learner preferences. He saw value in the multiple methods of conveying the instructional content on the website (e.g., written narrative text with option for text-to-speech, video demonstrations). His primary advice was to “give options” or methods of delivering the information so that parents can choose the one that s/he feels most comfortable with. He explained, “If parents are more



comfortable with a certain situation, then it's easier for them to transcend that, you know, to their children and then they can transfer that knowledge to their children.”

With regard to the presentation of instructional content in a web-based format versus through printed handouts, Walter stated that he preferred having written material to accompany the website. In addition, when sharing information to parents from a printed handout, he recommended discussing the information sequentially, starting at the top of the page and on toward the bottom. His perspective was that while some parents may be more comfortable reviewing the information online, others like himself might also like the “security” of the piece of paper. Walter reported that he benefitted from notetaking on paper, which he then files for reference. He stated that he appreciated that I provided a one-page handout with general literacy tips. The website contained introductory information presented in narrative form, with a text-to-speech option. Walter added that it would be beneficial to offer to parents printed handouts of the narrative information on the website. Finally, he also found value in being able to practice the strategies learned during the home visit to facilitate being able to, in turn, teach it to their child. The sum of his feedback suggested that Walter felt most comfortable with the traditional EI approach used by clinicians with parents during home visits. He did, however, believe that it is best to offer a variety of instructional formats to meet various learner preferences.

### **Case Two: Kaila and Family**

Kaila (pseudonym) was 3 years and 2 months when I met her and her family. Kaila and her family lived in a multi-generational household in Honolulu. Her immediate family consisted of her parents, Asia and Noa (pseudonyms), her 13 year-old brother Tyson (pseudonym), her 5 year-old sister Tiana (pseudonym), and 2 year-old sister Kanani (pseudonym). Family B resided in Noa's parents' home along with his parents and Noa's sister and her family. Both Asia and

Noa were of Hawaiian descent, and their children were also a mixture of other ethnicities, including Filipino, Spanish, and Chinese.

Asia shared that spending time together as a family was an important value to her and her husband. She maintained a close relationship with her two younger adult sisters. In particular, her sister Leah, had been a vital source of support for her with regard to Kaila's developmental needs. Asia stated that from the early stages of Kaila being diagnosed with hearing loss, Leah accompanied her to various specialists' appointments. Leah also had a close bond with Kaila and, therefore, Asia felt that "Aunty Leah" should be educated on Kaila's health and developmental needs in order to provide recommended supports. Leah was present during sessions 2 through 4 and often stepped in to interact with Kaila in literacy-related activities. Asia also stated that her mother provided emotional support during the difficult initial stages of accepting Kaila's hearing loss diagnosis. With the exception of our initial interview session at a local park, Asia requested that we meet at her parents' home for sessions 2, 3, and 4. Their home was a multi-generational household and a gathering place for Asia and her siblings' families. In the next section, I describe Kaila's hearing loss, speech/language skills, and EI and preschool services. Table 1 contains demographic child and family information.

### ***Developmental History and Family Background***

Asia provided two reports from which I gathered Kaila's data on clinical and educational history. These reports included Kaila's EI final Child Outcomes Summary and her IEP from school, which were both dated around the time of Kaila's third birthday. At that time, she transitioned out of the EI program and into a special education preschool program for CHL that used an auditory/oral communication approach. Through our discussions, Asia also provided developmental history and clinical and school services information on her daughter.

Kaila had bilateral sensorineural hearing loss, which was detected via newborn hearing screening through Hawaii's Early Hearing Detection and Intervention program. The degree of hearing loss was mild sloping to severe in both ears, which meant that her hearing acuity for the lower frequencies of speech was mildly impaired, but more severely impaired for the middle and high frequencies of speech. Although requested, Kaila's hearing aid evaluation report was not available for my review. Therefore, detailed information on the benefit that Kaila receives from her hearing aids, across the speech frequencies, was not available. Asia noted that Kaila's hearing aids provide sufficient amplification to allow Kaila to hear and understand when she communicates with others. However, Asia also noted that even with hearing aids on, Kaila's hearing is still "spotty as she can hear certain things, but not others." Kaila and her family were referred to the state's EI program after the initial diagnosis of hearing loss and received multi-disciplinary family-centered services up until Kaila's third birthday. Kaila's pediatric audiologist fit her with bilateral ear-level hearing aids at approximately 2 months of age, which she has since used full-time. Asia reported that she and her husband elected for Kaila and her family to utilize the auditory/oral mode of communication. The family spoke in English.

A review of Kaila's IEP report provided insight into her speech, language, and hearing developmental at age 3 years, just as she transitioned into a special education preschool program. The IEP impact statement indicated that specialized services and supports were necessary to promote Kaila's educational success in light of her hearing loss and resulting communication deficits. Her development across the other developmental domains was broadly within normal limits. Kaila attended a preschool special education classroom setting for CHL which emphasized listening and speaking (auditory/oral) in order to communicate and learn. Her IEP noted that up through age 3 years, Kaila had been following the typical developmental pattern of

speech sound articulation, albeit delayed, with respect to her typically developing peers. Characteristic of many individuals with moderate to severe high frequency hearing loss, Kaila tended to omit articulating the ending consonant sounds in words. Likely as a result of this articulation pattern, her IEP indicated that her mother reported that Kaila's speech was intelligible mainly to close family members around 50% of the time. In addition, her expressive and receptive language skills were delayed compared to her same-age peers. Kaila's vocabulary was "limited" and, thus, "holding her back from higher-level language." At that time, she had a vocabulary of about 100 words. According to the IEP report, she and her family members when communicating with Kaila supplemented verbal communication with simple gestures and signs when needed "to clear up miscommunications." To assess her listening abilities in everyday life, a functional listening evaluation was completed and indicated that Kaila was at the stage of learning to auditorily discriminate between two words that differ only by a vowel and learning to recognize word meaning through vowel and consonant differences.

**Description of Kaila and Family.** Kaila, her parents, and her three siblings resided in Honolulu within a multi-generational household, which included Noa's (Kaila's father) parents and Noa's sister and her children. Noa and Asia assumed traditional roles within their family unit. Noa was a tile-setter for a local company and Asia was a full-time caregiver for her children. While neither parent attended college, Asia described Noa as a very intelligent individual. He reportedly told Asia that "school wasn't for me" and had dropped out of school when he was in the 10<sup>th</sup> grade. Asia assumed the predominant hands-on role of tending to children. With respect to Kaila, Asia attended the school based IEP meetings and health/medical appointments. She implemented educational and communication strategies recommended by clinical professionals and Kaila's teachers. Asia shared that she often "tweaked" information

learned from professionals in a way that works for Kaila. Noa reportedly participated at times in literacy-related activities with his family, specifically those that are fun and usually in the form of games. On occasion, he read books to his children, too. She appeared highly motivated to learn as much as she can to support her children's development. When I shared tidbits of information about hearing and/or literacy, she not only applied this information to Kaila but also expressed her ideas about how she could apply that information to her other children.

Asia's younger sister, Leah, played an ongoing role in supporting Asia and her children. We met at Asia and Leah's mother's apartment for sessions 2, 3, and 4. Leah resided there with her parents, Leah's 4 year old son, Leah and Asia's youngest sister. Both Asia and Kaila enjoyed a close relationship with Leah. Asia noted that she relied on Leah's support to partner with her in learning how to support Kaila's development. Leah spent a couple of years prior working as a preschool aide, and she reported that helping Kaila is something that she takes special interest in. Asia shared that she periodically called upon Leah to attend Kaila's audiology appointments and in the past, EI home visits. During my home visits, in sessions 2 through 4, Leah juggled her time between attending to her son, nieces, and nephews, and joining in to read to Kaila.

When asked to describe Kaila, Asia shared, "She likes to copy her older sister. She likes playing with make-up. She likes dollies. She's also very rugged. Like, she's, one of those girly tomboys . . . like, 'You like me punch yo' face?'" Asia also noted that Kaila is a sensitive little girl, stating, "She knows how I'm feeling. Very intuitive . . . she's nurturing. Like when she knows I'm sad, she'll say, 'You ok, Mommy?' It's ok, Mommy.'" Asia also described Kaila as a "comedian" and shared instances in which Kaila brought humor to the circumstance. For example, Asia shared that the children called upon her to mediate a sibling spat. In an irritated manner, Asia told Kaila, "Move!" To make Asia laugh, Kaila looked Asia directly in the eyes

and danced in “Space-Invaders” style back and forth, then out of the way. Asia reported that Kaila does not show this comedic side of her personality at school. To learn more about their family, I also asked about the kinds of activities their family enjoys doing together. Asia stated that they enjoy outdoor activities, such as going to a park, to the beach, and hiking. Tiana and Tyson talked about their outings to Waimea Bay where they “jumped off the rock” and a recent muddy hike which included catching fish in the stream.

***Data Analysis: Knowledge of Early Literacy and Hearing (RQ1)***

Asia appeared to be at ease when we engaged in dialogue about Kaila and their family during each of our four sessions. For the initial interview, Asia asked to meet at a public park and playground and was accompanied by her four children. For sessions 2 through 4, she preferred to meet at her mother’s apartment. She did not hesitate to share her experiences and perspectives concerning Kaila’s hearing loss and language and literacy journey as well as their family life in general. In the next two sections, I describe Asia’s knowledge and perspectives about early literacy and hearing/hearing loss, her routine literacy activities with Kaila, and her experiences and perspectives after having received parent education.

When I asked Asia about the skills that come to mind when she hears the term ‘early literacy’, she replied, “Identifying letters, the sounds . . . that’s mostly it.” Asia’s answer indicated her emphasis on alphabetics, meaning alphabet letters and letter-sound correspondence. We also discussed her understanding about the connection between hearing or hearing loss and reading development. She responded, “It’s kinda like being blind. I wear contacts, so if I can’t see how the letter ‘e’ is written, I don’t know how to write it. She can’t hear how the letter ‘e’ is supposed to sound, she can’t say it. . . . If you know what it sounds like, then you’ll be able to sound it out, like sound it out or spell it too.” Asia articulated the fundamental connection

between one's ability to hear the sounds of spoken language and the ability to read. She stated, "If you can't hear what it's saying or what it's supposed to be, there's no way you can read it or understand, anyways, what you're reading."

***Data Analysis: Family's Perspectives and Experiences with Early Literacy (RQ2)***

It is essential to consider the challenges that Asia faced while caring for each of her children, while simultaneously targeting Kaila's growing language and literacy skills. There was a high level of activity during each of the 4 sessions, as would be expected, simply because of the number of people present. All four children in the immediate family were present during our initial interview session at the park/playground. During sessions 2 through 4, at Asia's mother's home, there were additional nieces, nephews, and adults present. There were frequent stops and starts during the sessions as Asia tended to her children's or nieces/nephews' needs, mediated sibling squabbles, or stopped her mom's puppy from chewing. This busyness was characteristic of the family's daily life. As Asia read a book to Kaila, during the observation/session 2, Kaila's little sister Hoku came up from behind them to listen in. After a few moments, she swiped Kaila's head from behind with her palm. Asia noted that this is characteristically *Hoku*, at times, when she becomes envious of another sibling who is getting mom's attention. This incident illuminates one of the day to day challenges that Asia faces in her efforts to balance her support of Kaila's language and literacy development with other children's needs. Though she was pulled away from discussion often, she returned to discuss the topic at hand.

Through our discussions, I learned that between Asia and her husband Noa, Asia is the primary caregiver who also took the lead role in addressing their children's educational needs. Asia reads to her three daughters each night; this is an activity that both she and her daughters looked forward to. Asia reported that Kaila's older siblings are good literacy role models for

Kaila. Tyler is an avid reader. Her older sister, Tiana, who had just finished kindergarten, enjoys bringing home early readers, which she reads to her mom and younger sisters. Asia stated, “Tiana is really good at figuring out how a word is spelled and sounding out.” As I will describe later, Kaila was just beginning to learn alphabet letter recognition and a few letter sounds. Asia recounted an incident in which Kaila observed with interest as Tiana attempted to sound out letters on a candy bar. Asia shared that having older siblings as literacy models, was a catalyst for Kaila’s growing interest in reading.

As I listened to Asia share about Kaila’s/her children’s literacy journey, Asia shared that she embraced advice that she received from EI, communication disorders professionals and teachers. She shared about a few strategies that she had learned through the Kapiolani EI speech-language pathologist and Kaila’s special education teacher. She described a few instances in which she learned parent strategies for facilitating Kaila’s oral language and articulation. Asia noted that when she implemented the speech/language/literacy strategies recommended by professionals, she saw growth in Kaila’s skills. Furthermore, she had learned to modify the recommended strategies as needed for Kaila, stating that “If it (the strategy) doesn’t work, I tweak it.”

Dovetailing our discussion about hearing loss and literacy, Asia shared her concerns about Kaila learning how to read and write. She described her sense of loss early on, when Kaila had just received the diagnosis of permanent hearing loss. She shared about the difficulty of “accepting the hearing loss” and was transparent about her fear that Kaila may later be teased for needing help in school as a result of her hearing loss. Asia’s mother helped her to have a broader perspective about Kaila’s disability; her mother reportedly shared that learning to cope with the hearing loss would become “a lifestyle” for Asia’s family and that Kaila would learn to adjust. It



is noteworthy that when we talked about Kaila's future reading outcomes, this discussion triggered concern- in this case, Asia's concern that Kaila would struggle with learning to read and consequently, she may be teased because of it.

***Data Analysis: Early Literacy Routine (RQ3)***

In preparation for session 2, the observation home visit, I asked Asia to think of a few of Kaila's favorite reading, writing, and/or language activities that Kaila enjoyed and did routinely with her family. To alleviate any anxiety about being observed, I shared with Asia that the intent of the observation session was for me to learn about families' literacy routines. Asia appeared comfortable during this session.

At the onset of the observation session, Asia pointed to some picture cards as a way to warm up. Initially, Kaila remained quiet, although Asia and Leah noted that Kaila normally was very loud upon entering her grandmother's apartment. During our previous session, Kaila was playful while interacting with me and her family during our initial interview session at the park. However, Asia stated that Kaila tended to retreat when interacting with her teachers and had anxiety from the feeling of having to "perform" for them. Leah described it as Kaila being "self-conscious because she knows she's being watched." When Kaila's teacher asked questions, Asia noticed that if Kaila sensed impatience, Kaila withdrew. In her three months of being in the special education preschool classroom, Asia shared that Kaila barely answered her teachers in an audible voice. According to Asia, Kaila "mouthed the answers" or whispered. It is possible that since the observation session was only the second time that we interacted, it triggered the same sense of being evaluated at school. For this reason, I initially refrained from talking and simply listened (e.g., during story reading) and sat a few feet away from Kaila and Asia. Notably, Asia and Leah, too, spoke more quietly and were gentle in offering various activities to Kaila. After

about half an hour, Kaila appeared more relaxed; although she still was not “loud” or comical (as Asia and Leah described her), she willingly participated in her mom’s and aunt’s chosen activities. Her eyes gazed intently on whatever book, pictures, activities her mom or aunt selected. She spoke quietly or mouthed her answer to her mom’s/aunt’s questions.

From our discussions and the observation session, I learned that this family’s language and literacy routines included activities that incorporate the following: parent-child oral language interactions, shared book reading, singing, writing/drawing, activities involving AK, and PA activities. I describe this family’s literacy routines in the following sections.

**Parent-Child Language Interaction.** When we discussed the topic of Kaila’s precursor literacy skills, Asia discussed Kaila’s developing oral language. She associated early literacy primarily with her child’s oral language development. Asia described the significant growth in Kaila’s oral language skills over one year’s time. As mentioned previously, Asia puts into practice the advice she received from professionals, regarding how to stimulate Kaila’s speech and language and literacy. During sessions 2 through 4, although Kaila participated in whatever literacy activity that Asia or Leah initiated, she was reportedly more reserved than when only family members were present. Thus, I was not able to directly observe the full extent of Kaila’s typical parent/adult-child language interactions with Asia and Leah. However, during the initial interview at the park, Kaila appeared more relaxed and interacted playfully with me. Asia noted that prior to preschool, Kaila “babbed” to communicate her needs and said “... a lot of ‘uh wuh wuh wuh.’” Based on my observations of Kaila’s utterances and Asia’s description, this type of verbal utterance, in actuality, is known as *jargon*. Jargon is the language development stage during which a young child produces an unintelligible string of speech sounds that mimics the

intonation and rhythm pattern of adult speech. This stage occurs at around 12 to 18 months of age in typically developing children and is a precursor step to conversational speech.

Asia recounted that during this preschool period, she consistently encouraged Kaila to use more complete verbal utterances (phrases or sentences), instead of one-word responses when conversing. Kaila's final EI report, just prior to her third birthday, indicated growth in expressive and receptive language skills over time, albeit delayed with respect to her peers. However, Asia shared her past fears over Kaila not being able to express basic needs or thoughts and feelings. Prior to entering her special education preschool setting, Kaila was often silent when Asia asked her basic questions about her needs or wants. Asia received a parent letter from Kaila's preschool teacher that provided strategies on "how to encourage our child to speak." In regard to these teaching tips, Asia stated, "I will definitely try them and if it doesn't work for us, I'll tweak 'em." She gave examples of how she provided verbal scaffolds to facilitate her daughter's incremental steps toward speaking in longer, more complex utterances, as illustrated in the following excerpt:

So, before I'd be like, "Kaila, do you want a hot dog?" If she said, "Yes," it's like, "No, Kaila you say, 'Can I have a hot dog please?'" So, I noticed that us doing that with her has encouraged her as well. Like, "No, no thank you. I don't want that." So, for me, using their tips really, really helps.

As is evident, Asia credited the work of the speech-language pathologists and teachers who worked with Kaila and also provided parent instruction on how to stimulate Kaila's oral language growth. Although past EI speech-language therapy reports indicate a delayed trajectory of language growth for Kaila, there were also documented gains in expressive and receptive language skills. Asia expressed her relief that Kaila had finally acquired the skills of expressing

her needs, thoughts, and feelings. Furthermore, Asia expressed delight that Kaila was now able to express such feelings as, “I’m hungry. I want McDonald’s.” Asia demonstrated her responsiveness to Kaila’s oral communication, an evidence-based facilitative language technique learned during EI.

**Shared Reading.** Before bedtime each evening, Asia shared that she reads nightly to her children. She described nightly shared reading as a pleasurable way for the children to wind down before bed. Asia stated that Noa is “not a reader” and that he had hesitation about reading to Kaila and her siblings. He reportedly felt intimidated since Asia is animated when reading and able to captivate her children’s interest. However, with his family’s encouragement, Asia stated that Noa read occasionally to the children and when he did, the children were elated.

Asia choose to read a book to Kaila, right from the start of the observation session. Asia shared that Kaila enjoyed a variety of books, which she or her sisters selected for nightly book reading. These included *Sesame Street* books that include preschool concepts (e.g., shapes, numbers, and opposites) and Ten Apples Up on Top (LeSieg et al., 1961). In addition, there were two books that were family favorites. One book, entitled The Night is Singing (Davies, 2006) was a book that her children requested each night and which Asia found in the share-and-take bin at a neighborhood park. This is a book written for preschoolers that contains rhythmic lines and rhyming words throughout. Also, the 7 Habits of Happy Kids (Covey, 2008) was a book that the whole family enjoys and that Asia read portions from regularly to all of her children, including her teenage son, Tyson. Her children’s schools utilized this book as a curriculum resource for their character education curriculum. Asia appreciated the character values set forth in the book and subsequently purchased a copy.

Asia described her reading routine with her children. She gathered Kaila and her sisters so that they all sat on/near her lap or the girls sat in front of her as she read. Sometimes, she allowed each daughter to choose a story, but at other times, Asia chose a story that appealed to all three girls. She reported that her style of reading included a combination of talking about story details, pictures, or pointing out some words on the page. She made a point to be responsive when there was a story detail or picture that Kaila or another daughter pointed to or commented on. She paused to reinforce preschool skills such as naming colors and counting objects on the page. During the observation session, as Asia read to Kaila, she utilized the dialogic reading strategy by occasionally pausing to converse with Kaila. In one instance, Asia asked, “What are they playing?” After Kaila quietly answered, “Basketball,” Asia continued, “Yeah, basketball! You like to play basketball?” Furthermore, Asia provided appropriate communication cues that facilitated Kaila’s listening comprehension. I watched as Kaila said “basketball” in response to her mom’s query during the story reading; Asia turned to her right side and looked directly at Kaila’s eyes to check for comprehension. She did this on several occasions while reading to Kaila. Watching her mom’s mouth movements appeared to facilitate Kaila’s listening comprehension. In this way, Asia demonstrated her understanding of how to provide appropriate visual cues to Kaila, in light of Kaila’s hearing loss. Relatedly, as she read to Kaila, I observed Asia consistently using facial expressions and animation in her voice. Providing communication supports to her daughter was significant; these types of supports facilitate listening comprehension in individuals with hearing loss.

Through my observation and discussions with Asia, I discovered that shared reading gives Asia opportunities to introduce advanced vocabulary and concepts. In particular, the book 7 Habits of Happy Kids (Covey, 2008) includes captivating fictional stories that each highlight a

specific character quality. Asia shared that she values being able to discuss character issues with her children and that this book has been an invaluable resource in this regard. Recommended questions and activities follow each story, which allow for expanded discussion of the story's character quality and help children relate themes to their own lives. Some examples of the advanced vocabulary that Asia shared with her children included *leadership*, *seek to understand*, and *habits*. When needed, Asia stated that she modified the lessons to make them age appropriate.

Significant to the picture of Kaila's developing language and literacy is the input that she receives from her "Aunt Leah," who had previously been a preschool teacher's aide. Leah expressed that she was able to draw upon this former professional experience when engaging Kaila in language and literacy activities. Seeing Kaila's initial hesitance during the observation session, Leah jumped in to read a book to Kaila. In a gentle manner, she reassured Kaila saying, "It's ok.... It's ok." She asked Kaila to name pictures (e.g., girl, monkey, numbers) from Kaila's school binder. Leah then read an early reader book to Kaila. She used a dialogic approach to reading and interweaved vocabulary instruction in a conversational manner that maintained Kaila's engagement. For example, after reading a line that said, "Meg's red pet was ill," she paused, looking directly at Kaila with a sad face and said, "The pet was sick." In addition, Leah also used effective communication strategies as she read to Kaila and paused occasionally to check for Kaila's comprehension.

**Singing.** Asia shared that singing songs together is a routine activity that her entire family enjoys because they "sing and dance and get silly together." Asia noted that she allowed the children to utilize her cellular phone or their iPad to sing along to children's music. One of their favorite songs to sing and listen to together was what they called the "Pineapple Pen" song.

During the observation session (session 2), Asia played a YouTube video of the song “7 Habits of Happy Kids” on her phone. Her oldest daughter, Tiana, learned this song at school, as part of the school’s character education curriculum. Asia sang aloud while Kaila also sang quietly while facing each other and doing the accompanying hand motions. Both the book and the song provided an opportunity for Kaila to learn advanced vocabulary.

**Writing and Drawing.** During our discussions, Asia shared that as a matter of daily routine, she attempted to incorporate activities naturalistically into her family’s daily routine that supported her children’s literacy development. When discussing how her family incorporates writing and/or drawing into their day, Asia shared that she had writing and drawing materials (e.g., pens, markers, paper) available at all times for her children. As we settled in to begin the observation/session 2, Asia placed a binder in front of Kaila, along with a supply of colored markers. The binder was sent home daily and included printed material from school. Kaila immediately turned to two of the pages, which had boxes for each of the alphabet letters with a corresponding picture of an object beginning with the letter. For example, the box with the letter “Aa” included a picture of an apple; the letter “Qq” included a picture of a queen. Kaila immediately began to color a few of the pictures. There were remnant markings from colored pens. Whenever the family went on an outing, Asia said that she prepared in advance to have writing materials ready such as composition notebooks for each of her daughters to draw or write in while they are out of their home environment. I did not observe Asia modelling how to draw or write nor did I observe her providing direct instruction as Kaila drew. When asked about Kaila’s writing skills, Asia stated that Kaila had not yet learned to write alphabet letters nor had she learned to write the letters in her name. More importantly, however, for her daughter who

had just turned 3 years old a few months prior, Asia provided an environment in which there were daily opportunities for Kaila to draw and write.

**Alphabet Knowledge Activities.** Asia described the AK instruction that Kaila received during her first few months in preschool, just prior to summer break. She referred to the alphabet letter pages in Kaila’s school binder. Kaila knew some of the alphabet letter names and had just started learning some letter-sound relationships. Each letter had a picture of an object that begins with that letter. Asia stated that she and Kaila reviewed the alphabet letter pages in her school binder and that Kaila enjoyed telling her what she had learned in school. Asia noted that, “She’s (Kaila) tryin’ to say some of them, like she says ‘girl, /g’... and ‘A, Apple, /a/’” Leah interacted with Kaila using these alphabet letter/picture, asking Kaila “What is this?”, as she pointed to each box. Kaila answered by stating the name of each object rather than the letter in the box. However, she correctly identified and said the letter “B.” Asia shared that at times, when she pointed out the box with a picture of a queen, Kaila responded by saying “Mommy” rather than *queen*. This indicated that Kaila was still progressing in her knowledge about letter names and sound correspondence. Asia noted that Kaila benefitted from observing her older sister Tiana regularly “sounding out words” of objects in their home and in early reader school books. Thus, Kaila’s formal AK instruction in school and observing her older sister as a literacy model. Kaila demonstrated that she was at the beginning stages of developing her AK skills.

**Phonological Awareness Activities.** I asked Asia about their family’s literacy routines that incorporate playing with speech sounds, playing word games, or singing songs with rhyming words. Asia shared that one of the songs Kaila enjoyed singing with her mom and sisters was a fingerplay song called “Mommy Finger,” a song that included rhyming words throughout. The family’s nighttime ritual included reading The Night is Singing (Davies, 2006), which also



included rhyming words. Asia also had purchased reading curriculum from which she selected literacy activities and books to read to her children. There were also early reader books with rhyming words and accompanying CDs with audio-recordings of each book. Asia sometimes played the audio-recordings of the early readers for them to listen to as they quietly played. Thus, Asia had provided regular general exposure to PA, specifically rhyming patterns, to Kaila and her children in fun and engaging ways.

Asia also noted that Kaila's teachers (deaf educators) sent summer home activities for parents to do with their CHL. She showed me a summer calendar sent home from Kaila's preschool teacher which included daily suggested language and literacy summer activities for parents to do with their children over summer break. One suggested activity was "Find words that rhyme with car." This recommended parent-child activity would be classified as direct instruction, as opposed to a more general exposure to rhyming (e.g., reading books with rhyming words.) However, she stated that she found this homework a bit challenging since suggestions were not provided on how to introduce the idea of rhyming to Kaila. In summary, Asia provided an introductory exposure of rhyming to her children through books and singing which provided a good foundation for the next steps of direct PA instruction in rhyming and other higher-level PA skills.

**Psychosocial Issues.** I asked Asia to share her goals for Kaila with respect to reading and writing. With tears in her eyes, Asia shared, "I want her to be able to read and write, at least at the same level with her peers . . ." We paused to allow time for her to process the emotions which surfaced. Asia described how one of her younger sisters received special education services during childhood. Her sister endured teasing for receiving special education and for "needing help." She wiped tears from her eyes as she explained the following:

And a lot of kids would get teased for it. And it's not because they're stupid . . . . And it hurts my heart to think, that any of my children would be teased for needing special help. On top of her having the disability, on top of her not being able to speak, on top of her not being able to read or write, on top of her having normal peer pressure . . . . I wanna give her as much access as I can to, to, um read and write and to, to be with her peers.

Through the sentiments she expressed and her nonverbal communication, it was clear that Kaila being able to read and write, just like her peers, was of high priority to Asia. The thought of Kaila encountering difficulties with learning to read and write in the future provoked anxiety because of the potential psychosocial impact. She summed up her sentiments by stating, "Like any parent, if I could take it (the disability), I would. I would do that for her." As the mother of a son who also receives special education services, I recalled having similar concerns when my son was younger. We had a moment of discussing both shared and unique experiences and concerns. Asia commented that it was helpful to feel a "connection" to other parents who understood and had encountered similar concerns regarding their child's learning and school experiences.

Although Asia described some very personal challenging situations that they had endured, she also spoke of how she tried to remain positive and to look on the "brighter side" of these situations. There were times during our sessions when she or Leah had to correct a misbehaving child in the room. Even when firm correction was given, it often was accompanied with a humorous phrase, such as "Eh...Mary! Stop being so Dramalani!" They sometimes mixed in humor and playfulness. For example, when Asia sang the song "Seven Habits of Happy Kids" with Kaila, Kaila did the motions shyly and sang quietly. At the end, Asia said, "Awesome . Give me five," as she put her palm out for Kaila to slap. Kaila gestured to slap her mom's hand,

but Asia removed her hand quickly and said, “Ha ha, you too slow!” which changed Kaila’s serious countenance into smiles. There were silly moments like these weaved into each session. Each time, Kaila giggled.

**Summary.** On an encouraging note, Asia shared that she was generally pleased with the progress that Kaila has made with language, literacy, and preschool skills in her few months of preschool. Asia stated that she was “not too concerned yet” because Kaila had only had a few months in preschool, prior to summer break. Asia noted, “I feel like Kaila’s headed in the right place definitely. She’s made a lot of progress. Starting next year, in the next two years in preschool, I feel like she’ll pick up a whole lot.” Despite her concerns, Asia was pleased with Kaila’s progress and communicated her hopeful outlook for Kaila’s future school achievement.

Kaila and her family regularly engaged in a variety of literacy-related activities. These included frequent conversational exchanges with embedded parent facilitative language techniques, nightly shared reading, and singing often while being silly together. Asia also made writing/drawing materials readily available for Kaila. Although Asia did not explicitly teach Kaila about listening for the patterns of sounds in words (PA instruction), she provided regular exposure to the beginning PA skill of rhyming through fingerplay songs and rhyming books. Asia also noted that Kaila had benefitted from observing her older sister who was learning to sound out simple words, which in turn stimulated development of Kaila’s AK skills.

#### ***Data Analysis: Perspectives on Parent Education (RQ4)***

Prior to our final interview/session 4, our exit interview, I emailed Asia to follow up a week after the parent education/session 3 to see if she had any questions, comments, or needed a review of the instructional content. Through email, Asia reported that she had already reviewed the online module and had several opportunities to review the rhyming content with Kaila and to

try some of the activities. Asia was candid and readily shared her perspective and experiences. I asked her what it was like to use the online module. She provided the following description:

It was actually helpful. It gave me ideas as far as how to help her. . . gain a new skill. AND family bonding stuff. Like us playing the Stand Up/Lie Down game . . . Yeah, even if it wasn't like you said, exact, what was on there. But it gave me some ideas of what I can do, and little tweaks on stuff that we already do . . . And then during the session with you, she kinda was still shy, and still kinda confused about it. But when we got home and everyone was playing with her, like she kinda got more into it. I think she likes it more when everybody is participating and playing . . . especially when it's our family. She's more comfortable being crazy with our family.

In Asia's description, she revealed several elements that helped her implement the rhyming activities with Kaila. First, she noted that the website gave her actionable strategies for teaching Kaila about rhyming and sparked her creativity. When implementing them at home, she "tweaked" the strategies and activities in a way that was engaging for Kaila and her family.

Second, Kaila's engagement and learning benefitted from family participation. Asia noted that during our parent education/session 3, Kaila was still a bit shy. After providing instruction on the module's content to Asia and Leah, I allotted time for guided practice so that they could introduce the concept of rhyming to Kaila. At that time, we used the following two activities: pointing out words that rhyme in the book, Go, Dog. Go! (Eastman, 1997) and identifying/matching objects that rhyme within a closed set. Although Kaila participated when I was present, she was reportedly shyer than she was at home. Thus, I minimized my participation as they introduced the concept of rhyming to Kaila and tried a rhyming activity. As Asia described above, Kaila was still "kinda confused" about rhyming during our parent education

session. Based on Asia's observation, Kaila tended to withdraw when concepts were new or challenging at school. However, when she was at home, family participation put her at ease facilitated her engagement and learning. In the past, Kaila had been exposed to rhyming words through books that Asia read at home and possibly at school. However, based on my discussions with Asia, this was the first time that rhyming was being taught explicitly; Kaila had to think about the similar pattern found in rhyming pairs of words. Since rhyming was a novel concept for Kaila, the game format for teaching rhyming (Activity #2 in module) reportedly captured Kaila's interest and was particularly fun because the whole family participated. In addition, being able to watch other family members participate also provided the necessary modelling to facilitate her beginning grasp of rhyming. Asia noted that she, her husband, and all four children played the Stand up/Lie Down rhyming game before bed on several occasions and always laughed and joked while playing.

On a related note, Asia mentioned an instructional tip that was helpful when teaching Kaila. During an email a week after our parent education session, I mentioned that using family members' names as rhyming words may help Kaila's understanding (e.g., saying, "I'm thinking of a person's name in this family that rhymes with \_\_\_\_\_. What name is it?") During our final interview, Asia stated the following: "When I asked Kaila 'Whose name here rhymes with *Laddy*?' And she she'll point to the dad. . . Yeah, it was easier to start off there." Utilizing familiar names/words within a closed set (family members) acted as a scaffold to facilitate Kaila's beginning awareness of rhyming patterns. She noted that the piece of advice to use nonsense words when rhyming was effective because her husband and children could come up with silly words and keep the rhyming game going without stopping to think of real words that rhymed. I then asked how this scaffold translated to using other rhyming words. Asia shared, "I

tried...some other words, like *sand* and *hand*. . . they sound the same. It took her awhile to think.” Kaila was still in the early stage of developing an awareness of rhyming patterns.

To conclude session 4, we played a match-the-rhyming objects game to give Kaila more practice with rhyming words. I previously introduced this game during parent education/session 3. I placed one object in front of Kaila. I also placed four other objects in bag, refilling the bag periodically with new objects. At any given time, one of the four objects in the bag rhymed with the given object, in front of Kaila. Before starting the game, Asia, Kaila, and Leah named each of the objects out loud before we started the game. Then, I asked Kaila to find the object in the bag that rhymed with the object in front of her. One of the objects placed in front of Kaila was a *shell*. Among the 4 objects in the bag was a *bell*. Kaila initially needed assistance from her mom to match the rhyming objects. However, after several repetitions, Kaila was able to correctly select the object that rhymed. Her performance was fairly consistent with Asia’s account of their rhyming practice at home. Whereas during session 3, she showed little understanding of rhyming patterns, by the end of session 4, Kaila demonstrated a growing awareness by selecting the rhyming object correctly a few times, which was met with verbal praise.

In another segment of our discussion, Asia shared that she benefitted from detailed, in other words explicit, instruction on how to facilitate the teaching of rhyming. She reminded me that Kaila’s preschool sent home a calendar that lists ideas of activities with preschool skills that parents could do with their child during the summer. There was one idea for a parent-led activity for each weekday, during the summer months. Asia shared that she valued having these suggested activities and made attempts to try them with Kaila as much as she could. However, she noted the following: “So at school, they sent home that calendar, and there was some rhyming stuff, but they didn’t say how to introduce it. . . or how to work with her.” Based on

Asia's commentary, explicit instructions from the module along with demonstration videos filled an instructional gap, which enabled her to implement the strategies to teach Kaila.

I also asked Asia to describe the aspects of the website, or parent education content in general, that were most helpful to her. Asia described two aspects. First, she noted that it was helpful to have the rhyming activities, #1 through #4, presented so that the complexity level progressed from simple to more complex tasks. She noted, "I liked it because the way it was kinda age-based." Indeed, activity #1 introduced ideas for how to cue one's child into listening for the ending portions within two words that rhyme, or "sound same same," as described by the mother in the Activity #1 videos. Activities #2 and #3 describe activities and strategies for helping one's child to identify rhyming words. Activity #4 discusses how to develop the child's ability to match rhyming words and how to produce rhyming words within closed sets. Furthermore, as Asia described, all of her daughters, ranging in age from 2 to 6 years of age, were captivated by the various rhyming activities and benefitted from the instruction.

Yeah . . . . it wasn't only just for her (pointing to Kaila), being hard of hearing. Even the baby (2 year old daughter, Kanani) is picking up on it. So, I don't think it's just for her (again points to Kaila). It's touching on everyone, and I like that . . . . Everybody's gaining from it (online parent education content).

Simultaneously, Asia expressed that Kaila benefitted from reading-related concepts that her older sister Tiana learned in kindergarten. Often, concepts that Tiana learned during the school day, (e.g., pointing out letter names on a candy bar) she was eager to show Kaila. There is evidence which suggested that during the early childhood period, young siblings have the capacity to teach each other, typically the older teaching the younger; furthermore, they do so naturally as they

engage in play or converse (Howe et al., 2016). Asia perceived that within the microcosm of family life, there was benefit to children learning together and also learning from one another.

**Parents' Feedback on the Parent Education Module.** I asked Asia for feedback regarding the parent education session and online module. Asia shared that when her daughters napped, she had brief windows during which she accessed the website on her cell phone and viewed portions of the module. She read through the entire website from start to finish, segmenting portions to view as time allowed. She read the instructional material, then periodically paused to watch the corresponding demonstration video. I also asked Asia for her feedback regarding how to improve the online module and parents' learning experiences in the future. She shared the following:

Well, I like it right now the way it is because I did pick up a lot of it. So, for me personally, it's fine. If it was all on paper (handouts), my kids would destroy it, or I would lose it. I liked the videos . . . it would be a little bit harder (if there were no video examples). So, I read it, and then I watched the video. I liked having both.

Asia's commentary communicated that the online delivery of instructional content (combination of written instructional content with demonstration videos) suited her learning style well.

### **Case Three: Bella and Family**

Bella (pseudonym) was 3 years and 10 months old when I met her and her family. Bella and her parents, Tony and Yuko (pseudonyms), resided in East Honolulu. Tony was of African American descent and was originally from the east coast of the U.S. Yuko was originally from Japan but studied abroad at the University of Hawaii at Manoa, where Tony and Yuko met about 9 years prior. Tony was self-employed as a software developer. Yuko was a paralegal for a law



practice in Honolulu. Yuko was a native Japanese speaker yet also was fluent in English, having learned it as a second language during childhood.

Bella and her family maintained close relationships with Tony's mother and Yuko's parents. Tony's mother relocated from the east coast to be close to Bella and lived a few miles from the family. Yuko's parents made extended visits from Japan twice a year. Yuko and her family also visited her parents in Japan several weeks out of every year. Table 1 contains child and family demographic information.

### ***Developmental History and Family Background***

Based on Bella's audiological evaluation results, Bella had congenital moderate-profound sensorineural hearing loss in both ears, which was identified through Hawaii's State Early Hearing Detection and Intervention program. Functionally, without the use of hearing aids/assistive listening technology, conversational speech and most environmental sounds were inaudible to Bella. According to her parents, Bella was fitted with bilateral ear-level hearing aids at 5 months of age and since then, had used them daily during waking hours. According to her EI reports when Bella was 2 ½ years of age, Bella could respond appropriately to a variety of indoor and outdoor environmental sounds, verbal directions, and simple questions when using her hearing aids.

At 2 years of age, Bella began attending a private nursery and preschool on a part-time basis. According to an IFSP document just before her third birthday, her attendance at preschool sparked noticeable growth in both her expressive and receptive language skills. At that time, her speech-language pathologist noted that she was speaking in grammatically correct sentences, was able to follow various verbal directions, and was able to answer "wh" questions. At the time of transition from the EI program at age 3 years, Bella demonstrated language skills that were

approximately at age level. This was unusual for children with hearing loss, who typically approach the preschool years with delayed language skills. Tony and Yuko were seeking to raise Bella to be bilingual. Since Bella's birth, Yuko spoke Japanese at home to introduce Bella to the Japanese language. As Bella transitioned out of EI at age 3 years, her speech-language pathologist noted that Bella "code switches between English and Japanese." Her predominant language, however, was English.

**Description of Bella's Family.** Bella was a gregarious little girl who enjoyed a variety of recreational activities. During our first meeting at their home, she entered the family kitchen where I was sitting. While she combed through her long and curly hair, she greeted me by saying "Hi!" and proceeded to play quietly in the adjacent living room area. Her parents stated that she was accustomed to having EI professionals enter her home. They described her as sociable, affectionate, and charismatic "just like her dad." Tony reported that in her preschool program, Bella appeared to be "a favorite" among the students and teachers.

Bella participated in various recreational activities. At the time of data collection, Bella was participating in swimming classes daily at her summer preschool program. On Sundays, she attended a gymnastics class, and to her parents' delight, they reported that she appeared to be a gifted beginning gymnast. Bella also enjoyed participating in dance classes and at the time, participated in weekly hula classes. Previously, she had participated in ballet classes. Yuko stated that because of Bella's hearing loss, she had been concerned about Bella not being able to hear the music and rhythm. However, she revealed, "I was pleasantly surprised that she has no problem with hearing the rhythm . . . she is flawless." In addition to these activities, her parents reported that Bella's favorite pastime at home was to sing "Disney songs" and act out scenes from animated Disney musical movies.

One month prior to her transition out of the EI program, which was approximately one year prior to the family's participation in the current study, Tony and Yuko enrolled Bella in a private preschool program. She was 2 years and 11 months at the time. Tony and Yuko appreciated the school's warm community atmosphere and felt that the Reggio Emilia teaching philosophy implemented by the school was a natural fit for Bella. Yuko stated that the school's curriculum was "project-based learning," which she and Tony liked. She also noted that the preschool emphasized students' language development, which aligned with their goal of supporting Bella's oral language growth. Tony and Yuko were especially relieved that Bella had adjusted well and enjoyed preschool. They also felt reassured since one of the preschool teachers had over 39 years of experience working with students with disabilities, including students with hearing loss.

Outside of the family's typical school and recreational routines for Tony and Yuko valued their strong bond as a family unit in addition to Bella's close relationships with her grandparents. Tony operated his business from home, and Yuko worked part-time; Tony and Yuko considered it a privilege to be able to invest extensive time with Bella throughout the week. On weekends, Tony's mother took Bella to the movies or out shopping. The family also enjoyed being outdoors together, just playing in their yard or spending the day at the beach.

**Family's Early Experiences.** In the sections that follow, I describe Tony's and Yuko's knowledge and perspectives about early literacy and hearing/hearing loss, their family's literacy routines, and their experiences and perspectives after having received parent education.

Thereafter, I also discuss the family's literacy routines and the unique role that each parent played in their partnership to support Bella's language and literacy development. However, I first

discuss difficult decisions that Tony and Yuko faced early in Bella's life which contextualize their early perspectives and experiences on literacy development.

Bella and her family began receiving home-based multi-disciplinary EI services soon after Bella was diagnosed with hearing loss. Tony and Yuko shared about decisions they faced early on regarding communication modality and hearing technology. On the heels of the shock of Bella's hearing loss diagnosis, they were faced with the decision of selecting a communication mode for Bella. Would they elect for their daughter to use an auditory/oral mode of communication to develop her listening and speaking skills or they ASL and have their daughter become integrated into Deaf culture? Or, would they opt for total communication, a combined approach for which the individual utilizes his/her listening and speaking skills with manual communication support. Tony and Yuko elected auditory/oral communication modality. However, they also utilized some ASL signs, to supplement their communication with Bella during the first one to two years of Bella's life. They also decided to have Bella fit with bilateral behind-the-ear hearing aids at 5 months of age. They were advised by Bella's audiologists and the other early interventionists to look for signs of auditory responsiveness when Bella used her hearing aids. It soon became apparent to her parents and professionals alike that Bella benefited substantially from the hearing aids; her vocalizations increased when she used her amplification devices (aids) and she responded to environmental sounds and to conversational speech when aided.

Although Bella was reportedly receiving hearing aid benefit, Bella's ear, nose, and throat physician and audiologist recommended that they should still consider cochlear implantation for Bella in the future. Tony and Yuko recounted the tremendous pressure they felt about making the right decisions for Bella. They reportedly spent an extensive amount of time talking with

professionals and parents who were proponents of each of the three communication modalities before electing auditory/oral communication for Bella. They also researched the risks and benefits of cochlear implantation for Bella. Yuko stated, “We attended *every* CI manufacturer’s presentation that came to town.” The challenge was to consider whether the prospective auditory benefit from CI outweighed the risk of the surgery. Additionally, even if they decided to pursue CIs in the future, they needed to decide on the appropriate time for Bella to undergo CI surgery.

Families whose child is born with hearing loss face similar decisions that will impact their child’s future. One devastating comment made to them by well-intentioned professionals was this: “Bella was fit too late with hearing aids.” That comment reportedly weighed on Tony and Yuko, even though they felt they had little control over the timing of when Bella was fitted with hearing aids. They recounted feeling hopelessness about what they heard about the negative impact of hearing loss on a child’s literacy and school achievement. They shared that they had received the honor of being selected as the recipient family from Hawaii to attend the Early Hearing Detection and Intervention annual conference on the mainland. Yuko recounted that what they heard at the conference sessions about the statistics of poor reading achievement for CHL was bleak and frightening. According to Tony, “Our goals were then set so low from the beginning that normal is like, up here. Because we were underneath, low.” Yuko stated, “When we started off, we would work on it really early like okay this is terrible. This is gonna be bad, so we’re just gonna work on it.” Tony stated further that “We tried everything, yeah and because 8 to 10 people (professionals) told us exactly what to do, we did *everything*.” Tony and Yuko shared that they were determined to work hard to overcome any obstacles that would keep Bella from achieving language and literacy skills just like her hearing peers. Understanding these

difficult early decisions contextualized their approach to supporting and shaping Bella's language and literacy development.

***Data Analysis: Knowledge of Early Literacy and Hearing (RQ1)***

I asked Bella's parents the following question: "What skills come to their minds when you hear the term *early literacy*?" Through Tony's response, this evidently was a challenging question to answer and led to a thought-provoking discussion. He shared that the wording of my initial question was confusing. Part of the challenge for parents when answering was the metacognitive nature of this question. Although most parents have heard the term *early literacy*, they may not have given conscious thought to what it means. They shared these ideas:

Dad: That's a weird question . . . . It should actually say almost like 'How do you achieve it or that's not what I'm tryin' to say. Early literacy is not common, right? So, you asking that question, well again, we're not the barometer, we're off the barometer (meaning, their daughter is advanced in her oral language development compared to typical CHL). So, for a normal family you say *early literacy*. First, they'd be like, 'What is that?' So, it's, I can't think of any skills because our daughter *has* early literacy so I would say every skill that she has is because of it. I wouldn't even call it a skill because a skill is like trained. It's something you practice.

Mom: We've been doing it. We've just been doing it really early. I think early literacy started really early for us. So, I think that's what the thing is.

To further elicit Tony's and Yuko's sharing of what was salient to them with regard to *early literacy*, I revised my question as follows: "What does early literacy mean to you?"

Tony: Okay, so early literacy means *access*, just in general. Because you have early literacy, you're going to be able to move further faster...so *access to information*. It's

kind of like if we didn't get hearing aids at the age that we got it and waited an additional month or two months, it would have been a huge gap of information that she missed. So, *access to information is early literacy.*"

Yuko: Yeah, we think it's a necessity. That's why *we started so early.*

Based on their statements, Bella's parents define early literacy as providing a young child with early auditory access to conversational speech for the purpose of stimulating oral language development. Their perspective was that providing early access to oral language is a critical foundation for the future; access to language allows for access to "information" in the world. As Tony further stated, had they not provided amplification for Bella early on in her life, there would have been a "huge gap of information" for Bella. Therefore, a main thrust of their efforts, as parents, was to develop Bella's language listening and oral language skills. Tony and Yuko also shared a few times during our initial interview that they had gleaned valuable information about how to develop Bella's oral language development through the guidance of many professionals.

As mentioned in the literature review, the scope of practice in audiology guidelines for the American Speech-Language Hearing Association and the American Academy of Audiology do not include the topic of hearing and its connection to reading. Therefore, it is not standard practice for pediatric audiologists to provide parent education specifically on the impact of hearing loss on reading and strategies to facilitate reading development. I asked Tony and Yuko to describe the connection between hearing and learning to read and write. Tony answered, "Hearing and reading and writing? Is there a connection?" He paused then commented, "Oh hearing is reading because you have to hear someone else read it to read, but writing, I don't know." His statement suggested the belief that in order to learn to read, one must first be able to

hear someone else read. Tony and Yuko shared that Bella once had a bad ear infection, and her hearing loss temporarily worsened. Yuko shared that it was difficult to communicate with Bella since she would frequently say, “Huh?” Shared reading also became challenging because she could not hear them; Tony stated that it was “frustrating” and “exhausting.” Tony concluded that based on that experience, without adequate hearing, Bella would not have “access to information.” He further commented, “If she can’t hear, then we’d be exhausted and she would learn nothing, and we wouldn’t be able to teach her.” In essence, Tony believed that hearing is essential for a child to be able to gain auditory access to information in order to learn.

Yuko described the connection between hearing and learning to read and write from the perspective of a child being able to hear a teacher’ or parent’s instruction regarding how to write alphabet letters (e.g., penmanship instruction). Yuko explained, “You (parent) say it, ‘Write this one first, write this one second, then write this one third.’ So, there’s an order of writing, and so I vocalize, ‘You have to write this first, then a line and then you gotta do this...’ And *A* too, ‘It’s supposed to be this way, it’s just like a *V* and then you do a line.’ You instruct all the time.” Yuko stated that in order to learn to write the alphabet letters, one must hear the instruction on how to form the letters. Yuko then connected this discussion with parent education they received about Bella’s hearing and oral language development, which emphasized oral language development.

To summarize, this question was initially challenging for Tony and Yuko to answer. After rephrasing my initial questions, a thoughtful discussion ensued about Tony’s and Yuko’s perspectives on hearing and the connection to literacy. To summarize their perspective, Tony and Yuko believed that hearing was essential for Bella to gain auditory access to spoken language, to information about the world and people, and to preschool/academic content.



***Data Analysis: Perspectives and Experiences with Early Literacy (RQ2)***

I listened to stories about their family's journey from Bella's birth through toddlerhood, beginning with the shocking news of Bella's hearing loss diagnosis. Tony and Yuko shared that hearing accounts of poor language and literacy outcomes in CHL from individuals at the EHDI conference was devastating. They spoke about the hopelessness they felt in the earlier years. At the time, they believed that Bella would inevitably have poor language and literacy outcomes. Tony explained, "Things looked so bad that the only direction to go was up." He then shared how they constructed a plan on how they would support Bella's language development. They also made the decision to foster her skills in both Japanese and English. They structured their family life to ensure that each day to included language and literacy activities. Some of these included shared book reading of books written in English and others in Japanese, singing and listening to music, role-playing as a play activity, Yuko teaching Bella daily from a Japanese language curriculum, narrating life" to Bella, and many conversational exchanges among their family.

During the current study, Bella attended a private preschool where she reportedly received rich language input. Yuko explained that this preschool is project-based in its teaching philosophy and incorporates stimulating language and communication experiences for its students. She mentioned two learning projects that were heavily language-based. She described one project, stating, "They asked the kids, 'Where's the heart of our school? These are 3 and 4 year olds asking like a hypothetical question, like, where's the heart of our school? The kids went around the campus and asked everybody. Students, teachers, and administrators. They all stopped and talked to these preschoolers.'" In addition, the theme for the school year was "connections." In another project, students explored answers to the question, "How do you feel

connection between people?” The preschoolers explored the answer to this question along various domains (i.e., physical, emotional, visual, etc.).

Tony and Yuko described how they did their own research on issues related to hearing, speech and language, and communication development for CHL. Tony and Yuko took an evidence-based approach with respect to helping their daughter acquire language and literacy skills. They assimilated the instruction they received from EI professionals about how to help Bella, then did their own personal research on the issues. As Tony mentioned, they benefitted from “8 to 10 professionals’ advice” on strategies for stimulating their daughter’s language and literacy acquisition. Tony also noted that Yuko was his “Google” when it came to researching information on how to help their daughter and that Yuko being bilingual had been an asset to these research efforts. Yuko stated that often, when clinicians gave her advice, she researched the topic both in English and in Japanese. She shared that she noticed inherent “biases” on topics related to deafness and speech/language on the “Asian side and American European side” and so she “combined both.” In this way, Tony and Yuko exacted a comprehensive review of the available literature.

Tony stated that when they began to observe that Bella was displaying good early acquisition of both English and Japanese language and early literacy skills, they felt some relief. He recounted that he had told Yuko, “Okay, we’re good now.” While also relieved, Yuko shared her perspective that “It will never be enough. There is always more.” Tony then shared that for Yuko, there will *always* be a higher standard to attain.

### ***Data Analysis: Early Literacy Routine (RQ3)***

This family seemed comfortable engaging in their pre-selected literacy activities in my presence. The family had a daily plan mapped out that included specific literacy activities, and

each parent assumed a specific role. As they engaged Bella in various language and literacy routines, they provided structured, explicit teaching. In the next section, I give account of this family's routine language and literacy-related activities, which included oral language interactions, singing/music, imaginative play through role-playing, shared book reading, writing/drawing, and activities involving AK and PA.

**Parent-Child Language Interaction.** According to the speech-language pathologist's report at the time of discharge from the EI program, Bella's expressive and receptive language skills fell broadly within the range of her typically developing peers. As mentioned previously, this was an atypical occurrence since CHL, by and large, display language delays during early childhood. Her parents described Bella as "constantly talking." According to Tony, Bella talked about "everything" on her mind "all the time . . . with whoever is willing to talk with her." When they read to her at night, Yuko said Bella asked questions throughout the story. Yuko stated, "She's in the what phase, so everything is *what, what, what*" or "*why, why, why*." Tony confessed their excitement over Bella's exemplary language growth mixed with occasionally feeling "exhausted" because Bella continually wanted to converse, ask questions, or role-play. They allowed Bella to make choices among recreational activities outside the home (e.g., dance, gymnastics). They also gave her freedom to talk about whatever was on her mind. On several occasions, Tony shared, "We let her (Bella) lead the conversation." In this way, Tony and Yuko utilized a responsive approach when conversing with Bella.

Tony and Yuko cited several factors that had positively impacted Bella's language growth. Bella had a natural affinity for activities that were heavily language-based, such as learning the lines of animated movies, singing and role-playing (dramatic play). Second, they were intentional about talking aloud throughout the day, whenever Bella was present. This was a

technique that they had learned through the EI deaf educator and that they referred to as “being an announcer” or “narrating life.” Yuko stated that one must “just vocalize everything.” These were attempts to provide spontaneous opportunities for incidental learning throughout their daily routine (King, 2020). Yuko gave the example of how she talked aloud, in Bella’s presence, about the steps she took while performing a mundane task such as cooking rice: washing the rice, placing the rice into the rice pot, and turning it on. This allowed Bella to overhear them talk about everything that was going on in the environment and to know her parents’ thoughts and feelings. By using the strategy of narrating life, Tony and Yuko weaved language stimulation throughout Bella’s day to give her access to information about people and events in the world around her. Tony and Yuko also explained that a third contributing factor to Bella’s outstanding language growth was that throughout her daycare and preschool experiences, she had been among the youngest in the class. Her parents shared that communicating regularly with older children who had more advanced oral language skills bolstered Bella’s own language growth. Her parents stated that Bella had to “run to catch up,” like a child who benefits from interacting with older siblings.

**Japanese Language Instruction.** Tony and Yuko shared their plans to teach Bella to speak and write in the Japanese. When Bella was an infant and until she turned 2 years old, Yuko spoke both in English and Japanese with Bella. After deliberating on how and when to teach Bella the Japanese language, they decided that when Bella turned 2 years old and attended daycare, Yuko would only speak Japanese to Bella. Their rationale was that this strategy would facilitate Bella’s Japanese conversational fluency. Tony would continue to converse in English with Bella and would assume the role of facilitating Bella’s early literacy-related skills in English. Indeed, their EI speech-language pathologist noted the product of these efforts in an

IFSP report just prior to Bella's third birthday- that Bella was able to code switch between English and Japanese.

Bella's parents utilized other avenues for Bella's immersion into the Japanese language. Bella attended Japanese language classes in Honolulu. In addition, Bella attended a summer school when she was 3 years old and while the family visited Yuko's parents in Japan, which was about one year to the family's participation in the current study. Yuko stated that being able to speak daily with older children in the Japan summer preschool, in addition to speaking with her native-Japanese-speaking grandparents, greatly facilitated Bella's Japanese conversational fluency. Also, just a few days prior to the family's initial interview session, they had returned from a 2-week trip to Japan. Yuko stated, "She (Bella) significantly advanced in her speaking skills. She asks questions now out of the blue in Japanese . . . and complains in Japanese."

While Bella's conversational Japanese language skills have grown through weekly attendance at Japanese language school and extended visits to Japan, she also benefitted from daily instruction from Yuko at home. When Bella was around the age of 3 years, Yuko began formal Japanese language instruction with Bella by utilizing a Japanese language curriculum geared for preschoolers. Yuko stated that the lessons included concepts like shape and number recognition and picture matching. Yuko noted that the curriculum content included spoken Japanese language instruction in addition to the written characters that represent phonetic symbols known as *hiragana*. The curriculum incorporated daily "role-playing" themed lessons which called for teacher and student to act out typical scenarios in the daily life of a preschooler in Japan. Yuko gave one example of one theme that centered around the places and things that a preschooler might encounter on her way to preschool. In addition to the enculturation that Bella

received through her family's periodic visits to Japan, Yuko noted that instruction using the Japanese language curriculum facilitated Bella's understanding of Japanese culture.

**Shared Reading.** Upon the recommendation of their EI deaf educator's advice to start early, Tony and Yuko reported that they had been reading every night to Bella since age 5 months. Bella enjoyed this nightly routine with her parents. According to Tony, they had to set a reading time limit or "it could go on and on and never end" because Bella repeatedly asked for another book to be read. Tony read children's books to her in English each night, and Yuko read Japanese children's books as part of the Japanese curriculum during the daytime or other Japanese children's story books at bedtime.

When Bella was an infant, Tony exposed Bella to vocabulary and reading material that were well-beyond the preschool level. Before Bella was at an age at which they could converse about what he read aloud to her, he often chose to read "big adult encyclopedia-type books" to Bella to alleviate his own boredom. On one occasion, he recalled reading to Bella about watches. Since Bella turned 3 years of age, there were a few books that Bella requested to be read to her over and over, such as Click, Clack, Moo: Cows that Type (Cronin, 2000). Eventually, Bella was able to recite every line in the story on her own, page by page. They stated that they believed in affording Bella the freedom of choice whenever possible, including allowing her to choose the literacy or play activity. However, according to Tony and Yuko, a current "battle" they were facing during shared reading was that Bella insisted on reading a book aloud first, before her parents read to her. When a book was new to Bella, they preferred that she listened first to learn how the book should be read "correctly." Then they allowed her she read/recite the book on the second round.

For the observation session, Tony and Yuko decided to do a shared reading activity with Bella- one book in English with Tony and one book in Japanese with Yuko. Yuko recommended they read a specific book, stating, “Do the sheep book. You guys do so good with the sheep.” As Tony held the book Where is the Green Sheep? (Fox, 2004) in front of Bella, she recited the lines of the story, most of which she had apparently memorized. Tony provided assistance by moving his fingers across the lines of the page as Bella recited the words; when Bella could not recall a word on a page, she looked up at Tony for assistance as illustrated in following snippet:

Bella: But . . . where . . . is . . . the . . . green . . . sheep? (looks at Tony for reassurance)

Tony: Beautiful!

Bella: Here is the . . . (looks up at Tony with a questioning look)

Tony: Thin . . . (provides a clue by opening his hands to illustrate “thin”)

Bella: (continues) sheep. Here is the . . . (looks up at Tony for assistance)

This scenario demonstrated Bella reliance on her Dad’s guidance and encouragement to successfully recite the lines of the story. Tony displayed parental responsiveness during this language/literacy task, a characteristic of parent-child language interactions which facilitates child language development (The Hanen Centre, 2016). This scenario also illustrated Tony’s line-by-line support, as Bella attempted reciting the story, a precursor step to future independent reading.

After Bella finished reciting the book to Tony, Yuko read a children’s book in Japanese to Bella. Yuko had an animated style of reading to Bella, which captivated Bella throughout. Yuko read with facial expressions, gestures, and inflection in her voice. It was evident in several instances when Yuko asked Bella a question related to the story, and Bella responded in Japanese each time. A striking characteristic of Yuko’s reading time with her daughter was her dialogic

approach. Throughout the story, Yuko paused periodically to engage her daughter in discussions about various details within the story. At one point in the story, Yuko made a gesture to symbolize a long nose, which then led to a back-and-forth exchange between Bella and Yuko in Japanese. Bella then stood up and pretended to reach for something imaginary up high, then brought it to her mouth and took an imaginary bite, as if biting an apple. Bella asked her mom a question, which led to a conversation between them. As we watched them read, I asked Tony, “Does Bella like to act out the story?” Tony replied, “Regularly! She *becomes* the character in the story.” Through her animated and dialogic style of reading, Yuko captivated Bella’s interest through role-playing as they read.

**Role-Playing.** According to Tony and Yuko, one of Bella’s favorite activities was what they referred to as *role-playing*. This is analogous to other terms used in early childhood education, *dramatic play*, (Cecchini, 2008) and *pretend play* (American Speech-Language Hearing Association, 2013). However, I use the term utilized by Bella’s parents, *role-playing*, which refers to individuals creating a play scenario for which the participating play partners pretend to be someone else.

According to Tony, Bella could role-play “for hours.” He noted that Bella especially enjoyed role-playing scenarios with Disney princesses, such as “Beauty and the Beast” and the “Little Mermaid.” Sometime after her third birthday, she reportedly watched Disney princess movies repeatedly to learn each character’s lines until she memorized and could recite them all. She role-played as a princess character while her parent or grandparent played a different character. Bella reportedly “got into the role” and could get swept up into her imaginative world “for hours” if allowed or when indulged by one of her grandmothers as her play partner. Her usual partner was Yuko, as they role-played scenarios in Japanese that were part of their daily



Japanese lesson plan in the Japanese language curriculum. The hours of enjoyment that Bella spent role-playing provided immersion into an auditory/oral language rich atmosphere and was likely a significant contributing factor to her exceptional language growth.

**Singing and Music.** Along with her affinity for role-playing, singing went hand-in-hand as a favored pastime for Bella. During our first session, as Yuko and I sat talking in the dining area, I could hear Bella singing in her bedroom just down the hallway. When Bella was 2 years old and had attended a daycare, Bella had a preschool teacher, Mr. M. (pseudonym), whom they described as gentle and nurturing. He also reportedly was a musician for a rock band. Mr. M. introduced his students to music by playing his ukulele as he sang to them each day. Tony and Yuko believed that this early exposure to music through Mr. M. fostered Bella's interest in music early on. Yuko shared how music and Bella's singing permeated their home life and that "ever since she could talk, she is always singing . . . she can recite the music from just hearing it, so we believe that hearing has no problem with it (music)."

According to Tony, Bella's goal was not only to learn every line spoken by each character in a given animated movie, but also to learn the lyrics from every song. Bella enjoyed performing each of the songs for her usual home audience, but Tony also shared about an occasion at a shopping mall when Bella stood on the center stage and sang the lines to a Disney movie. She regularly performs the songs from a movie that she's studied while "dancing and doing choreography . . . She'll perform for everybody." During our observation session, we moved to the living room, which was Bella's informal stage. They streamed a music video onto their television which included a medley of songs performed by various Disney princesses (e.g., Belle from "Beauty and the Beast," Ariel from the "The Little Mermaid"). As Bella watched each music video, she sang a few songs for me, each in its entirety. Bella had an affinity for

performing arts in general, and over the past year, had reportedly enjoyed participating in hula and ballet classes. Yuko noted that she was surprised that Bella displayed good “rhythm” and that “she is flawless” when performing her dance routines.

**Print Knowledge.** To gain understanding about Bella’s print knowledge, I asked Tony and Yuko the following question: “How does your family incorporate activities that involve writing or print into your day?” Bella demonstrated her print knowledge in each of these three component areas: concepts of print, AK, and the early stages of writing and drawing. It was clear through observation that Bella had already acquired knowledge about the basic conventions about print (concepts about print) by the time I met her and her family. In the sections that follow, I describe Bella’s AK and early writing skills in Japanese and English.

**Alphabet Knowledge and Writing.** Yuko shared regarding Bella’s developing AK and Bella’s beginning writing skills in Japanese. As mentioned previously, AK refers to an individual’s ability to recognize and produce the names and sounds of letters. At the time of data collection, Yuko noted that Bella was learning to read and write in the Japanese written system called *hiragana*, which consists of 46 phonetic characters with each character representing a sound. Bella reportedly was able to sight read several words in hiragana from story books that are part of their preschool Japanese language curriculum and knows how to write all of the hiragana characters. Bella could also write her name in Japanese, but not yet in English. Yuko stated, “Bella likes writing in Japanese more than English. I think because she likes the challenge. She still needs to work on (the English) alphabet, but she’s good at Japanese.” I did not have the opportunity to observe Yuko and Bella working together on Japanese reading/writing. Tony and Yuko shared that they believe in allowing Bella “to lead” during conversational exchanges and in initiating activities language/literacy activities. However, Yuko

took a structured approach when providing Japanese language instruction to Bella in that she followed daily lesson plans when implementing the Japanese language curriculum with Bella.

In the English language, Tony and Yuko reported that Bella had not yet learned all of the alphabet letters nor their corresponding sounds. Yuko stated, “Bella’s preschool is a discussion-based preschool” and “writing comes any time they (the students) want it to.” Yuko explained that Bella’s preschool’s teaching philosophy regarding teaching the alphabet letters and sound correspondences was that an appropriate time to teach a child about alphabet letters and corresponding sounds is when a child shows motivation to learn them. In terms of formal instruction, Yuko stated that Bella’s school teaches the letters and sound correspondence during kindergarten. Yuko reported, however, that Tony already had begun introducing the names of English alphabet letters. She stated that Tony handled the bedtime ritual of assisting Bella with brushing her teeth. On Bella’s bathroom mirror, there were picture cards, each with an alphabet letter and a picture of a word that began with that letter. During their daily teeth brushing ritual, Tony asked Bella to pick two letter cards and then to say the name of the letter. Then they reviewed the corresponding sound together. Bella was still in the process of learning all the alphabet letter names and their sounds.

For the observation session, the family did a parent-guided writing activity with Bella while utilizing a “Hello Kitty” preschool workbook written in English. The “Writing Activities” portion of the CHELLO assessed for the presence of four parent behaviors and features of the home literacy environment. These parent behaviors and features of the home literacy environment are known to support preschoolers’ early writing development: the availability of writing and drawing supplies (e.g., pencils and crayons), parental modelling of writing/drawing, parental encouragement of child’s writing/drawing attempts, and parental assistance with the

child writing his/her name, letter(s) or other words (Neuman et al., 2008). Tony provided each of the four aforementioned supports during the observation session as he guided Bella through their writing activity. As an illustration, on one workbook page that Bella selected, her task was to trace the connect-the-dot patterns which formed single-digit numbers. Then, beside her tracing, she wrote the number again. Tony patiently guided Bella with explicit instruction and offered verbal reinforcement throughout their interaction. He offered kinesthetic cues, placed his hand over hers and stated, “Let me show you. It’s a hook, then down, then over.” After Bella made an attempt to write a “2” independently, he offered praise. Bella received instruction well from her father, and their interaction seemed to be a routine literacy interaction between father and daughter.

**Phonological Awareness Activities.** Although I did not observe Tony and Yuko reading rhyming books or engaging in singing word play songs, during our discussions, they shared that two of their family’s favorite books to read at bedtime were Click, Clack, Moo: Cows that Type (Cronin, 2011) and Brown Bear, Brown Bear, What Do You See? (Martin, 1967). These books contain rhyming words throughout the entirety of the story. Furthermore, Yuko stated that books like these are particularly appealing because “She (Bella) likes books with rhythm. If a story doesn’t have rhythm, then we just add it in, and she likes it better.” These books may have contained rhyming words. One of the comments that Tony made to Yuko, at the conclusion of our parent education session was this: “I never even knew that we should be rhyming with her.” However, Bella consistently received general exposure to rhyming words through their two favorite storybooks and also through listening and singing along to music from Disney movies.

To summarize, Bella and her family regularly engaged in a wide variety of literacy-related activities. Her parents provided consistent language input throughout each day by

utilizing the parent facilitate language strategy called narrating life and ensured that they engaged in regular conversations with Bella. Bella also enjoyed pastimes that emphasized oral language, including shared reading, role-playing, and singing/music. In addition, Bella was developing her Japanese language fluency. Her mother spoke predominantly Japanese with her and implemented a Japanese language curriculum daily. Bella also was able to read and write all 46 Japanese written hiragana characters and could sight read several high frequency words in hiragana. Although her preschool program did not formally teach English alphabet letters and their sounds, her father had begun to introduce the alphabet letters and a few sounds. He also had begun to introduce how to write letters and numbers. Notably, Bella's parents provided explicit instruction in a number of these early literacy areas. By her parents' report, rhyming/PA skills development, however, were areas of new learning for Bella's family.

***Data Analysis: Perspectives on Parent Education (RQ4)***

Prior to our final session, the exit interview, I emailed Tony and Yuko to follow up a week after the parent education session (#3) to respond to any questions, comments, or to review the instructional content. Tony responded by email and stated that since our last visit, they had been practicing with rhyming words with Bella multiple times each day. I asked the following question: "How has the information from the parent education module changed your family's reading and writing related activities?" He provided the following description by email:

The information was amazing, knowing that we should be teaching rhyming was a huge surprise. Now that she understands the concept everyday multiple times a day, she asks me if things rhyme. When we read books, she is looking for rhyming words. It's really amazing. Reading books are more fun now because she is anticipating words that rhyme.

It's changed our conversations about everything because I'll say a word in a sentence and she will take that word, make up a word, ask me if it rhymes, in the middle of me talking.

Then she will intentionally ask me if something doesn't rhyme, which is amazing as well.

During the final session/exit interview, Tony repeated these sentiments. Tony assumed the role of teaching Bella about rhyming words. Yuko also learned the instructional content during the parent education session and via the website in order to provide support to Tony, as he implemented the rhyming strategy and activities with Bella. Yuko also provided positive reinforcement to Bella during the rhyming activities.

**Parents' Feedback on the Parent Education Module.** Yuko explained that she and Tony reviewed and learned from the online module in different ways, based on their individual learning preferences. After our parent education/session 3, she reviewed the website in its entirety, beginning with the home page. Thereafter, she reviewed the "Activities" section, Part 1 through Part 4. Yuko shared, "I think for me, the video helped. The video tutorial that gave me a good idea of how to start it off and stuff. So, I have to really look at the video and then read it. Then that helps." Furthermore, she shared that having "two visuals," the combination of written text explanations about rhyming strategies/activities and short video clips to illustrate them, suited her learning style well. Yuko commented that this combination would meet the needs of "two different types of learners" and that the sequential organization of the rhyming activities (i.e., Parts 1 to 4) from simple to complex, "made it easier for me to categorize it." With respect to the length of the video clips, Yuko felt that the short demonstration video clips were more useful in helping her to learn each rhyming strategy/activity (compared to the full-length videos of each rhyming activity) because of the one-to-one correspondence between each instructional step and its corresponding short video clip.

Tony shared his perspective, as a software developer, about the format of the online module by email and during the final interview. He explained that on a daily basis, his task was to design software for his clients that captivated the targeted audience. He emailed this feedback:

Reading the material (on the website) was good enough for me. I didn't need the videos, but Yuko liked the videos, probably because she is a social media person and can absorb a lot of info quickly thru video, and I speed read/skim and can understand a concept pretty quickly that way. So, it's good you have both learning styles.

During our final interview, Tony also added the following feedback:

Helpful was you explaining it, the website is not very helpful outside of the content. You should add an interactive widget to the website, so it's like you being in the living room with the parent like you were with us, to force parents to learn if they don't watch or read.

Tony stated that face-to-face instruction in their home was the most effective means for teaching him about the content/strategies. His learning preference aligns with the adult learning principle which states that learning is most effective when it is situated in the context where the learner will apply the new skill (Knowles et al, 2015). His strategy for digital/online learning was to consume information within as short a time as possible. After the parent education session, he preferred to “skim” the written narrative text in the module and opted to skip the video clips. We viewed a few of the demonstration video clips together during the session. Tony’s perspective was that the 30 to 60 second clips were too long given the targeted audience, namely the parents of preschool CHL today. He stated that these parents likely fall within the “gaming” generation, who, in his estimation, prefer to consume information in a matter of a few seconds. During our interview and subsequent member check discussions, he further explained his idea of incorporating “interactive widgets” into the module. A widget could be accessible by clicking on

the that option. Users would then see a person or animated character or hear just a voice that verbally explains the content just as I did in their living room, in a matter of “seconds.”

According to Yuko, a disadvantage of Tony’s approach (i.e., skimming the narrative text and skipping the demonstration videos) was that one might miss critical details about how to implement the rhyming strategies/activity. Tony’s approach aimed to get at the gestalt of the rhyming content. In contrast, Yuko’s approach entailed a thorough reading for details in addition to viewing the demonstration videos. During the first few days of introducing rhyming, Bella did not fully grasp the concept and according to Yuko, she seemed to “guess” whether a pair of words rhymed or not. When Bella was incorrect, Yuko reported that Tony responded with, “No, that’s not it,” which discouraged Bella. Yuko offered advice from the module- provide positive reinforcement for the child’s effort regardless of whether their answer was right or wrong and to keep the activity fun. Tony modified his response, and eventually Bella grasped the concept of rhyming words. Ultimately, Tony’s and Yuko’s varied approaches to learning from the online module provided them with comprehensive information that facilitated Bella’s learning.

Tony and Yuko also shared their experience with the advice to use nonsense words when thinking of words that rhyme with a given word. Tony stated, “Knowing that the word doesn't have to be a real word is vital information.” The silliness of pretend words kept Bella engaged and facilitated her learning. Interestingly, Yuko stated that it was beneficial that Tony assumed the role of teaching rhyming to Bella because for her culturally, making things up was frowned upon. Yuko shared that based on her cultural upbringing, “Pretend words, you shouldn’t use the pretend words.” Thus, although she stated that she herself had difficulty making up with nonsense words that rhymed, this helped Bella grasp the concept of rhyming and made learning fun.



Finally, Tony recommended incorporating an interactive *hook* on the home page to “suck them (parents) in” from the outset. For example, he proposed using a pop-up box that asks parents outright to click on a rhyming pair of words within a given set. This *hook* would serve as a type of introduction to the content on the home page.

### ***Cross Case Analysis***

After conducting individual analyses of each case, I completed the next level of analysis, the cross-case analysis. In this step, I analyzed the data for unified descriptions and themes that represented the data across the cases and sought to arrive at a general explanation that fit the cases collectively. However, I noted areas in which a case was unique from the others. For simplicity, I will sometimes use the word “family” when referring to an individual parent/set of parents from an individual case/family. I describe my findings in the sections that follow.

**Parents’ Collective Perspectives about Early Literacy Development and Hearing (RQ1).** Parent(s) from each case, whereby an individual family represents a single case, were asked “What skills come to mind when you hear the term *early literacy*?” Two families (four out of the five parents) associated the term *early literacy* with the broad notion of “starting early,” as one father stated. This topic elicited memories about their experiences during the stage of receiving EI services. They associated early literacy with their child’s language (and speech) development and the overall process of supporting this development through strategies learned while participating in the EI program. These two families tended to use the terms “starting early” and “EI” synonymously with early literacy. They relayed their *experiences* as a means communicating their understanding of *early literacy*. One mom articulated her sentiments about the concept of early literacy in this way: “We’ve just been doing it really early. I think early literacy started really early for us.” She then shared about how they attempted to support their

child's language development from the earliest stages, post-hearing loss diagnosis. Relatedly, one father equated early literacy with EI services, and stated his answer as a question, "Early literacy . . . . Like EI, yeah?" Another father also expressed uncertainty, but later decisively stated that early literacy means giving one's child access to information, specifically to spoken language.

On the other hand, one mother answered decisively using definitional terms. She stated that early literacy refers to one's ability to identify letters and sounds, also known as AK, which is indeed one aspect of early literacy that strongly predicts conventional reading skills. She also clearly comprehended the basic connection between hearing and reading/writing and stated that if a child has difficulty hearing speech sounds, s/he will encounter difficulty grasping letter-to-sound correspondences and, down the road, reading and writing. The other two families held the general belief that hearing is essential for developing oral language, which in turn builds a foundation for later reading and writing. However, their understanding was only partial, and they had difficulty articulating this basic connection between hearing and learning to read.

### **Parent's Perspectives and Experiences with Their Child's Early Literacy**

**Development (RQ2).** When discussing their perspectives and experiences with their child's early literacy development, all three sets of parents shared experiences which suggested the psychosocial impact that hearing loss had on each family. My inquiry into their child's literacy development triggered parents' memories of past and/or current feelings of uncertainty and despair. At least initially, parents shared the concern that their child would struggle to achieve language/literacy skills like their typical peers. Shedding a few tears, one mother stated she felt sadness over the future possibility that her child with hearing loss would be teased by her peers if she needed extra help in school. Similarly, the other two families worried that their child would

be teased for having hearing loss and wearing hearing devices. One set of parents also expressed concerns about their child how receptive teachers would be to providing accommodations. Ultimately, however, all families eventually achieved a sense of hopeful watching and waiting, as they observed their child's steady progress with language over time.

All five parents reported that their child's preschool experience led to significant gains in their child's language and early literacy skills development. Each family had welcomed and implemented advice received from EI professionals and later, preschool teachers, and found the advice to be useful and led to developmental gains. Families frequently communicated their shared perspective that their child's language and literacy development had greatly benefitted from strong parent-professional partnerships.

Through initial interviews and observations in the home, I captured families' sentiments as they engaged their child in language and literacy activities from day to day. These activities were at the forefront of parents' minds. Families were intentional about implementing certain language and literacy activities on a daily basis with their CHL, and often during targeted times of the day (e.g. shared reading at bedtime, conversations during car rides to/from school). Shared reading times, in particular, appeared to be a highly structured family experience. However, for other literacy activities (e.g., writing, drawing), families varied in how much structure and explicit instruction they utilized. While Bella's parents were highly structured and used explicit instruction during most literacy activities, the two other families, both of which had multiple children, were more relaxed and used a naturalistic approach with certain literacy areas such as AK and writing/drawing. Yet, each family encountered challenges when seeking to implementing various literacy activities or teach new concepts to their child; how each family navigated these challenges was unique. Positive and nurturing parent-child relationships were

apparent in each participant family as I observed them engaging in literacy-related activities. Since Cade disliked reading, his parents gently instituted behavioral expectations for shared reading time and utilized incentives when needed. Since Kaila appeared stressed when learning new concepts, her mother Asia kept learning fun by mixing in humor and engaging the whole family. Asia noted that Kaila's learning benefitted from participating in literacy activities such as participating in language and literacy games with the entire family. Bella's parents approached the challenges of teaching Bella new concepts through goal-setting and repetition. Each family navigated through unique challenges to support their child's language and literacy growth. Positive and nurturing parent-child relationships were apparent in each participant family as I observed them engaging in literacy-related activities.

**Families' Routine Early Literacy Activities (RQ3).** Two families defined early literacy as being synonymous with starting early or participating in EI. More specifically, they viewed early literacy as providing their CHL with access to spoken language and the process of stimulating their child's spoken language development as early as possible. Families' daily repertoire of literacy activities matched their conceptualization of early literacy.

All three families engaged daily in an array of literacy-related activities. However, families prioritized and daily implemented activities focused on language stimulation or "language activities"(as one family stated), which included back-and-forth conversational exchanges and shared reading. The families also devoted time daily to singing/music, and in one case, role-playing. Each of these primary literacy-related activities were heavily language-based. Therefore, it was apparent that all three families by and large, were *language-focused* in their approach to building a foundation for their child's literacy. Each day, families primarily focused

on activities that centered around developing their child's listening and spoken language skills, with the intent of preparing their child for developing conventional literacy skills.

To a lesser degree, families also incorporated activities that were *code-focused*. These activities included those which build a child's print knowledge, specifically AK and PA. As the term *code-focused* suggests, these activities help to develop one's understanding of smaller linguistic units such as speech sounds, alphabet letters, and sound-symbol association, which have a direct impact on early decoding skills. A unique case was Bella, whose mother comprehensively incorporated both language-focused and code-focused instruction by implementing a Japanese language curriculum daily to teach beginning writing and sound-symbol awareness in Japanese (hiragana).

***Oral Language Activities and Shared Reading.*** All of the families described their strategies for stimulating their child's spoken language development, which they learned from early interventionists and their child's preschool teachers. Families collectively viewed activities of daily living (e.g., playtime, making a smoothie together, car rides) as "language activities," opportunities to help build their child's oral language skills. They aimed to have "regular" conversations, as described by one father, with their CHL, instead of conversations that were contrived and therapy-like. They were responsive to their child's conversational attempts and initiatives. Importantly, parents aimed to have as many conversations as possible with their child throughout the day, having learned through EI that the amount of "talking" that their child hears impacts language and literacy development. Interestingly, one family described their child as so conversive that they needed to take talking breaks at times.

Families also shared specific strategies that they implemented regularly. One family stated that they "narrate life" or "announce," meaning that they described what s/he is thinking

and doing in a situation. They aimed not only to build language skills but also help fill in auditory gaps of information that their child may not otherwise be privy to overhearing. With regard to the child who initially had difficulty answering basic questions (e.g., “Are you hungry?”), her mom found that by utilizing strategies for linguistic expansion, recommended by her daughter’s preschool teacher, her daughter’s utterances became longer and more complex over time. In summary, with literacy development as an overarching goal, parents tended to focus their efforts on developing their child’s oral language skills. They had internalized and executed strategies learned from EI professionals and teachers about stimulating spoken language development at home. Importantly, they shared that these strategies led to improvements in their child’s oral language skills.

*Shared reading* was also one of two literacy activities that families prioritized. Each family read daily to their CHL. Through EI professionals, families learned the importance of reading to their child as early as possible; one parent recalled starting to read aloud to their child when she was five months old. Across the cases, there were several features that were common among families’ reading time and parent reading behaviors. Parents implemented an array of strategies within their dialogue that kept their child engaged, some of which are evidence-based. The most notable feature of families’ shared reading time was parents’ dialogic approach. The relevant dialogue between parent and child was a hallmark of their times of shared reading. Parents did not solely adhere to reading the story line. They paused to respond to their child’s relevant questions and comments. They commented or asked their child questions about story details or pictures, drew connections to the child’s daily life, and discussed key vocabulary words.

On the surface, reading a book to a child may seem like a straightforward task. However, a striking quality across all families' shared reading time was the amount of effort that parents exerted to complete the daily task with intent to make it language-enriching. All families were fully aware of their child's hearing limitations and continuously monitored their child's listening comprehension. They provided listening accommodations when needed. Each family also encountered unique challenges when reading to their CHL/children. For Bella's parents, who were raising her to learn English and Japanese, the challenge included the considerable amount of time required daily to read books in each language, in addition to other literacy-related activities (e.g., Japanese language curriculum). Bella enjoyed acting out/role-playing characters in the stories read to her, yet admittedly, role-playing sometimes became taxing for her parents, according to her father. For the family whose son, Cade, did not enjoy reading, they learned to navigate his waning attention by establishing clear guidelines during story time. For Kaila and her family with three siblings and who lived in a multi-generational household, one-on-one book reading with a parent was not feasible. Shared reading needed to be done for all siblings, of different ages, simultaneously. Her mother reported that Kaila benefitted from peer (i.e., her siblings) learning from older siblings who were good literacy models. Although shared reading clearly required considerable effort, families were committed to reading daily and worked hard to sustain shared reading as a daily non-negotiable.

*Singing and listening to music* was another language-based activity that all three families incorporated into their literacy repertoire. Because Cade enjoyed singing songs at home, which he had learned for school performances, singing and listening to music was a periodic occurrence in their family's home. However, Kaila's and Bella's families spent time daily singing and listening to music. For Kaila's family, singing silly children's songs together was a regular

family activity for bonding, having fun, and to “be silly.” Bella devoted a substantial amount of time daily to listening to and memorizing lyrics for Disney music so she could perform for her family. Singing provided a captivating avenue for stimulating children’s language development, and often, for introducing new vocabulary. Relatedly, Bella also devoted much of her play time at home role-playing. Children typically engage in role-playing between the ages of 3 to 5 years. The impact of role-play on a child is far-reaching and influences the following areas of development but is not limited to language and communication, cognitive, imaginative thinking, pragmatics, and social skills (American Speech-Language Hearing Association, 2013).

***Print Knowledge.*** The three children varied largely in their levels of attainment in writing and drawing skills and AK. Two of the children, Cade and Kaila, attended special education preschool classrooms for CHL, both of which utilized the auditory/oral communication mode. Their schools’ language arts curriculum was standards-based and included specific pre-kindergarten language and literacy objectives.

Cade’s parents were pleased with his developing writing and drawing skills and attribute this to Mrs. K.’s instruction. Cade could write his name and several other alphabet letters. Kaila had only been in her special education preschool classroom for 3 months prior to participating in this study. Within that timeframe, she had just begun to receive formal instruction in various early literacy skills and had not yet had opportunity to learn how to write alphabet letters or her name. Writing and drawing were not activities that Cade’s and Kaila’s parents incorporated into their daily routine in a structured manner. Yet, they assumed a vital role in this parent-teacher partnership by supporting the teachers’ primary instruction, having writing and drawing materials readily available in the home and encouraging these activities. In addition, I observed Cade’s father modeling how to draw an object upon Cade’s request and offering praise for



Cade's writing and drawing efforts. All of these parent and home factors were critical supports for their child's developing writing skills (Riley-Ayers, 2013; Neuman et al., 2008).

With respect to AK, both Cade and Kaila were in the process of developing their knowledge of letters and their corresponding sounds. Having had a full year of preschool instruction, Cade was able to recognize all the alphabet letters and knew some of their corresponding sounds. Kaila had just recently been introduced to alphabet letter recognition and the concept of letter-sound correspondence. These families did *not* regularly incorporate activities devoted to letter recognition nor letter-sound correspondences into their daily routines. However, both families were well-acquainted with what their child was learning in school with regard to AK, and likely both families viewed their role as that of supporting the teachers' primary instruction.

Bella and her parents were an atypical case and, in the words of her father, were "off the charts." This is especially true with respect to teaching their daughter about letter/symbol recognition, letter/symbol-sound correspondence, and early writing skills simultaneously in both Japanese and in English. Bella's parents also were atypical in that they provided direct instruction of these code-focused skills.

***Phonological Awareness.*** All three families were unfamiliar with the significance of PA to a child's later reading skills; they did not know that the ability to hear, think about, and manipulate (play meaningfully) with the sounds of language is an important building block for later literacy. Within the developmental sequence of PA skills, rhyming is the simplest and most familiar to parents. Many stories that are written for preschoolers, nursery rhymes, and children's music contain rhyming words. Across all three cases, as parents mentioned their family's selection of children's books, I noticed that each family mentioned at least one book that they

had read to their child, which included rhyming words. In so doing, families had provided a general exposure to rhyming, but the amount of exposure varied among families. Cade's family did not have favorite books that they read routinely. Instead, they read books that Cade brought home frequently from his preschool's library. However, his parents mentioned one Dr. Seuss book, Go, Dogs! Go!, which contained rhyming words. Kaila's mother shared about their family's collection of favorite children's books that they routinely read together. They frequently listened to and sang children's music together, including fingerplay songs such as "Daddy Finger" and "The Wheels on the Bus." These songs and the family's favorite books contained rhyming words throughout. Bella's mom shared that Bella enjoyed listening to stories (in English and in Japanese) that have "rhythm." It is possible that these stories with rhythm contained rhyming words. Bella also daily immerses herself in Disney music, which provide an inundation with rhyming words.

Interestingly, although families did not intentionally incorporate PA activities into their daily routines, two families exposed their child regularly to rhyming words through books and music. Only one parent, Kaila's mother, mentioned that one parent-child summer activity (recommended by Kaila's teacher), was to come up with rhyming words. However, the suggested activity did not include instruction on how to teach rhyming to her child. Across the three families, parents had not previously learned about the importance of playing with the sounds of language (PA) and were unaware of its contribution to a child's later literacy.

**Summary.** In summary, all three families articulated an array of literacy-related activities that were part of their family's routine. The activities that families devoted the most time to focused on building their child's listening and oral language skills through daily conversations, shared reading, singing/music, and role-playing. To a lesser degree, they incorporated activities

that were code-focused, such as writing, drawing, and letters/symbols and their sounds; they seemed to view their role as supportive of the primary instruction from the child's teacher. However, Bella's family, was an exception in that her parents provided explicit instruction in beginning writing skills and AK skills. With respect to PA activities, families were unaware of the positive impact of listening to and playing with speech sounds on literacy development. However, each family unknowingly provided varying degrees of exposure to rhyming (PA) in their literacy routines.

**Parental Perspectives and Experiences after Parent Education (RQ4).** Each of the three families shared their sentiments about the parent education information provided through the face-to-face session and the online module. Parents reported that the information on PA/rhyming was particularly useful. They had not previously learned about PA and that development of a young child's PA skills can positively impact his/her future reading outcomes. Furthermore, parents were surprised to learn that a familiar activity, specifically rhyming, was one skill that helps prepare their CHL for learning to read. Bella's father summarized parents' shared sentiment by stating, "The information was amazing, knowing that we should be teaching rhyming was a huge surprise."

***Children's Learning Experiences With Rhyming.*** Through email correspondence with each family within one week after parent education/session 3, parents reported on their child's progress with rhyming. During session 3, after initial introducing the concept of rhyming through an activity, each of the children had difficulty grasping the concept. In parents' follow up email during the week after session 3, they each noted that with repeated opportunities to instruct their child about rhyming and with repeated rhyming practice, their child made noticeable improvements in his/her grasp of the concept. During a final group rhyming activity during

session 4, I observed that two of three children indeed had improved in their understanding of rhyming, based on the accuracy of their responses. Kaila, the youngest participant, struggled more with rhyming than Cade and Bella initially. Yet, during session 4, I observed that she had progressed in her understanding and was able to accurately identify more rhyming words/objects within a closed set when compared to her performance in session 3. In addition, the home video of sent via by Cade's mother, illustrated his developing proficiency with *identifying rhyming pairs of words*. Although Bella was not present during the final session, her parents recounted that she had progressed to attempting to *producing pairs of rhyming words* spontaneously in throughout the day and had begun asking, "Do they rhyme?" In summary, it appeared that through the process of parent education, with use of the online module, in addition to opportunities for parents and children to practice rhyming at home, all of the children improved their rhyming skills.

***Outcomes Associated with the Online Module.*** Across all three families, parents stated that the online module itself was useful since it introduced a variety of rhyming activities to try. Two families said the module gave them a starting point, and thereafter, they used their creativity to "tweak" the activities to suit their child's/family's needs and engagement. Cade's father stated that the module gave them another area of literacy to work on, "rather than just sticking to that one thing" (i.e., their regular literacy routine activities). After viewing the module, Cade's mother took Cade to the library specifically to borrow books with rhyming words. By profession, Cade's mother was a part-time teacher; the module gave her the inspiration to devise novel rhyming activities that would appeal to Cade. Overall, families expressed the broad sentiment that the module gave them more ideas/tools to help their child beyond their typical routine activities and sparked parents' creativity.

***Learner Preferences and the Online Module.*** All five parents felt comfortable learning the information about PA/rhyming in an online format. Each shared regarding how the module suited, and in some respect, did not suit their learning styles. Four of the five parents stated that the module's combination of written narrative text and corresponding demonstration videos was an effective way for them to learn the rhyming strategy/activities. Furthermore, they stated that the video demonstrations were an especially powerful visual illustration of both how to teach rhyming (i.e., the strategy) and the rhyming activities. One mother stated that it would be difficult for parents to have to imagine *how* to teach their child about rhyming without the videos. In addition, one mother stated that having the "Watch for" tips, placed just above each video clip, was effective in helping her hone in on specific instructional points to look for. Two of the five parents (mothers) articulated that they reviewed the website in its entirety. Both mothers reviewed the module content from the beginning, starting from the home page; they read the instructional content and watched the videos for Parts 1 through 4 sequentially. Both mothers commented that the sequential arrangement of Parts 1 through 4, from simple to more advanced rhyming activities, facilitated their learning. For instance, one mother stated that this presentation of content helped her to "categorize the levels" (i.e., complexity of the rhyming activity) of the various rhyming activities. This helped her to cognitively arrange the content to facilitate her learning about how to teach rhyming. Another mother has children of various ages, and thus, having the content and activities presented in increasing levels of difficulty helped her find activities that suited the age range of her children, not just her CHL.

Most parents preferred the convenience of the digital format over having handouts of instructional content. During parent education/session 3, each family had at least one laptop or personal device on which they accessed the module. Thus, the online format was accessible and

convenient for all families. Kaila's mother alluded to having easy access to the website on her phone while her children napped. Although she viewed the website from beginning to end, she had frequent starts and stops. As time permitted, she could easily pick up from where she had previously stopped and thus appreciated that the digital format.

From both fathers, there also were recommendations to add two distinct features into the module to suit their personal (and potentially other parents') learning styles. Cade's father stated that he was comfortable with the online delivery and that he found the combination of instructional written narrative text and demonstration videos to be effective. Yet, having a paper handout, with the same content, to simultaneously review was his learning "comfort zone." He also liked the option to review handout notes at a later time. This was akin to the EI model that his family was accustomed to. The two other families, however, were opposed to paper handouts, and cited the waste of paper and the possibility of handouts getting or destroyed.

Bella's father stated however, that the videos "were not helpful," given his preferred learning style. Her father was a software developer and had an intriguing perspective on how to deliver the content online. He stated that the most useful aspect of the parent education experience was face-to-face instruction on PA and rhyming, how to teach it to their child, and the guided practice that occurred during session 3 in their home. With regard to the online module, Tony stated that he preferred to just "skim" the written material and in this way, he could quickly obtain the gist for the instructional points. After viewing a few video clips, each of which were 30 to 60 seconds, he reportedly decided they were too long for his preference and elected to forego the remaining demonstration videos. His rationale was that parents of today's preschoolers are of the "gaming" generation and likely preferred short videos of no more than "a few seconds." He recommended that the website include multiple "interactive widgets" that

would essentially include the segmented components of instructional content on rhyming that I shared with them during our face-to-face sessions. Parents could then click on each of the widgets and hear (or read) parent instructional information spanning over just a few seconds.

In general, parents reported the benefit of learning from both face-to-face sessions and the online module. The information shared through parent education expanded family's literacy repertoire and each family reported enjoyment together while implementing the rhyming activities. Parents expressed delight with gaining new literacy tools and were inspired to come up with novel rhyming activities. The variety of methods utilized in the delivery of parent education seemed to account for parents' varied learner preferences. Yet, parents also recommended additional features to enhance future parents' learning experiences. Encouragingly, one mother reported a favorable overall learning experience, but her one recommendation would be "to continue," and in the next iteration of the parent education/module, to add other early literacy strategies (i.e., beyond rhyming) for parents to help their child.

## **Chapter 5: Discussion**

Although there are individual differences, childhood hearing loss poses a threat to children's ability to achieve typical milestones in language development, and in turn, reading acquisition is negatively impacted. Audiologists' typical role is to provide diagnostic evaluation and treatment of hearing loss through fitting of hearing devices with the goal of providing maximal access to spoken language. Yet, in this study, I posited that audiologists can expand their role as part of the literacy team (English, 2014; English et al., 2012; Wiley & English, 2010), through parent education. This study was an initial investigation on this topic.

In this qualitative multiple case study, there were two main purposes. The first purpose was to investigate the phenomenon of parents of young CHL and their child's early literacy development. Specifically, I examined parents' knowledge base, parents' perspectives and experiences, and families' routine literacy activities. The second purpose was to develop and deliver a parent education module on hearing loss and early literacy to participant parents of preschool CHL. Parent education consisted of face-to-face instruction in the home setting and use of the newly developed online parent education module. Principles of adult learning theory undergirded the development and implementation of the parent education component (Knowles et al. 2015). To promote parents' learning in a collaborative manner, I utilized parent coaching as a conceptual framework (Rush & Shelden, 2005). Parent coaching is grounded in principles of adult learning and has been used in early childhood/intervention settings. I examined parents' perspectives and experiences following parent education and opportunities to practice. The parent coaching framework in addition to adult learning theory provided a useful lens for understanding parents' perspectives, experiences, and feedback.



Universally, parents are committed to their children's growth and development. The participant parents in the current study each expressed their motivation to support their child's literacy development. In fact, each family shared at the outset of the study that the main reason they consented to participate was to gain new knowledge and skills on how to further support their child's early literacy development. Participant parents were motivated and acted on the new information and skills they had learned during parent education. During activities that posed some challenges for a given participant child, parents also were skillful at facilitating their child's engagement and understanding. On a related note, in each of the participant families, the positive relationship(s) between parent(s) and their child was evident as they engaged in literacy activities. For example, when Cade's attention began to wane during shared reading, his father engaged Cade in dialogue about interesting story elements. Kaila's mother and aunt periodically utilized humor and lightheartedness when Kaila seemed stressed when engaging in a literacy activity, which seemed to facilitate Kaila's willingness to continue the activity. These lighthearted moments seemed to provide just the right amount of encouragement for Kaila to be willing to try the language/literacy activity. Also, Asia shared that bringing Daddy's playfulness into the rhyming games eased any pressure Kaila felt about learning a new concept. This family's characteristic lightheartedness was a strength that created a nurturing atmosphere to ease any pressure Kaila felt when faced with learning challenging new concepts. Bella's parents reportedly allow Bella to take "the lead" often during language and literacy activities. During a letter- and number- writing activity in which her father provided direct instruction to Bella, Bella appeared eager to receive his instruction. In each of these families, the positive, nurturing relationships that were evident between parent(s)/adult family member and child appeared to be a bridge that facilitated their child's language and literacy learning.

It is essential to acknowledge that each of these families were highly successful in terms of the level of support they provided for their child's language and literacy growth. It is also important to acknowledge that among the general population of families of CHL, not every family will provide the high degree of support to their child as the parents in this study did. In the clinical application section, I will discuss this issue of working with families who may not be as motivated or successful as the participant families.

In this chapter, I discuss the findings of the research questions and relevant themes that emerged. I also draw upon relevant early literacy, audiology, and parent education/adult learning literature. I then propose ideas for incorporating parent education on early literacy into the audiology clinic and other settings that serve young CHL and their families. This chapter concludes with discussion of the study's limitations and recommendations for future research.

### **Addressing the Need for Parent Education**

A major finding from this study was the need for parents of CHL to increase their knowledge base about early literacy skills and parent facilitative strategies. The existing literature is replete with evidence that young children benefit from parent instruction in the home, in both typically developing children (Levin & Aram, 2012; NICHD, 2010; Yeung & Suskind, 2020) and in young CHL (Cruz, et al., 2013; DesJardin et al., 2014; DesJardin & Ambrose, 2010). A goal of this study was to provide parent education concerning the connection between early literacy and hearing in addition to teaching parents about rhyming, a speech sound-based (phonological) skill, that promotes reading readiness.

To work more effectively with parents, I utilized a collaborative parent education model and more specifically, parent coaching, which aims to build parents' capacity to promote their child's development (Ingersoll & Dvortscak, 2006; Rush & Shelden, 2005, 2020). Parent coaching

incorporates principles of adult learning theories, which includes the preliminary step of determining parents' explicit knowledge base before introducing new content, since it is difficult for learners to integrate new information if they are unclear about what they already know. Soliciting parents' perspectives also affirms their expertise regarding their child and is an essential feature of the coaching process (DesJardin & Ambrose, 2010; Rush & Shelden, 2005, 2020). Initial identification of parents' knowledge base about early literacy and the connection to hearing was a vital first step in this study. Through research question 1, I examined parents' knowledge base.

### ***Parents' Prior Early Literacy Knowledge***

Prior to receiving parent education in session 3, as a group, parents possessed only a partial understanding of the term *early literacy*. Parents had learned how to promote development of their child's speech, hearing, oral language, and communication from EI professionals and preschool teachers. The most salient lessons parents reported to have learned through participation in EI were (a) that the amount of spoken language (e.g., talking) that a child is exposed to has direct impact upon their child's language development, and (b) how to infuse oral language stimulation techniques into their daily family routines. They provided descriptions of the concept of early literacy by sharing their experiences with providing language stimulation through inundating their child with auditory exposure to spoken language (i.e., talking). Their conceptualization of early literacy was partial; in essence, they viewed oral language skills as a gateway to literacy. Parents unilaterally associated *early literacy* with *oral language* stimulation, which paralleled the most salient lessons they reported learning during EI. Paulson and Moats (2010) discussed an early literacy model which characterizes early literacy as being comprised of these three interrelated components: *oral language*, *print awareness*, and *PA*. Parents'

descriptions of *early literacy* bring to mind the familiar parable of a group of blind men who, never having seen an elephant before, attempt to describe it after feeling only one part of the elephant's body. Each man's description of the elephant is only partially true. Similarly, parents tended to describe the concept of early literacy according to the knowledge acquired during EI. The gestalt of their understanding was that early literacy is tied to oral language skills, which indeed is one facet of early literacy, however, they lacked knowledge of the other facets of early literacy, in particular, print awareness, and PA.

One mother, however, defined early literacy as “the letters and their sounds,” which indicated her emphasis on alphabetics, meaning alphabet letters and letter-sound correspondence. Again, her response reflected a partial understanding of the domain of early literacy. Her response aligned, in part, with findings of the NELP that AK was one of six early literacy skills that has a moderate to strong predictive relationship with conventional literacy skills of decoding and reading comprehension (NICHD, 2010). The other five early literacy skills included PA, rapid automatic naming of letters or digits, rapid automatic naming of objects or colors, writing or writing one's name, and phonological memory.

Regarding the connection between early literacy and hearing/hearing loss, parents' general consensus was that hearing has a “profound impact” on learning to read, as one father stated. Only one parent was able to articulate the basic connection- that if a child cannot hear individual speech sounds, s/he will have difficulty learning to read and write. Parents must understand the critical importance of their child being able to hear and pay attention to all the sounds of spoken language; this is the essence of PA. As mentioned in the literature review, having accurate acoustical representations of the speech sounds of language is crucial. The acoustical quality of the speech sounds that a child hears will directly affect what is imprinted

into the child's developing brain, whether accurate or inaccurate. If a child hears speech sounds that are flawed in some way (e.g., inconsistent use of hearing devices, improperly fit hearing devices), his/her phonological representations of those speech sound units will be distorted. The distorted phonological representations will then get mapped onto symbols (letter-sound association) and will negatively impact letter-sound associations/phonics development and down the road, decoding and spelling. Parents must understand, too, that the amount of this auditory exposure to conversational speech must be *relentless* for the child's brain to be sufficiently primed to learn to read (Wiley & English, 2010).

### ***Families' Literacy-Related Routines***

Addressing research question 3, I discovered that families incorporated a range of literacy-related activities into their daily routines, but the activities at the forefront of parents' minds were those that emphasized oral language skills and what I refer to as *language-focused* literacy activities. These included shared reading, having conversations with their CHL, announcing/"narrating life," music/singing, and in one case (Bella's family), role-playing. Every parent in this study aimed to consistently implement the oral language stimulation techniques they had learned during EI as they read books jointly, went about their daily activities, and targeted specific times of the day to converse with their child (e.g., car rides to school, mealtime). Parents displayed responsiveness to their child's verbal utterances; there is evidence which demonstrates that growth in children's language occurs when adults are responsive to a child's utterances and engage them in extended back-and-forth exchanges (Justice et al., 2018; Turnbull et al., 2009). Parents utilized additional evidence-based language stimulation techniques that are known to facilitate language and literacy development. These included expansions of their child's verbal utterances and use of a dialogic approach and word

elaborations during shared reading (Pentimonti et al., 2013; Riley-Ayers, 2013). It was evident that parents related to shared reading as another avenue to build their child's oral language and communication skills, and they exhibited skillfulness in their ability to sustain their child's engagement throughout. Most importantly, the fact that all families made it a priority to read daily to their child suggests that they understood the significance of reading to their child- that reading is one of the most important things parents can do to build their child's foundation for reading (National Institute for Literacy, 2006).

In all participant families, singing was an activity that their child individually, or they as a family, reportedly engaged in routinely. Singing is a socially engaging and developmentally appropriate way for young children to learn information (Colker, 2014). Torppa et al. (2014, 2018) demonstrated that regular music exposure during childhood stimulates language development in young CHL. More specifically, this was the case for young CHL who sang songs and/or whose parents sang to them regularly or engaged in other musical activities in the context of their family's daily routine. In addition, these researchers found that for CHL, the early start of musical activities, such as children and/or parents singing at home or musical activities involving an instrument, positively influences the child's speech perception skills in noise, a skill that can be problematic to a CHL in the typical noisy classroom setting. Torppa and Huotilainen (2019) even suggest that singing to one's young child may even be more advantageous for the child's speech perception development than musical instrument playing. They noted the importance of singing and/or playing the same songs or lines of a song over and over again. Their rationale is that in addition to building auditory memory skills, a known area of deficit among CHL, repeatedly listening to and/or singing the same lyrics strengthens the precision of the child's stored phonological model of the words over time. This was the case with Bella;

listening to the same music and lyrics songs from Disney movies repetitively, was a naturalistic auditory learning opportunity that likely strengthened her auditory/oral language skills. In addition, Bella's regular engagement in one of her favorite pastimes, role-playing, provided additional opportunities for stimulating her language growth. Children typically engage in role-playing between the ages of 3 to 5 years. The impact of role-play on a child is far-reaching and influences the following areas of development but is not limited to language and communication, cognitive, imaginative thinking, pragmatics, and social skills (American Speech-Language Hearing Association, 2013).

Although there was individual variation among the families, as a group, families spent comparatively less time on literacy activities that involved recognizing letters and their corresponding sounds (AK) and writing alphabet letters/their names. These activities relate to the alphabetic code, and are therefore, *code-focused*. Most parents also were less structured in how they incorporated these daily activities and seemed to view their role as supportive of teachers' classroom instruction in these areas. They shared about the type of code-focused instruction their child received from their teacher and were familiar with their child's progress in letter recognition, letter-sound association, and beginning writing skills. In one case, parents noted that their child also received instruction in drawing as part of their preschool curriculum. Drawing is a significant occurrence during the preschool years; the child understands that his/her markings can be used to carry an intended message (Paulson & Moats, 2010). Parents also showed their support for beginning writing and drawing by ensuring that their child had access to writing/drawing materials. By providing resources and regular opportunities for their child to draw/write, parents extended critical support for these precursor steps to literacy (Riley-Ayers, 2013).

Bella's family was an exceptional case. Her mother implemented a comprehensive Japanese language curriculum. The fruit of her direct, instructional approach on a daily basis was evident through the progress in Bella's Japanese (hiragana) early writing and decoding skills and her increasing fluency in speaking Japanese. As mentioned, her Japanese language skills (e.g., symbol recognition/early sight word reading, knowledge of letter/symbol-sound association, and beginning writing) were more advanced than her skills in English. Bella's father had just recently begun to work with Bella on alphabet letter recognition, knowledge of letter-sound association, and beginning writing/letter formation; he also used a direct teaching approach.

### **Audiologist's Role in Promoting Early Literacy Development**

The American Academy of Audiology (2013) and the American Speech Language Hearing Association (2011) offer clinical practice guidelines for (re)habilitation and amplification in pediatric audiology, yet these do not include a recommendation that audiologists address the topic of literacy development. Since a primary audiological goal is to facilitate individuals' communication through listening, they focus on the ability to hear spoken language as a vital component for achieving literacy success. Audiologists are first responders in the identification of hearing loss (English, 2014) and play an ongoing role throughout childhood to insure optimal auditory access to speech sounds through properly fit amplification/CIs. (Moeller & Tomblin, 2015). A landmark longitudinal conducted study on 317 CHL highlighted the central role that audiologists play in allaying the deleterious effects of hearing loss on language, and thereby, literacy, through early identification of hearing loss and insuring access to sound through appropriately-fit hearing/amplification devices (Moeller & Tomblin, 2015). The study identified factors that offer "protections" against the risk of language delay, which include hearing aid usage beginning in early infancy, consistent and daily use of hearing aids, extended



durations of hearing aid usage over time, and language-stimulating parents'/caregivers' talk (Moeller & Tomblin, 2015).

Although audiologists are not generally trained in reading development, they are experts in hearing/listening, and their work is intimately connected to the language and literacy development of the children they serve. Therefore, audiologists are well-positioned to provide parent education on the connection between hearing and literacy, speech sound-based strategies that promote early literacy, and general information on early literacy.

The following sections describe issues that audiologists should consider when providing parent education on this topic and are based on this study's findings and existing literature. Table 1 provides a summary of the recommendations that I elaborate on in the sections that follow.

Parents learn soon after their child's hearing loss is identified that their child is at risk for speech and language delays. Along with this news, is the realization that his/her child is at risk for

Table 1

*Recommendations for Audiologists: Reading-Readiness for Young Children with Hearing Loss*

<u>Topic</u>	<u>Key Points</u>
Identify reading-readiness as goal.	With speech-language development, discuss early literacy. If reading-readiness is a family goal, put it in writing in clinic notes. (If child is between birth to 3 years, include early literacy goal in IFSP.)
Identify and collaborate on family's literacy routines.	Inquire about family's language/literacy routine. Consider using an inventory (e.g., "Home Literacy Environment", DesJardin & Ambrose, 2011). Affirm families' literacy routines.
Explain <i>early literacy</i> in parent-friendly language.	Explain that early literacy includes <i>oral language</i> , playing with speech sound in words ( <i>phonological awareness</i> ), and regular exposure to printed letters and symbols ( <i>print awareness</i> ). Give examples. Use handout "Audiologist's Guide to Early Literacy Conversations."

Explain the 2 types of listening-to-spoken-language skills.	Both skills are foundational to reading: listening to connected speech/people talking <i>and</i> listening to/playing with speech sounds (phonological awareness).
Provide personal adjustment support as needed.	Discussing literacy may elicit parents' concerns Actively and empathically listen to parents.
Consider using online parent education resources on facilitating early literacy development.	<a href="https://wileyla.wixsite.com/heartoread">https://wileyla.wixsite.com/heartoread</a> Determine appropriateness of implementing as a stand alone or combined with face-to-face coaching.

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encountering difficulty with reading acquisition, also because of the hearing loss. Historically, a primary goal listed on families' Individual Family Service Plan (IFSP) relate to speech and language development. According to the deaf educator for the State of Hawaii EI program, other typical IFSP goals involve social-emotional connection with family members, auditory, and listening comprehension goals (J. Clark, personal communication, February 8, 2020). On the other hand, reading readiness (i.e., early literacy skills development) prior to entering primary school is not typically nor directly stated as an IFSP objective.

Reading proficiency is a universal desire that parents have for their child (English, 2014). It is a given expectation. However, it is possible that parents do not think to discuss literacy goals in the context of an IFSP meeting and yet, the birth through 5 period is arguably a critical period for developing precursor/early literacy skills. I recommend that audiologists/clinicians juxtapose the topic of literacy development alongside the usual discussions about speech and language development early in the EI stage. If parents' goal indeed is for their child to be prepared for learning to read (i.e., develop early literacy skills) by the time s/he enters primary school, it would be beneficial for EI professionals/clinicians to broach this topic to determine whether parents would like to include this as an IFSP goal so that specific objectives can be delineated in

the IFSP document. If a goal is not made concrete, it is difficult to assume that reading readiness will materialize as the child enters primary school.

Audiologists also can play a role in supporting families in the area of early literacy. Although literacy has not traditionally been a topic addressed by audiologists, this is a concrete goal that will resonate with parents and is likely easier to conceptualize than the ubiquitous and vague goal of their child developing “normal speech and language” (English, 2014). Once the goal of being ready to learn to read/reading readiness is verbalized, audiologists can support families by educating them about early literacy strategies that facilitate reading readiness and in particular, ones that are tied to hearing. In a survey, parents of CHL stated retrospectively that although the initial diagnosis of their child’s hearing loss was difficult, learning about specific tools to help their child achieve specific developmental goals was invaluable, akin to a roadmap to help them get to their destination (Alexander Graham Bell Association, 2013; English, 2014). The bottom line is that helping to cast a vision for a concrete end goal (reading readiness) is a necessary start to equipping families with tools to achieve their goal.

***Clinical Application: Identify and Collaborate on Families’ Literacy Routines***

To support their pediatric client’s early literacy development, audiologists should seek to learn about families’ language and literacy routines. As mentioned, literacy is not a typical audiology clinic discussion topic, and audiologists are not trained reading specialists. Therefore, to support this conversation, audiologists can use a tool such as the “Home Literacy Environment Inventory” developed by DesJardin, et al. (2011) to inquire about families’ current literacy repertoire and parents’ direct teaching strategies. Although the study included mothers’ literacy interactions with children, the list applies to any caregiver-child literacy interactions. In particular, the category, “direct parent teaching activities” (e.g., doing rhyming and language

games together, pointing out logos/symbols in the environment, encouraging questions and dialogue during shared reading) correlate with children's literacy outcomes on measures such as PA, letter and word identification, passage comprehension, and basic reading (DesJardin et al., 2011). Therefore, audiologists can confidently recommend these specific types of activities since there is an evidence base to support them. To sustain a collaborative environment, the parent coaching paradigm recommends that professionals foster a give-and-take atmosphere that helps parents self-examine and self-reflect (Rush & Shelden, 2005, 2020). Using the list as a springboard for discussion, the audiologist can dialogue with parents to identify their current parent literacy teaching practices and activities. As is recommended by the coaching model, through joint planning, the audiologist and parent can brainstorm to identify one or a few activities that families can feasibly incorporate into their daily routine (Rush & Shelden, 2005, 2020). In keeping with best practices in parent coaching, audiologists should also affirm the positive practices that parents are already doing with their child.

**Top-Down and Bottom-Up Processes.** During the 1970s through 1980s, the field of education witnessed the debate about whether skilled readers utilize a top-down or bottom-up approach to reading. To summarize, the bottom-up theory of reading emphasized the importance of the basic phonic skills and word decoding as fundamental to comprehending written text. The top-down theory recognized the world knowledge and experience that the reader brings to the task of comprehending what s/he reads (Abraham, 2000). There was eventual recognition that skilled readers likely utilize an interactive approach, which utilizes a combination of both top-down and bottom-up processes.

Although top-down and bottom up theories relate to conventional literacy, I conjecture that one may broadly apply these theories to early literacy skills. The parents in this study

demonstrated their commitment to act on information that would promote their child's development which they learned through EI professionals. They viewed their emphasis on oral language stimulation activities as essential for their child's developing language and literacy.

According to the parent coaching framework, prior to sharing new information with parents, it is important for audiologists to first affirm families' current literacy practices (DesJardin & Ambrose, 2010; Rush & Shelden, 2005, 2020). In this study, I adhered to this recommendation and affirmed parents'/families' current literacy practices, which were predominantly oral language activities. To strengthen parents' resolve to continue to provide oral language stimulation, audiologists can share compelling information about the fundamental connection between hearing and reading- that consistent, daily auditory exposure to spoken language lays a foundation for both language and literacy development. Hearing loss creates a need for the CHL to play auditory catch-up, relative to their typical peers who begin to hear on the day they are born. Day 1 for a CHL- his/her "hearing age"- begins when the child is fit with hearing devices and have consistent, maximal access to spoken language. Children require an inundation with spoken language to prepare their brains to learn to read, on the order of 20, 000 hours of listening (Dehaene, 2009). Audiologists can share a parent-friendly website for the "Thirty Million Words" (TMC) project and their studies' findings (TMW Center for Early Learning and Public Health, 2020), which is one reference in the parent education online module. The salient message of the TMC project is for parents to understand that the brain requires a deluge of spoken language input during the first few years of life in order for a child to achieve his/her maximum language and learning potential.

When parents afford their child with opportunities to listen to and engage in conversations over time, even from infancy, this increases the child's world knowledge and experience, also

known as their *schema*. During the pre-reading stages of a child's life, one might think of oral language stimulation strategies as akin to a top-down early literacy strategy. The development of strong oral language skills facilitates building of a robust schema that a child can later bring to the task of reading comprehension. For children who communicate through listening and spoken language, all learning in the child's future is reliant on the sufficiency of this auditory-language input. Audiologists lend critical support to this end by regularly monitor hearing devices to ensure maximal auditory access to speech and routine discussions with families about consistent device use. Audiologists can also share the “3 Ts” parent-child language suggestions from the TMC project, which include *talk more*, *tune in* (be responsive to all of child's communicative attempts), and *take turns* (TMW Center for Early Learning and Public Health, 2020).

To summarize, the evidence from early literacy research suggests that parents' oral language stimulation techniques are indeed essential to developing literacy; however, a focus on oral language skills alone is insufficient to comprehensively support their child's precursor literacy skills (NICHD, 2000, 2010). Parents need additional literacy education and tools.

### ***Clinical Application: Expand Parents' Early Literacy Knowledge and Tools***

As mentioned previously, the “Home Literacy Environment Inventory” (DesJardin et al., 2011) is one example of a list of literacy activities that audiologists can use as a springboard to discuss families' routine literacy activities. The findings of the current study revealed that in general, parents and children engaged in code-focused activities less frequently than language-focused activities. Although there were exceptions, by and large, parents'/families' support for code-focused literacy activities was in the form of general exposure (e.g., listened to children's music with rhyming words, child observed older sibling sounding out words in print) and positive verbal reinforcement rather than a direct teaching of skills. The findings also revealed

that parents lacked understanding that the domain of early literacy includes various component skills, specifically, *oral language*, *print awareness*, and *PA* and benefitted from parent education on this topic. In my study, once parents' need and desire to learn new skills was identified, coaching included sharing new information about early literacy to build parents' help giving capacity (Rush & Shelden, 2005, 2020).

**Explain the Domain of Early Literacy.** Audiologists lack formal training in reading instruction. However, with a few resources developed for audiologists and through collaboration with related professionals when needed, audiologists are well-positioned to convey basic yet vital information to parents regarding early literacy relative to childhood hearing loss. Audiologists can help parents achieve a basic understanding of the various components of early literacy and the range of skills necessary for reading readiness. This will equip parents to provide more comprehensive early literacy support, rather than emphasizing development of one set of early literacy skills alone (i.e., oral language). To aid this discussion about the component skills of early literacy, audiologists can utilize a handout that my colleagues and I developed for parent education, entitled "The Audiologist's Guide to Early Literacy Conversations" (Wiley et al., 2016), which is a resource listed in the online parent education module. In addition, the article "Play it by (H)ear" (Wiley & English, 2010) may be a useful resource for audiologists as it contains basic information on hearing loss and literacy and ideas on how audiologists can support CHL and their families in their literacy journey. Finally, audiologists can direct families to the parent education online module developed for this study. The module provides instruction on a phonological early literacy strategy (rhyming). It also contains parent-friendly information on the basics of early literacy and hearing/hearing loss, demonstration videos on rhyming activities, and a resource page with links to various early literacy websites.

All parents in this study shared that they/their CHL benefitted greatly from the information learned through EI professionals in the past and from their child's current preschool teacher/deaf educator. Therefore, audiologists should not hesitate, with parental consent, to collaborate with their child's speech-language pathologists and teachers and/or refer families to these professionals for additional guidance on appropriate early literacy activities, specific to the child's needs. Also, the audiologist can lend support to parents by helping them to brainstorm ideas about one (or a few) literacy activities that the parent can feasibly begin to implement. Together, the audiologist and parent can also discuss ideas for how to incorporate them in a naturalistic way. Again, the Home Literacy Environment Inventory may provide some guidance.

**Explain the Two Types of Listening-to-Spoken Language Skills as a Precursor to Reading.** There are many aspects of reading development and instruction that are beyond the scope of audiologists' practice. However, audiologists should be assured that discussing auditory-based skills that are precursors to reading is a logical extension of their expertise in hearing. It will be helpful for audiologists to educate parents about the difference between the two types of listening-to-spoken language skills and the role that each plays in creating a foundation for literacy. The analogy of building the foundation for a house may be useful. The concrete slab is one component to the foundation of a home in construction. Gravel is another critical component to the home's foundation. The concrete slab and the gravel, together, are vital to securing a firm foundation for the future home. Likewise, a child listening to connected speech (i.e., people talking) develops his/her oral language skills, which is a fundamental, top-down component to future literacy skills. Language provides a means for a child to store his/her base knowledge about the world and his/her experiences. The child will draw upon this store to help with future reading comprehension tasks. Phonological/speech sound units are like the



gravel since they are smaller, individual units of spoken language. Learning to listen to and manipulate these sounds in meaningful ways (PA) is a bottom-up process that also will facilitate the child's later decoding/spelling skills. Both types of listening-to-spoken language skills (auditory/oral language skills and PA) are critical to building a firm foundation for future reading and writing.

The findings of the current study clearly showed that parents lacked knowledge about the concept of PA- the ability to listen to, think about, and play with the sounds of spoken language sounds (e.g., words, syllables, individual phonemes) and its impact on literacy outcomes. In this study, educating parents about the contribution of PA skills on reading outcomes was a vital component of parent education. According to Tough (1979), as cited in Knowles et al. (2015), adult learners will be vested in learning new information when facilitators substantiate the “need to know.” Indeed, every parent in this study appeared captivated when learning about the significance of rhyming/PA skills and demonstrated a high level of motivation to learn how to teach rhyming to their child.

Previously, all of the parents had unknowingly provided a general exposure to PA through rhyming books and children's music with rhyming words. However, as is the case with children who have language-based/learning disorders, DesJardin et al. (2011) determined that CHL benefit from direct teaching of literacy skills, such as code-focused instruction in rhyming/PA, rather than a mere exposure (e.g., reading rhyming books) to literacy-related concepts. When explaining the idea of “listening to and playing with sounds,” audiologists can begin with the familiar example of rhyming, the entry level PA skill. The online module provides explanations in parent-friendly language and video demonstrations. Audiologists can explain to parents that when listening for rhyming words, the brain tunes into the “sameness” of the ending portions of

two or more words (Paulson & Moats, 2010). After a child becomes proficient with rhyming, the next PA skill to introduce is alliteration, a slightly more advanced PA skill. With alliteration, the listener's brain then switches to listening for the "sameness" in the beginning portions of words (e.g., tongue twisters). It will be helpful for parents to understand that an important facet of preparing to learn to read is for the child's brain to become increasingly apt at detecting patterns in the words s/he hears. This is why it is important to not only listen to conversational speech, but to learn to listen to and play meaningfully with the smaller units of speech. With more opportunities to practice, children, typically of school age, can advance to PA tasks of greater complexity with smaller units of sound, *phonemes*. One example of a higher level PA task is phoneme deletion (e.g., "The word is *cat*. What word do you have if you take out the first sound?" Answer: *at*). Parents should be aware that PA skills are equally important building blocks to develop on the road to literacy and that phonemic awareness skills, in particular, have a positive causal effect on beginning literacy skills such as decoding and spelling (NICHD, 2000).

***Clinical Application: Provide Personal Adjustment Support***

Clinical practice guidelines state that audiologists should provide counseling that includes two facets. First, through informational counseling, audiologists are to provide hearing-related information to clients and their families. Second, they are to provide personal adjustment support to address clients' and families' psychosocial needs and provide emotional support related to hearing loss (ASHA, 2008; Clark & English, 2019). Importantly, it behooves audiologists to discern between stages of acute grief and longstanding depressive or other mental health symptoms that require referral to a mental health professional.

In this study, the need to go beyond sharing information to address parents' psychosocial needs was evident. In Chapter 2, I discussed the move toward "family-centered care" in audiology, which emphasizes the significant role of family members and is responsive to their collective preferences, values, and needs (Institute of Medicine, 2001; Singh et al., 2016). Undergirding family-centered care are principles adopted from "person-centered therapy," espoused by Carl Rogers (1961). To summarize Rogers' theory, when bestowed with trust from an empathetic listener in an atmosphere of unconditional positive regard, a person can unburden him/herself and is then positioned for "growth" (Rogers, 1961). In my interactions with each of the three families, I sought to uphold these principles. One way that parents hoped to "grow" through participation in this study was to gain new knowledge of how to provide support for their child's literacy development. I had hoped to first establish trust with families to facilitate authentic sharing and to help them grow in their knowledge base on early literacy. However, I had not anticipated that parents *had a need* to share aspects of their journey related to their CHL.

During the initial interview, each of the families shared the difficult aspects of their journey relative to their child's hearing loss. I had not anticipated the degree to which the topic of literacy would trigger an emotional response from parents nor their need to share about issues related to their child's hearing loss that had caused fear, worry, or feelings of devastation. Some of these events included adjusting to the identification of hearing loss, former parental guilt (i.e., What did I do to cause the hearing loss?), worries about their child being bullied for having a disability, and worries about whether their child would learn to read like their typical peers. As cited by Clark and English (2004), Uyehara-Isono (2001) recommended that clinicians, must "allow time for parents to tell their story and avoid interjecting 'corrections' about their perceptions. There is a need to chronicle the events that led them to this moment (Uyehara-Isono,

2001), and it should not be rushed or interrupted” (p. 87). Indeed, all three families had a need to chronicle, talk about, their families’ journey relative to their child’s hearing loss. This required an atmosphere free of judgement and correction about their experiences and perceptions.

Given an educational topic such as literacy, why would this arouse an emotional response from parents? Research question 2 delves into parents’ perspectives and experiences, including their beliefs and feelings, with regard to their child’s literacy development. Universally, parents understand that literacy is a linchpin for their child’s future success. At the same time, the parents of this study were fully aware that hearing loss placed their child at risk for possible future reading problems. Families expressed satisfaction with their child’s progress in early literacy skills during their beginnings in preschool; however, they still worried about their child struggling to read, or struggling in school in general because of the hearing loss. Parents of preschool CHL are in a transition period. These three families no longer received EI services, which centered around their families’ unique preferences, values, strengths, and needs. They no longer had the same regular opportunities to discuss their concerns with a trusted EI professionals, who often in our local culture, became like extended family. Simultaneously, they faced the new reality of school-based standards and expectations for their CHL.

The findings of the current study suggest that during this preschool/transition-to-school period, families have a need for continued psychosocial support to discuss their worries and concerns. Vaughan (1998), as cited by Clark and English (2019), advocated for *therapeutic listening*, a process referred to as the *talking cure*. Therapeutic listening occurs when a clinician provides a patient or family member the opportunity to talk through a problem or concern that s/he may not fully understand. Vaughan noted that when individuals are troubled or worried, there is neuroscientific evidence that their thought patterns are unfocussed and disorganized.

However, when given opportunities to share, the very process of talking brings clarity and requires minimal input from the audiologist. Applying this principle to the findings of the current study, parents indeed demonstrated the need to talk about their concerns, worries, or events from the past that related to their child's hearing loss or language and literacy development.

Importantly, affording parents with opportunities to talk about their concerns related to their child's hearing loss in an empathetic atmosphere may bring about a clarity of thought that is essential for parents' growth, including their capacity to support their child's literacy development.

On a related note, it is important to recognize that each family comes with unique preferences, values, and beliefs. There will be families that hesitate to implement facilitative language and literacy strategies with their child. Family-centered care requires that we be sensitive to families' choice to implement, or to not implement, the knowledge and strategies that we endeavor to share and that we treat families with unconditional positive regard whatever their persuasion or decision may be.

### **Parent Education Module**

In the previous section, I discussed recommendations for *what to explain* to parents of CHL about hearing and early literacy development. Specifically, I gave recommendations for audiologists when educating parents on hearing/hearing loss, the connection to literacy development, and speech sound-based (phonological) skills that promote reading readiness. In this section, I share findings related to research question 4- parents' perspectives and experiences after having received parent education. I also discuss lessons learned regarding parents' learning preferences as it relates to the online module. The lessons learned provide useful guidance for future parent education efforts. I then share ideas for how audiologists can incorporate use of the

online module I developed for this study (or another online parent education resource) with parents and CHL that they serve within the audiology clinic and other settings that serve CHL and their families. It is important to recognize that each clinic setting is unique. Therefore, these recommendations are set forth simply as ideas to stimulate thought for individualizing parent education on hearing and early literacy development. These recommendations are based on the findings of this study and adult learning theory.

### ***Parents' Learning Preferences***

In this study, parent education components aimed to increase parents' knowledge base in addition to providing instruction to build parents' skills. An important outcome of this study was the feedback from parents regarding their learning experience through face-to-face interaction and the online module. The findings of this study align with those of Phaneuf and McIntyre (2011). Parents did not benefit uniformly across instructional delivery features. The most salient conclusion based on parents' feedback is that parent education must include multiple ways of conveying instructional content to accommodate for various learning styles.

**Face-to-Face Learning.** Parents' identified several features, in the delivery of instructional content, that were conducive to their learning. Parents' preferred delivery mode was through face-to-face interactions, which they had become accustomed to during participation in the EI program. EI home visits typically require "active learning" which incorporates information-giving, opportunities to observe modelling of the new skill, and opportunities to practice the new skill(s). An active learning approach has been found to be a more effective learning format than information-giving alone (Kaminski et al., 2008). Indeed, parents found face-to-face learning, particularly in their home setting, to be ideal. For adults, learning is more effective when the content is situated in the context where the new learning must be applied

(Rush & Shelden, 2020). As one parent stated, the “most helpful” teaching component was “you (me) being in our living room” to explain and demonstrate the new strategy. Today, face-to-face instruction through home visits remains the “gold standard” and predominant method in Hawaii’s EI program (J. Clark, personal communication, March 3, 2020). Audiology appointments, however, are not home-based, but rather occur in clinic settings. Therefore, I describe other options for parent education in a section that follows.

**Internet-based Learning.** In keeping with the premise that there is no one-size-fits-all format, it behooves clinicians to consider the use of the internet and technology for delivering parent education. A current exemplary model is the collection of pediatric audiology videos on a dedicated YouTube channel, “HearOn Channel” (Family-Centred Early Intervention Lab, n.d.) The intent of each 5 to 8 minute video in the series is to provide key information to parents of CHL on various topics related to hearing loss and audiologic services in a topic-focused, parent-friendly manner. An advantage of such internet-based approaches is their inherent flexibility to accommodate for the needs of busy families with young children in this era where information on demand is an expected norm.

**Pilot Study Online Module.** While the HearOn Channel video series delivers general informational content, parent education often also necessitates the teaching of specific, actionable steps in a parent strategy to stimulate an area of child development. This was the case for a pilot study I conducted in 2015. I developed an online instructional module for parents of young CHL and professionals (e.g., speech-language pathologists, deaf educators, audiologists) on how to teach young CHL to respond when s/he hears one of the six Ling sounds, which are a sampling of the frequencies found in conversational speech and included the following sounds: *ah*, *oo*, *ee*, *s*, *sh*, and *m*. I examined the practicality and effectiveness of the module and the mode

of delivery (online). The module, entitled “Auditory Detection of the Ling 6 Sounds,” included short video clips (under one minute each) and written instructional steps. Through an online survey, participants judged the online mode of delivery to be an effective and practical means of learning a facilitative strategy, since individuals could review the module repeatedly and at their convenience. A few professionals commented in the survey, “We have needed something like this for a long time.” Since the conclusion of the pilot study in 2015, the Hawaii EI program continues to utilize the module as a teaching resource for professionals and parents of every child identified with hearing loss, birth to three years of age (J. Clark, personal communication, February 28, 2020). It is noteworthy that since then, Hawaii’s EI program, specifically the Early Hearing Detection and Intervention program, is in the exploratory phase of producing other online parent resources related to childhood deafness.

***Dissertation Study Online Module.*** The results of the pilot study inspired the production of the online module in this dissertation study. Parents’ responses provided insight on the features of this module that helped them learn a new facilitative strategy of teaching their child about rhyming. Their commentary also offered firsthand advice on adult learner preferences to inform future parent education efforts.

Parents’ consensus was that the demonstration videos were a powerful visual means for teaching the parent strategy. Importantly, I learned that videos which teach a specific strategy should be brief, to account for the time constraints that parents face. I chose to produce videos that were between 30 to 60 seconds in length. Recognition of parental time constraints also necessitates that video clips in an online module be able to stand alone as an instructional tool; that is, parents should be able to view key instructional steps of the targeted strategy/skill by viewing the demonstration videos alone. However, parents also found it helpful to have brief



written narrative text with each demonstration video to alert them on what to watch for. This alerting feature cues parents beforehand on the video's key instructional steps or take-home points. In my online module, this alerting feature was incorporated through the "Watch for this" bullet points for each video; one mother stated that them, she "would have been lost." Therefore, this alerting feature facilitates parents learning by helping them to cognitively organize the instructional content. Interestingly, as an alternative to demonstration videos, one parent who was a software developer suggested incorporating widgets to explain bits of content in 5 to 10 seconds each. He reasoned that 30 to 60 second videos may still be too lengthy for some parents today who are part of the gaming generation and want information delivered quickly.

All five parents in this study expressed that they learned information through reading. All three mothers watched each video and read through the entire written text to get more detailed step-by-step information. One mother commented that when she and her husband were first attempting to teach rhyming to their daughter, her husband had skimmed through the narrative text in the module. In so doing, he had missed the vital step of praising the child's effort during rhyming activities rather than the accuracy of her response. This impeded their daughter's grasp of rhyming and left her discouraged. Once this mother shared the key "missing" step in the strategy, her husband went back to incorporate this step, which improved their daughter's engagement and learning. Brief video illustrations were a quick and effective means for learning, yet written narrative text comprehensively conveyed vital details that might otherwise have been missed. Based on parents' responses, development of online resources to teach parent facilitative strategies should include various avenues of conveying information, such as through videos and written text. When considering various learner preferences, some parents may prefer to listen to rather than read information. A text-to-speech option/closed captioning should be considered for

learners who prefer listening to narration. Some instructional content in the module included a text-to-speech option. However, none had used this option.

Finally, a major benefit of online resources is the convenience that it affords to parents. Parents generally have access to the internet and appropriate hardware, and can therefore view it repeatedly if desired and/or at their convenience. One mother, in particular, stated that she reviewed the module piecemeal throughout the day, often when her young children were napping. Being able to use her personal device also made review of the module feasible, given her family's hectic schedule. Most parents stated that they preferred reviewing the information online since handouts could get lost or destroyed. However, one parent stated that although he benefitted from the online module, his learning preference was to also have handouts of the instructional material so that the professional could review them, step by step, while he took notes. He recommended that handouts of content from an online resource always be offered as an option to parents.

In summary, parents' perspectives and experiences on receiving instruction in person and via an online module provided useful insights to guide future parent education efforts. This study revealed that parents' unique learning styles substantiated the need to include multiple means to convey instructional content. While they still preferred to have face-to-face instruction, they found online learning to be effective. Adult learners have a need for self-direction in their learning experience and online resources afford parents the opportunity to engage with instructional content in ways that comfortably suit their learning style (Knowles et al., 2015).

### ***Use of the Online Module in the Audiology Clinic***

In previous sections, I proposed *what to explain* (content) about hearing and early literacy development to parents. In this section, I discuss additional tips for implementing parent

education and utilizing an online resource, such as the online module developed for the current study, in the audiology clinic.

Audiologists face the challenge of time constraints when attempting to provide informational and personal adjustment counseling into already jam-packed clinic schedules. Addressing hearing/literacy with parents may seem unfeasible since comprehensive audiologic evaluation and hearing device evaluations and fittings consume the bulk of the allotted appointment time. In addition, health insurance plans provide coverage primarily for diagnostic services and hearing aid evaluation and fittings; plan benefits may or may not provide coverage for audiologic (re)habilitation services, such as parent education. The prospect of discussing another topic (hearing loss/literacy) may feel like an additional pressure for audiologists. However, audiologists can conceptualize parent education on literacy as an ongoing dialogue with parents of young CHL that will extend *over time*. Audiologists who identify a child's hearing loss and/or fit hearing device(s) provide audiologic care for the child and family for many years to come. During the first few years of life, the CHL will be seen in the audiology clinic for routine hearing and device checks several times in a year. As mentioned previously, it will be helpful to broach the subject of hearing loss and literacy as soon after the identification of hearing loss as possible, along with the usual discussion about hearing loss and speech/language development. Once parents and audiologists identify reading readiness as a goal, the audiologist can collaborate with the family over the next few years to support their child's early literacy development, including teaching parents about sound-based (phonological) early literacy skills.

When providing any type of informational counseling/parent education, one cannot overstate the importance of actively listening to parents' input. Active listening is especially important when instructing parents on early literacy skills, like PA skills, that comprise a

spectrum of skills from simple to more complex. For example, before a parent can explicitly teach their child about rhyming words, the child must have had sufficient listening-to-spoken language (i.e., listening to conversations) experience to serve as a foundation for developing a metacognitive listening skill of rhyming (an beginning-level PA skill), in which the child must attend to and listen for similar word endings. Actively listening to parents will help with determining which particular PA skills, or other early literacy skills, are developmentally appropriate at any given time. Other related professionals such as early interventionists or preschool teachers may also be working with the child and family. One option is for audiologists to collaborate with these professionals, with parental consent. The benefit of a multi-disciplinary approach to literacy support is that each professional will bring unique expertise regarding the child's abilities so that literacy activities and support can be individualized.

### ***Online Modules as One Component of Audiologic Rehabilitation***

Given the constraints of time, an online resource is a time efficient and cost effective parent education format. Audiologists can utilize the online module developed for this study as a telehealth component to audiologic rehabilitation with a CHL and his/her family during face-to-face clinic appointments. One way to utilize the module in a time-efficient manner is to have a laptop or tablet available for families and to encourage them to view the module independently, while waiting to be seen by the audiologist. Families could begin viewing the “Welcome” video on the website's homepage as a matter of introduction to hearing, reading, and rhyming. Another option is to utilize downtimes during the clinic appointment, such as while the family waits as the audiologist performs an electroacoustic check of the hearing devices and/or performs hearing device repair/maintenance. Audiologists can encourage families to begin to scroll through the written narrative content and/or view the demonstration videos. After hearing and hearing device

evaluations are completed, audiologists typically provide audiologic counseling, which includes parent education, as part of audiologic rehabilitation. During this time, audiologists can utilize the online module to provide instruction to families regarding the connection between hearing/listening, reading, and rhyming skills. There may not be sufficient time in the appointment for audiologists to model how to teach rhyming to parents by doing a rhyming activity face-to-face with families; thus, the demonstration video clips would be a time efficient alternative. Parents should also be offered handouts that contain corresponding content from the module's written narrative text.

Audiologists can also share the website address with families so that parents can then access the module asynchronously, outside the clinic appointment/setting and practice the rhyming strategy and activities at their convenience. This study demonstrated that families benefitted from independent practice and directing their own learning experiences at home. Opportunities for self-directed learning is an important facet of effective adult learning experiences (Knowles et al., 2015). In addition, a pre-arranged "coaching" email gave parents an opportunity to self-reflect on their progress with teaching rhyming to their CHL. Self-reflection is an important step in parents being able to problem-solve independently during real-life application of a new skill (Rush & Shelden, 2005, 2020). Each of families had encountered some challenges when teaching their child about rhyming, but devised effective, creative solutions. Through our email conversation, I also shared a few scaffolds that might facilitate their child's learning about rhyming words. The parents and their CHL also benefitted from independent practice at home, which afforded opportunities for self-direction and self-reflection in the learning process. Audiologists could consider arranging a follow-up "coaching" call to parents within one to two weeks to provide additional coaching support as needed. In addition, when the

child and family return for a future clinic appointment, the audiologist can review information about hearing, early literacy, and rhyming. If desired by the parents, audiologists might also model how to teach/engage the child in a rhyming activity and then give opportunity for parents to also engage their child in a rhyming activity, if parents desire. This would provide an opportunity for parents to receive coaching support face-to-face.

***Use of the Online Module in EI, Early Childhood, and Preschool***

The online module developed for the current study can be used as a parent education resource by EI professionals during home visits with children and their families. During parent training, EI professionals can provide content instruction to parents while utilizing the online module as one resource during face-to-face sessions. The professional can also model the strategy in-person (e.g., the steps to teaching rhyming to one's child) and provide an opportunity for the parent to engage his/her child in a rhyming activity. This observation of the parent's use of the rhyming strategy can be followed up with supportive and constructive feedback during the home visit. The EI professional can also provide the website address for parents' review of the information at their convenience. During the joint planning phase, professionals also could assist parents with brainstorming ideas for naturalistic ways that parents and their child can realistically incorporate rhyming activities into their daily routine. Another option for providing further coaching support and feedback on families' implementation of the rhyming strategy and activities is to offer families the option of video recording the parent/child engaging in rhyming activities during families' daily routine. The professional could view the video clip during an upcoming face-to-face home visit and provide feedback to parents accordingly. Head Start professionals who do home visits to their preschool students and families also can utilize the online module using a similar approach. In addition, preschool special education teachers can

also utilize the online module as one parent resource in their toolkit by reviewing the module contents in-person with parents and providing them with the website address for at home-viewing.

There is an increasing need and demand for telehealth services across the nation and globe. This is the case in audiology and across healthcare fields in general (Ballachanda et al., 2020). Direct services that typically occur face-to-face are increasingly being delivered through synchronous telehealth platforms. Audiologists, speech-language pathologists, and other EI professionals can utilize the online module on rhyming during synchronous telehealth appointments with young CHL and their families by viewing the module online simultaneously through a screen sharing feature. Unlike the Meadan et al. (2016) study, the online module for this dissertation study is not an intervention, but rather a parent resource. Nonetheless, the findings of Meadan et al. (2016) offer encouraging insight; when internet-based resources, such as online modules, are utilized synchronously or asynchronously with/by families, parents can indeed learn to implement the targeted strategies provided that they also receive parent training and coaching throughout the learning process.

**Coaching a Variety of Parents and Families.** In the current study, the participant parents/families were highly successful in terms of the levels of parent engagement, motivation, and degree of support that they provided their CHL. Undoubtedly, in the general population of families of young CHL, there will be parents who will not be able to provide the same degree of parental support for various reasons. Whatever the case, a sense of a shared partnership in which there is mutual respect for the other party's values, beliefs, and preferences must be achieved before parents will act on new information intended to build their capacity to support an area of their child's development.

Clark and English (2019) described the importance of developing a common ground, which is a key aspect of providing person-centered audiologic care and moves beyond just establishing rapport. Developing common ground runs contrary to an expert model in which the professional addresses differences in values, beliefs, and preferences as a problem-solving endeavor. Instead, Clark and English (2019) note that when professionals seek to achieve common ground, the differences are viewed as a facet of the developing parent-professional relationship and requires that the professional foster an atmosphere of unconditional positive regard. This includes active listening to help parents feel comfortable sharing their perspectives; the professional shares his/her perspectives as well. From this sharing emerges common ground, also known as a third space (Barrera et al., 2012). According to Clark and English (2019), developing of this third space in the relationship increases open communication and improves the chances that both parties will mutually agree upon a favorable solution that will benefit the child's developmental outcomes. Forward movement in treatment, including parent education, cannot occur without achieving this type of reciprocal and responsive relationship in which both parties' perspectives are understood and respected.

In the current study, the parents/family members displayed a high level of motivation and engagement to support the developing language and literacy of their CHL. Participant parents' and children's growth in their ability to teach/learn about rhyming words was a result of parents' high level of motivation and engagement in the current study. In families for which there is not the same degree of parental motivation and engagement, it will be necessary to carefully customize parent training and coaching in a measured fashion. Audiologists do not provide home visits, and likely, might utilize the online module as a parent resource. EI professionals, preschool teachers, and speech-language pathologists may elect to use the module as part of their



direct services to families. The provider may need to devise and implement scaffolds during parent education that will meet the unique needs of a given family. The IRIS Center (2020) offers advice for educators on how to improve learning outcomes for struggling learners from kindergarten through 12<sup>th</sup> grade. However, there is application to teaching adult learners (e.g., parents) who may need additional supports to learn new skills and knowledge to promote their child's development. Instructional scaffolds are supports that aid the individual's learning and builds on existing knowledge and skill level when new knowledge/strategies are being introduced (IRIS Center, 2020). One may apply instructional scaffolds when implementing parent education. For example, while many parents already read books to their child, there are others families who may not. For such families, it is not realistic to begin parent education with discussions about the importance of rhyming and key steps to teaching one's child about rhyming. Instead, the professional may need to scaffold the instruction by breaking instructional content into smaller chunks. During the initial steps of coaching, namely joint planning, the professional and parent may jointly come up with an introductory level objective that might include parents reading developmentally appropriate books to their child as part of their daily routine. The provider could recommend a few books which include rhyming words. Once this objective is met, at a later face-to-face session, whether in the family's home or via a telehealth/telepractice appointment, the professional might spend time modeling shared reading of books with rhyming words and also invite the parent to participate. At this stage, the professional would not yet introduce to the parent how to describe rhyming words to their child, but rather, the emphasis would be on parents providing a general exposure to rhyming words through shared reading. An eventual goal would be to provide instruction to the parent on how to teach the concept of rhyming to their child during shared reading.

There is no one-size-fits-all approach to working with families. It behooves professionals who work with families of CHL to be sensitive to their unique skills/knowledge, values, and beliefs about literacy. As a word of caution, professionals should refrain from simply giving out information about early literacy to parents. Instead, an important first step is to establish a third space/common ground in the parent-professional relationship, where there can be open communication with families. Careful coaching must include joint planning to arrive at agreed upon stepwise objectives. By taking a measured approach and being responsive to families' skill levels, needs, and preferences, professionals will then be able to provide needed supports/scaffolds at every step in the training/coaching process to help parents achieve new knowledge/skills (i.e., the teaching of rhyming to their child).

### ***Summary***

In summary, audiologists may face unique challenges with time constraints in a clinic setting when attempting to incorporate parent education on early literacy. Audiologists should consider the following when planning parent education on hearing/early literacy: share information incrementally with families during each routine visit, provide resources that families can review and activities/strategies that they can implement at home, consider using online parent resources, and arrange a follow-up coaching email or phone call with families to provide continued coaching support. With parental consent, consider collaborating with the child's early interventionists (e.g., speech-language pathologist, deaf educator) and teachers for multi-disciplinary literacy support. Professionals may utilize the online module as a telehealth/telepractice component for parent education during direct services in the clinic or center, during home visits, synchronously during direct services with families via videoconferencing, and/or to provide families with access to the online module to be used

asynchronously by families while at home. Finally, it is essential that providers establish common ground with families to provide parent education that is respectful and responsive to family's needs, values, and preferences.

### **Limitations**

This multiple case study included a sample size of three cases. Furthermore, referrals for recruitment of participant families came through a colleague, the Hawaii EI deaf educator who has worked with each CHL, birth through age three years and their families. I shared the inclusion criteria with my colleague, which did not necessitate that a family be deemed as highly successful/high performing. Yet, my colleague noted that she contacted five prospective families whom she had observed to be highly dedicated during their participation in the EI program and whom she noted were “hands on.” I made attempt to contact each family, yet only three families responded to recruitment efforts. All three participant families also were articulate, rich informants (Plano Clark & Creswell, 2010). According to Yin (2009), a sampling logic is not applicable in case study research; rather, decisions about the number of cases is discretionary and depends on issues of practicality and on the level of certainty the researcher deems necessary to understand the central phenomenon. Flyvbjerg (2006), as cited by Merriam (2009), state that the history of human and natural science is full of case study examples that have significantly advanced their field of study. In this study, the inherently rich descriptions of each of the three cases provided robust insight into the central phenomenon, namely, families' perspectives, experiences, and routines relative to their CHL and early literacy.

A clear limitation of this study is that because these families were exceptional, there is limited generalizability to typical families in the larger population of families with young CHL. In this dissertation study, all of the parents were successful at learning to how to teach the

concept of rhyming and to engage their child in rhyming activities in a way that suited their child's/family's ability and preferences. Also, each of the children progressed in their understanding of rhyming. These successes emerged from a specific set of circumstances- that each set of parents was highly engaged and highly motivated to begin with. There are many families among the population of young CHL in which parents are not as highly engaged or motivated; therefore, the generalizability of the findings of the current study is limited.

A second limitation is the personal bias that I bring as the researcher and a professional who has worked with individuals with hearing loss and their families. I also have a child with developmental disabilities that impacts his learning. Our three sons, my husband, and I are former participants of the Hawaii's EI program. Having been trained in multi-sensory reading techniques (i.e., Orton Gillingham) and having "tutored" my children using these techniques for two years, I came with a unique lens as I interacted with the families and analyzed the data. I recognized that my level of parent involvement and training in supporting literacy development in my own children was atypical. In order to minimize my biases from infiltrating into the data analysis, I made notes of personal thoughts and feelings prior to and during data collection, through reflexive journaling. During data collection and analysis, I also periodically collaborated on some of the findings and insights with a known expert in family-centered audiologic care. In addition, I conducted member checks when data and specific themes were not clear.

### **Future Directions**

In previous sections, I shared practical steps that audiologists can take for educating parents about the connection between hearing and early literacy development. This study embodies a systematic exploration into an inquiry I began seeking answers over 13 years ago- *How can audiologists help families of young CHL on the road to their child's literacy success?*

This query inspired my pursuit of doctoral studies in Exceptionalities. I have engaged in collaborative efforts with a mentor and colleague who shares a similar vision regarding pediatric audiology practice and literacy. To date, I have devoted a few efforts to help bring education to the audiology profession at large through two conference presentations, an audiology publication, and handouts/tools for use in the audiology clinic. These initial efforts have resonated with the audiology community. My pilot study and this dissertation study represent an advancement toward the vision of incorporating parent education on early literacy into audiologic practice.

In the future, my hope is to be involved in developing a project that would provide parent education and resources on language and literacy to parents of young CHL. Online delivery holds promise as an avenue for delivering parent education in audiology, particularly in view of clinic time constraints. Studies are needed to determine how to effectively utilize this delivery format in ways that will result in meaningful learning experiences for families. Parents present with unique learning styles and preferences in addition to unique personal and family life circumstances. One cannot assume that merely sending families out the clinic door with website information and/or handouts will effect change in parent-implemented early literacy activities at home. Future studies are warranted to examine best practices for delivering online parent education on hearing and early literacy, whether as a standalone or as a comprehensive approach that combines online parent education with clinic-based face-to-face coaching or other coaching support (e.g., via email).

As mentioned, transdisciplinary professionals who work with CHL in the context of EI home visits as well as Head Start and preschool special educators may find the online module as a useful parent resource. Service programs/providers will have to decide how an online parent

education resource, such as the one developed for the current study, can be most effectively utilized in their specific contexts, taking into consideration the families they serve and given the constraints of time and resources. Meadan et al. (2016) concluded that coaching was a critical component to delivering parent education online, whether synchronous or asynchronous.

Coaching in a systematic manner, such as in the model described by Rush and Shelden (2005, 2020), is an essential feature that facilitates parents' learning of new information and successful implementation of new strategies that facilitate their child's language/literacy development.

More research is needed in each of these unique settings (i.e., EI home visits, Head Start, preschool special education program) to determine if an online module is well-suited to the needs of the families within a specific program setting (e.g., EI, Head Start, special education preschool), and if so, the most appropriate delivery format. Each program should conduct a formal or informal needs assessment to determine how to appropriately and feasibly meet parents' educational needs within the population(s) they serve and to determine whether an online parent education resource, whether delivered synchronously, asynchronously, or in a hybrid format, is well-suited to families' and program's needs. Regardless of the parent education delivery format, coaching that is tailored to the needs of an individual family will be a vital component for the learning/growth of parents and their children.

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(Prompts: scribbling, “pretend writing”, drawing, parent modeling, pointing out logos/symbols, playing with letters/alphabet magnets)

7. What kinds of things does your child like to talk about with you/your family? (RQ3)
  
8. Describe some family activities that involve singing and/or playing with words? (RQ3)  
 (Prompts: rhyming words or words with the same beginning sounds in books, nursery rhymes, tongue twisters)
  - a. How do you guide your child in the activity?
  
9. What skills come to mind when you hear the term “early literacy” (or “early literacy development”)? (RQ1)
  
10. Describe the connection between hearing and learning to read and write. (RQ1)
  
11. Describe the impact that hearing loss has on a child’s development of reading and writing? (RQ1)
  
12. What are your goals regarding reading and writing skills for your CHL? (RQ2)

13. What concerns, if any, do you have about your child's literacy skills development? (RQ2)

14. Do you have anything else to share?

## Appendix B

### Observation Checklist for Family Literacy Activities

Category	Behavior/characteristic observed	Y, N, or Not Observed	Additional Notes
<b>Physical Environment (conductive to communication and learning)</b>	Adequate lighting		
	Minimal competing noise and visual distractions		
<b>Materials of the Environment</b>	Materials and toys support literacy (e.g., toys and books for learning the alphabet, pencils/pens/crayons, paper)		
	Sufficient variety of materials and toys to encourage child choice and initiative		
<b>Adult-Child Language Interaction: Parent encourages verbal exchange</b>	Parent asks questions		
	Parent encourages and provides opportunities for child to elaborate, ask questions, initiate, and actively influence verbal exchanges		
	Parent participates with child in language information activities throughout the session (e.g., story-book reading)		
	Parent faces the child while speaking, listens to child's responses, and seeks to minimize auditory/visual distractions		
<b>Vocabulary Building</b>	Parent introduces new words and concepts to child		

	Parent encourages child's use of language through play and activities by asking questions and providing new information as needed.		
<b>Responsive Strategies (Responses to child's queries or requests)</b>	Parent responds supportively/contingently to child's questions and comments		
	Parent verbally encouragement for child to attempt an actual task or behavior (e.g., "Here, try to write your name").		
	Parent acknowledges child's accomplishments or attempts with specific comments (e.g., "I see you drew Mommy's face")		
<b>Use of Print in the Home</b>	Print is used for functional purposes in the home (e.g., reminder notes, daily schedule on a calendar)		
	Parent uses print to label objects personal belongings in the home or personal belongings		
<b>Storybook/ Storytelling Activities</b>	Parent reads to child		
	Parent asks comprehension questions during book reading		
	Parent converses during book reading by making references to details in the story and/or teaching the meaning of new words		

	Parent converses during book reading by relating story details to the child's/ family's life experiences		
<b>Writing Activities (includes drawing, pretend writing, scribbling)</b>	Pencils/crayons/pens and paper are available for child to write		
	Parent models writing or drawing		
	Parent encourages child's attempt at writing/drawing		
	Parent assists the child with writing his/her name or other letters/words		
<b>Phonological Awareness and/or Singing Activities</b>	Parent reads aloud rhyming books or nursery rhymes with child		
	Parent reads aloud books that have strings of words with the same beginning sound (alliteration)		
	Parent and child do word play with rhyming words or calling attention to words/objects that have the same beginning sound		
	Parent and child do word play such as breaking a word into its smaller parts (e.g., clapping out syllables or sounds in a word) or putting the parts of a word together to make a new word (e.g., "I'm thinking of a word that starts with 'hot' and ends with 'dog.' What's the word?")		

	Parent sings children's songs or nursery rhymes with child or plays children's music for the child to listen and sing to (e.g., songs sung by Rafi)		
<b>Technology and educational TV shows or educational games on computer/tablet</b>	Parent provides opportunities for child to watch educational TV programs (e.g., "Word World", "Super Why") or play educational games on websites/apps (e.g., pbskids.org)		
	Parent participates with child and converses about the material viewed on the TV program or educational games.		

*\*This checklist is a modification of the Child/Home Early Language and Literacy Observation (CHELLO) developed by Neuman, Dwyer, & Koh (2007).*

## Appendix C

### Interview Guide #2

*Note: I conducted this interview with each individual family within 2 weeks after the parent education home visit.*

1. What was it like to use the online lesson? (RQ4)
  
  
  
  
  
  
  
  
  
  
2. How did your family reading/writing activities change after learning the strategies from the online lesson? (RQ4)  
(Alternately: How do you think your family reading/writing activities may change in the future after learning the strategies from the online lesson?)
  
  
  
  
  
  
  
  
  
  
3. What were some of the challenges to learning/using the strategies discussed in the lesson? (RQ4)
  
  
  
  
  
  
  
  
  
  
4. How can we improve this learning experience for parents in the future? (RQ4)  
(Prompt: Can be related to the online mode of delivery, guided practice, or other.)

## **Appendix D**

### **“Hear to Read” Website Address**

**<https://wileyla.wixsite.com/heartoread>**