Introduction

Historically, a late talker (LT) or individual with Late Language Emergence (LLE) is a child who has fewer than 50 words and does not combine words by the age of two (Rescorla, 2011). Some studies have found that when a child only has an expressive language delay, 70-80% of them will outgrow their language delay (Ellis & Thal, 2008). Late talkers who have both receptive and expressive language delays will likely have greater risks of poor outcomes (Marchman & Fernald, 2013). Unfortunately, the 20-30% of children who do not outgrow their delays will not catch up to their peers (Dale, Price, Bishop, & Plomin, 2003). Duff, Nation, Plukett, and Bishop (2015) stress the importance of intervening early to give LT's a better chance of not having the worst outcomes. Despite the evidence of how persistent language difficulties impact the academic and social performance of these children as they grow older (Sharma, Purdy & Kelly, 2009), many late talkers may not qualify for Part C early intervention services or Part B preschool services (Danaher: 2007). There is evidence to support treatments for late talkers (Buschmann, 2009, 2015; Girolametto, Pearce, & Weitzman, 1996). Girolametto (1997) found that late talkers who received focused stimulation training improved their expressive vocabulary. Buschmann, Jooss, Rupp, Feldhusen, Pietz, & Philippi, (2009) found that 75% of late talkers who received the intervention, no longer met criteria for late talking at the end of their study.

Milieu teaching is believed to support both the acquisition and generalization of communication and language skills in young children (Kaiser & Hester, 1994). Milieu

teaching includes the following four major teaching procedures: model, mand-model, time delay and incidental teaching. Milieu teaching has been incorporated in many parent-implemented programs (Kaiser & Roberts 2013) and has been found to improve parent and child outcomes (Warren, Yoder, Gazdag, Uam, & Jones, 1993).

According to Warren & Yoder (1996), the use of parent-based interventions optimizes the child's communication development. A popular parent based intervention service delivery model is parent coaching. Parent coaching is widely used in early intervention programs. It is an adult teaching strategy that empowers parents and gives them hands-on tools to use in interventions with their children (Rush & Shelden, 2008). Coaching has been defined as an adult learning strategy in which the coach promotes the learner's (coachee's) ability to reflect on his or her actions as a means to determine the effectiveness of an action or practice and develop a plan for refinement and use of the action in immediate and future situations (Rush & Shelden, 2011, p. 8) This coaching model includes (a) joint planning, (b) observation, (c) action, (d) reflection, and (e) feedback (Rush & Shelden, 2011). Much of the research of the coaching model as described by Rush and Shelden (2011) has been directed to children with developmental disabilities, early intervention programs, and early childhood education settings. One concern with the current research regarding coaching is the lack of definitiveness of the term across the field of speech-language pathology. The term "coaching" has often been loosely defined (Brown & Woods, 2015; Roberts & Kaiser, 2011) and has meant an interaction that occurred after initial parent training was completed (Kaiser & Roberts, 2013; Landry et al., 2012; Roberts & Kaiser, 2012);

these could include group instruction (Manolson, 1992); strategies of conversation and information sharing (Salisbury & Copeland, 2013) and providing feedback to a parent or individual (Kaiser & Roberts, 2013; Landry et al., 2012; Roberts & Kaiser, 2012). Because of the variability in the use of the term "coaching," the coaching model described by Rush & Shelden (2011) will be referred to as “SPC” to differentiate it from other coaching philosophies and routines. Because coaching is widely used in early intervention programs, another concern with coaching is that late talkers may not always qualify for early

intervention services, due to their weakness in one area of development. If parent coaching of milieu teaching strategies is useful for late talkers, early intervention programs may need to reassess their eligibility requirements.

With regards to late talkers, general language stimulation, focused language stimulation and milieu teaching are the most common treatment approaches (Deveney & Hagaman, 2016). There is ample evidence that supports naturalistic teaching, such as milieu teaching (Kaiser & Hester, 1994). Currently, there is limited information about the effectiveness of incorporating milieu teaching strategies with SPC as a service delivery model for late talkers who do not have intellectual delays or disabling conditions. We can only generalize that using SPC to coach parents to use milieu strategies in the natural environment will positively impact the child and parent participants.

It is believed that a parent's perspective about an intervention or treatment model impacts parent and child outcomes. There is current research that has determined that parents have expressed feelings of satisfaction after having participated in coaching models for their children's language interventions (Romski, Sevcik, Adamson, Smith, Cheslock & Bakeman, 2011). Roberts and Kaiser (2011) had found that parent responsiveness was affected when parents learned to implement interventions. To answer questions about how parents feel about SPC and implementing milieu teaching strategies, parental attitudes about SPC will be assessed at the end of this study.

This research will explore how the use of SPC with parents impacts child and family

outcomes (Roberts & Kaiser, 2012; Kaiser & Roberts, 2013). This research is being conducted to determine if using an SPC model to teach parents to implement milieu teaching strategies in the natural environments of late talking preschoolers leads to a) parent use of the strategy b) positive parent perceptions and c) results in target word use in late talkers. The results from this study will provide evidence to support the growing body of evidence for coaching parents and caregiver-implemented

interventions. It will give therapists and families more evidence to make decisions about appropriate services and service delivery models for late talkers

Literature Review

According to the American Speech-Language Hearing Association (ASHA Practice Portal, n.d), childhood expressive language disorders are prevalent among children. The prevalence of LLE is a concern to parents and professionals. Buschmann

et al., 2008, indicated that the prevalence of language delay was 15% and may be most frequently delayed among two-year-old children. Zubrick, Taylor, Rice, and Slegers, (2007) provided the first population- based estimate of LLE. Zubrick et al. (2007) examined language emergence in a sample of 1,766 children at the age of 24 months. This sample was obtained from an epidemiologically ascertained sample of infants who were participating in an ongoing study of health outcomes. Zubrick et al. (2007) used a language index that was based on the six-item Communication Scale of the Ages and Stages Questionnaire (ASQ; Bricker & Squires, 1999), a maternal report instrument that assesses early comprehension as well as production abilities. Zubrick et al. (2007) determined that the percentage of LLE children was 13%. This estimate was similar to those reported by others in previous studies (Fenson, Dale, Reznick, Bates, Thal, & Pethick, 1994; Klee et al., 1998; Rescorla & Achenbach, 2002). The estimate of LLE increased to 19% when respondents failed the question that asked whether a child used 2–3-word combinations. This was identical to the estimates from large-scale studies in the United States (Fenson et al., 1994) and the United Kingdom (Roulstone, Loader, Northstone, Beveridge, & the ALSPAC Team, 2002). The incidence of expressive vocabulary delays in individuals who have no known neurological, sensory, or cognitive deficits, is approximately 15-20% of 2-year-olds (Reily et al., 2007; Desmarais et al., 2007).

Early language delays may result in lifelong difficulties with a child's ability to use functional language and have impacts on their social, emotional and academic development (Wetherby & Prizant, 1992). Individuals who work with toddlers who can't effectively communicate their wants and needs understand the tremendous amount of frustration that is felt by the child and family.

What are expressive language disorders?

The specific cause of expressive language disorders can be linked to many factors. According to ASHA (2016) a spoken language disorder can exist as a result of a primary disability (SLI) or can occur along with or secondary to other conditions or disabilities. According to Asha (2016), the causes of SLI are difficult to pinpoint. Many studies suggest correlations with various risk factors such as chronic otitis media, genetic factors, socioeconomic status, difficulties in pregnancy, and oral-motor difficulties (Whitehurst, 1991; Tomblin,1997).

Specific Expressive Language Delay

The term "Specific Expressive Language Delay" (SELD) is used to describe when a child's expressive language abilities are significantly delayed in comparison to their receptive language skills. A child characterized as having SELD usually has a limited expressive vocabulary (less than 50 words) by 24 months of age (Paul, 1996). A child diagnosed with SELD typically has no other developmental problems and has

no known hearing impairment, cognitive disability, autism spectrum disorder or other significant developmental disabilities.

Late Talkers

Late talker is a term used in the literature to describe individuals who have delayed language development. Researchers have used different measures as well as different characteristics as identifying criteria in identifying late talkers (Roos & Weismer, 2010). Rescorla (1989) characterized a late talker as a child who lacked two-word combinations by age two or had an expressive vocabulary with fewer than 50 of the 310 words on the Language Development Survey (LDS; Rescorla, 1989). The Communicative Developmental Inventory (CDI, Fenson et al., 1993, 2007) describes a late talker as a girl who only has 92/680 expressive vocabulary words and 63/680 expressive vocabulary words for boys. Roos and Weismer (2010) state that a late talker is a child who has limited vocabulary with otherwise typical development. Many early intervention programs require that a child has significant delays in two areas of development to qualify for early intervention programs under IDEA (Part C). According to the definition provided by Roos and Weismer (2010), many late talkers might not qualify for early intervention programs due to their otherwise typical development.

Having received speech-language intervention before school age may minimize the level of frustration that the child and family experience. Part C) ofthe Individuals

with Disabilities Education Act (IDEA), which is the Infants and Toddlers with Disabilities Program, was created in 1986 to support the development of infants and toddlers with disabilities. At its inception, the program sought to decrease potential developmental delay, and reduce educational costs by reducing the need for special education services as children with disabilities approached school age. The role of the intervention services in Part C of IDEA (2004) is to provide early intervention (EI) services to infants and toddlers aged birth to three with medical needs or developmental delays. Many children who qualify for EI services have

a significant communication delay or are at risk for having a delay or disorder.

Developmental gains reported from EI researchers have found limited evidence to suggest that early detection of expressive vocabulary difficulties leads to more timely access to speech and language services and fewer children needing specialized intervention by school age (Van Agt et al., 2007; De Koning H et al., 2004). Despite these findings, The National Early Intervention Longitudinal Study (NEILS) reported the following overall outcomes for infants and toddlers who participated in Early Intervention Programs (Part C): participants had increased motor, social, and cognitive functioning; participants improved the acquisition of age-appropriate skills; participants decreased the negative impacts of their disabilities. Data collected by the states from 2009- 2010 showed that 71 - 76% of children who received Part C services made more progress than was projected (Center on the Developing Child at Harvard

University, 2010; Asha, 2008). Improvements were found in the area of social relationships, use of knowledge and skills, and taking action to meet needs.

Based on results from the NEILS study, early intervention programs were doing what they were designed to do, which is identify developmental needs and introduce developmentally appropriate interventions. At this time, we can say that there is evidence to support the benefit of early intervention services, regardless of whether the use of the services decreased the need of specialized intervention by school age. When a child has communication difficulties during their preschool years, it is critical to rule out disorders such as autism or childhood apraxia of speech. Efforts are being made to increase early detection of autism to help improve outcomes for the children who have the disabling condition and their families. Apraxia can often be a difficult diagnosis to make in a toddler due to the exclusionary factors associated with its diagnosis; however, early intervention for individuals who experience signs and symptoms of motor planning difficulties improves the outlook for individuals with CAS.

What Happens When Treatment is not Sought Early for Late Talkers?

It has been determined that the rate of toddlers who have never received intervention for expressive vocabulary difficulties is 40-60% (Nelson et al., 2006). The long-term effects of having language delays have been thoroughly investigated. Children who are late talkers may develop language skills that are within normal range by kindergarten (Weismer, 2007; Paul 2006). Weismer(2007) investigated the

language outcomes of children by age 5 ½, and recruited 40 individuals identified as late talkers by 24 months for his investigation. He compared these individuals to 43 typically developing children. Weismer (2007) found that 3/40 of those late talkers had performance that was one standard deviation below the mean on the Test of Language Development-Preschool, 3rd Edition (TOLD-P3, Newcomer & Hammil, 1997). All the children in Weismer's (2007) study performed within average range on measures of receptive language on the TOLD. Girolametto, Wiigs, Smyth, Weitzman and Pearce (2001) also investigated the language outcomes of children identified as late talkers. In their study 3/21, late talkers scored greater than 1.25 standard deviations below the mean on at least two TOLD-2 (Newcomer & Hammil, 1998) subtests. Less than stellar outcomes were revealed by Girolametto et al. (2001) which indicated that the children identified as late talkers had significantly lower MLU measures on narratives. Similarly, Paul (1996) and Rescorla (2000, 2002) found that late talkers make some improvements in their language, but they continue to have abilities lower than their peers, despite having scores within normal range.

Other evidence of the long-lasting effects of language delay comes from a study of 28 late talkers and 25 comparison children at age 13 (Rescorla, 2005). Results showed that although the late talkers had language that was within average range, they still presented with difficulties with vocabulary and grammar and had significantly lower measures of vocabulary, grammar, verbal memory and reading comprehension.

When you do decide to seek treatment for a language delay, what works?

Intervention for Language disorders can be costly for individuals with language

disorders (Yoder, Kaiser & Alpert, 1991). Because the difficulties that result from speech-language delays and disorders vary based on the impact of the individual, the interventions that are used to treat these conditions vary. Law et al. (2000) have defined three different categorical approaches to intervention: didactic (direct training of linguistic behaviors), naturalistic (teaching the child to respond to the language demands of the environment) and hybrid (a combination of didactic and naturalistic). These specific categories group interventions according to the characteristics and goals of the intervention.

Despite these categories, a therapist may use an eclectic approach and adapt interventions according to the needs or preferences of the client. Carrow-Woolfok (1988) suggests that language teaching methods range from highly structured didactic teaching to naturalistic intervention that is child-oriented. Structured interventions include behavioral didactic procedures such as modeling, stimulus control and reinforcement (Yoder et al., 1991). Less structured approaches include response interaction interventions that focus on social communication development. Approaches that fall in the middle of the continuum between behavioral didactic procedures and interaction interventions are interventions such as milieu or incidental teaching (Yoder et al., 1991). According to Hart (1995), these approaches emphasize functional language use that can be applied to interactions while teaching new forms of language through modeling and utilization of reinforcement procedures. Previous research by Yoder et al. (1991) suggests that lower functioning children benefited more from milieu teaching methods, whereas higher functioning children benefitted from

therapy utilizing the Communication Training Program which is a didactic intervention. Yoder's 1991 study included 40 disabled preschoolers who were between the ages of 2 and 7. These participants had delays with cognition and language that ranged from close to average to severely delayed (Yoder et al., 1991). Performances on the Sequenced Inventory of Communication Development Scale (Hedrick, Prather, & Tobin, 1984) indicated that each participant could verbally imitate 8 out of 12 words and had mental ages that ranged from 15 to 52 months.

Girolametto, Pearce & Weitzman (1996) suggest the use of the interactive language model for preschoolers. This model trains parents to use naturalistic strategies that are typically used with children with typical development. There are many interactive language models. Transactional interventions might include the therapist teaching the child to use functional communication and showing the family ways to encourage the child's use of words.

Naturalistic Teaching Methods

At this time, there is a large body of empirical support for using a variety of naturalistic teaching methods for preschool aged children (ASHA Practice Portal, (n.d.). A natural environment is any setting that despite a child's disability, he or she spends time in (Schwartz, 2003). The natural environment could be a school, playground, home or any other community-based setting. The following intervention strategies have been utilized to teach use of language targets: (a) changing the environment to give opportunities for communicating with preferred materials, (b) encouraging child initiations and following the child's attentional focus and interest, (c) using preferred

and non-preferred activities, (d) embedding instruction in the natural environment, (e) offering choices and encouraging choice making, (f) using natural reinforcers as consequences when the child is trying to communicate, (g) using time delay or waiting, (h) using contingent imitation, and (i) structuring predictability and turn taking into the activity (ASHA Practice Portal, n.d.). A few of the approaches that incorporate naturalistic techniques include incidental teaching, natural language paradigm, time delay and milieu intervention, pivotal response training, and the mand-model approach.

Milieu Teaching Strategies

This study will explore coaching parent implementation of milieu teaching strategies in late talkers. Naturalistic language teaching approach is designed to teach communication skills in everyday conversational interactions (Hart & Rogers-Warren, l978). Milieu teaching involves manipulating or arranging stimuli in the natural environment of a child to encourage them to engage in a particular behavior. At its introduction, milieu teaching strategies were designed to be a "collection of naturalistic instructional procedures that build on incidental teaching methods described by Hart and Risley (1975). According to Kaiser (1993), the focus of milieu strategies is to teach children new skills or behaviors in their natural environment. Milieu teaching typically consists of four different teaching procedures that are used to teach functional language to children with communication disorders. These methods include modeling, mand-modeling, incidental teaching, and time delay.

Modeling involves using language to narrate child activities, such as "Give me the car." Mand modeling involves using language to encourage the child to make verbal requests for items and may include asking questions such as "What do you want?" Incidental teaching involves a teacher following the child's lead and attending to the child's interest while looking expectantly at the child to encourage them to make a request. Time-delay is designed to increase the frequency of expressions in a child and involves the adult waiting a short moment for the child to respond before providing a prompt or cue.

Enhanced Milieu Teaching

According to Kaiser (1993) enhanced milieu teaching (EMT) is a naturalistic model that requires the interventionist to use the child's interests and initiations as an opportunity to model and prompt language use. It is a variation of milieu teaching which includes incidental teaching, environmental arrangements, and responsive interactions (adults respond in ways that encourage communication).

Pre-linguistic Milieu Teaching

Pre-linguistic Milieu Teaching (PMT) is an intervention designed for children with language delays. This approach is often used for children who have limited or no words and lack intentional communication. When implementing this strategy, PMT is embedded into ongoing social interaction that occurs in the natural environment of the child (Fey et al., 2016). PMT has been documented by (Yoder & Warren, 1998; 1999, 2001). When combined with parental responsiveness (Yoder & Warren, 2002)

the effects of PMT can be maximized and has been referred to as RE/PMT (Responsiveness Education/ PMT) (Fey et al.,2006).

Research supporting milieu teaching strategies and preschoolers

Preschoolers who present with delays in communication and struggle with developing their first words are generally first taught to demonstrate use of communicative intent (Fey, Yoder, Warren & Bredin-Oja, 2013). After the child has learned intentions, then communication interventions should focus on their use of spoken words and or alternative forms of communication (Dunst, Meter & Hamby, 2011; Romski, Sevcik, Cheslock, & Barton, 2006). Pre-linguistic milieu teaching (PMT) can be used as an intervention to help foster the production of spoken words (Fey et al., 2013). PMT interventions can be proceeded by milieu language teaching (MT) (Hancock & Kaiser, 2006). The effectiveness of using milieu teaching strategies for children with communication delays has been thoroughly investigated (Warren & Bambara, 1989; Warren & Gazdag, 1990; Warren, Yoder, Gazdag, Uam, & Jones, 1993). The effectiveness of using milieu teaching strategies for children with autism has been researched by multiple investigators (Kasier, Hancock, & Nietfeld, 2000; Yoder & Stone, 2006; McGee & Daly, 2007). The use of milieu teaching strategies has also been examined in low functioning children with intellectual disabilities (Yoder, Kasier, Goldstein, & Alpert, 1995). Milieu teaching strategies have been explored in individuals with speech delays (Alpert & Kaiser, 1992; Kaiser & Hester, 1994). With regards to service models for young children, there has been a shift from traditional

clinical models to services in naturalistic environments. This change is associated with the Individuals with Disabilities Education Act (IDEA, 2004) which is a federal mandate that describes family-focused services in natural environments as best practice for young children under the age of three. IDEA (2004) has led to the success of parent-implemented interventions. The natural environment is also a setting recommended when providing services to infants and toddlers with communication delays (ASHA, 2008). Because of this shift to the natural environment, interventions have become more family oriented. The literature on milieu teaching strategies has investigated the use of milieu teaching strategies with parents (Alpert & Kasier, 1992; Fey, Warren, Fairchild, Sokol, Yoder, 2006; Hemmeter & Kasier, 1994; Kaiser, 1996; Kaiser & Hester, 1994; Kasier et al.,2000). Siblings' use of milieu teaching in the home environment was examined by Hancock and Kaiser (1996).

Use of Target words in Milieu Teaching

In a study to compare the effects of Enhanced Milieu Teaching (EMT) implemented by parents and therapists versus therapists, only Kaiser and Roberts (2013) examined the language skills of preschool children with intellectual disabilities (ID). Kasier and Roberts (2013) used three or four broad classes of language targets for each child in their study based on the standardized tests administered during their pre-test period. During this study, Kaiser and Roberts (2013) included word targets such as two and three word semantic structures (e.g., agent + action; action + object; agent + action + object), two to four word requests (e.g., I want more), and vocabulary

(nouns, verbs, modifiers) into the treatment. Each participant's progress with using each target class was monitored. As the child progressed, more complex targets were added. They found that children in the parent and therapist treatment group used significantly greater percentage of target utterances than the children who were in the therapist only group. In a study to determine if intensity of treatment impacted the effects of milieu communication teaching in toddlers with intellectual disabilities, Fey, Yoder, Warren and Bredom-Oja (2013) used word targets as a guide to determine when to advance therapy goals. If their participants used fewer than 40 words or signs, the therapists and parents of those participants chose five to 10 lexical word targets that would be targeted for elicitation during treatments. Parent use of target behaviors was also measured during this study.

Parent-implemented Interventions

A variety of intervention strategies has been explored in the research for using parent-implemented strategies. Studies that found parent-implemented strategies for communication difficulties to be successful included (a) responsiveness to child communication; (b) enhancing the type of language input; (c) expanding child communicationand (d) balancing parent and child communication. There is a large range of literature to support parent- implemented interventions for young children with communication difficulties (Alpert & Kaiser,1992; Goldstein, 2006; Kaiser & Roberts, 2012; Law, Garrett & Nye, 2004; Roberts & Kaiser, 2011; Roberts & Kaiser, 2012; Wetherby & Woods, 2006). The studies investigated the effect of parent-

implemented strategies within the natural environment.

In a study of 25, 23-33-month-old children, Girolameto et al. (1996) found that as a result of utilizing coaching strategies, mothers used significantly fewer words/minute, spoke utilizing shorter utterances and included more target words in their vocabularies. The children in the study had significantly larger vocabularies and used a greater number of different words (both target and control) when producing multi-word combinations than children in the control group. Girolameto et al. (1997) followed up with the 25 children from his 1996 study and found that in addition to improvements with language there were also gains in phonology.

Roberts and Kaiser (2011) conducted a study that included child participants between the ages of 18 and 60 months. They compared parent- implemented interventions to therapist implemented interventions when measuring expressive language, expressive vocabulary, and rate of communication. They found that parent training had a positive effect on parent use of intervention strategies with the largest effect being with parent responsiveness.

Has (2015) conducted a study of 26 children with cleft palate who either received parent or therapist implemented interventions. Has (2015) found that children who received parent-implemented treatments displayed significant improvement in expressive vocabulary size, the number of total words, and the mean length of utterance. The intervention group in this study showed a decrease in the percentage of compensatory misarticulation following the intervention. The

control group showed an increase in the proportion of compensatory misarticulation.

Parent-implemented intervention was also investigated by Buschmann, et al. (2009). Buschmann et al. (2009) conducted a randomized controlled trial that included two-year-olds with specific language delays. Study results found that 12 months after the onset of therapy, the children in the intervention group who received parent-implemented interventions outperformed the children assigned to the group that did not receive parent-implemented therapy in the parent's measures of vocabulary, morphology, and syntax. It must be noted that this study was conducted in a hospital setting in Germany and did not occur in a naturalistic environment.

Additionally, McConachie and Diggle's (2007) investigated the results of 3 studies that explored the effects of parent-implemented interventions in children with autism. They found that the effects of parent-implemented intervention were nonsignificant for parent-reported measures of child language (vocabulary and sentence length).

Maternal Responsivity and its effect on child language acquisition

Maternal responsivity may impact the implementation of an intervention strategy. A healthy parent-child relationship where the mother responds to the child's behaviors and communications can be described as maternal responsivity (Warren et al., 2010). The relationship between parent responsivity and language development

has been examined (Landry, Smith & Swank, 2006) and has been found to positively contribute to child language outcomes. Low maternal responsivity has been found to impact child language development adversely (Hart & Risley,1995) and is thought to contribute to decreased vocabulary acquisition. Smith, Landry, and Swank (2000) and Tamis-LeMonda, Bornstein, and Baumwell (2001) assert that the quality of caregiver-child interactions influences child language development.

Parent-implemented Milieu Interventions

According to Warren and Yoder (1996), the use of parent-based interventions assures that the child's communication development is optimized. Because parents typically spend more time with their children than any other caregiver, parents play a very important role in their child's development, and many parent-child interactions naturally have features of milieu teaching (Hart, 1985). Studies have effectively proven that parents are capable of positively implementing interventions with their children (Girolametto, Weitzman, & Clemments-Baartman, 1998; Law, Garret, & Nye, 2004; Kashinath, Woods, & Goldstein, 2006; Roberts & Kaiser, 2013; Roberts & Kaiser, 2012; Wetherby & Woods 2006). Parent-implemented milieu interventions have also been researched with preschool aged children (Kaiser & Trent, 2007). There are limitations in the research with regards to investigations of milieu interventions for individuals who only have receptive or expressive language impairment. Much of the current research involving milieu teaching strategies involves individuals who have global developmental delays or disabilities which include cognitive delays in addition to

delays in expressive or receptive communication. When the focus is narrowed to individuals who only have expressive or receptive language delays, the literature lacks the quantity of evidence to specifically support the use of parent-implemented milieu teaching strategies with individuals who have primary speech or language impairments.

Caregiver-Implemented Training and Support Strategies

The Hanen Parent Program (HPP; Manolson, 1992) is a very popular parent-implemented program for children who have primary language impairments. This program utilizes group instruction for parent coaching where the caregivers are taught to follow their child's lead and use specific responsive interaction strategies to encourage their child's language use across natural routines. Wake et al. (2011) were not able to determine that 6 weeks of caregiver training using the Hanen Program improved the vocabularies of the individuals in their study of 149 children, whereas; Girolametto, Pearce, and Weitzman (1996) found that their study using the Hanen Program yielded positive results for the children whose parents received eleven weeks of Hanen training. Roberts, Wolfe, and Spidalieri (2013) examined the effects of caregiver use of language support strategies in children with expressive language delays. Results from this study support caregiver use of enhanced milieu teaching strategies. There is a small amount of support for studies related to autism which evaluated parent- implemented interventions. In a study conducted by Rogers et al. (2012) they determined that parent-implemented intervention studies for early

autism spectrum disorders have not demonstrated the large effects that have been seen in intensive traditional treatment studies. The summary of empirical studies evaluating speech-language interventions involving children with autism conducted by Goldstein (2002) suggests that poor methodological quality of parent training studies limits the ability to meaningfully interpret study results.

The field of mental health has found that parent training is the most effective intervention for young children (Kaminski et al., 2008). Parent-child interaction therapy (PCIT; Eyberg, Boggs, & Algina , 1995) (Eybarg,1970) is cited as being one of the most well- validated parent training models. The PCIT model combines play and child behavior therapies into a singular structured clinical model. The goal of PCIT therapy is to help caregivers minimize stress, improve parent satisfaction and to strengthen behavior management skills of the parent. Evidence supporting PCIT in children between the ages of 2-7 indicates that there is a significant impact on externalizing problems (Thomas & Zimmerman, 2012). PCIT has also been shown to improve parenting attitudes and child interactions (Thomas & Zimmerman, 2012).

Overview of Coaching

Coaching has a very long history and is popular among mental health interventionists and is becoming popular in business. In business, there is limited evidence of the effectiveness of the practice (Bolch, 2001). Contu and Kauggman, (2009, P. 26) state "The coaching field is filled with contradictions.

Coaches themselves disagree over why they are hired, what they do, and how to

measure success". There are two types of studies in the literature related to executive coaches. There are empirical studies and retrospective studies.

According to empirical studies, executive coaching leads to a moderate to high amount of changes in the coachee's skill and or performance ratings (Meuse & Dai, 2010). Results from the retrospective studies indicate that 86% of the respondents rated coaching as very effective and 95% were changing the way that they performed as a result of coaching (Mesue & Dai, 2010). The specific strategies used for executive coaching were not defined in the empirical or retrospective studies.

The American Speech-Language Hearing Association (2008) has extended its support of speech-language pathologists providing family support to improve a child's development. Performing in this role requires that a speech- language pathologist has the ability to integrate their knowledge and skills as an early interventionist and speech-language pathologist with knowledge of adult learning principles (Woods, Wilcos, Friedman & Murch, 2011). The responsibility of teaching adults to recognize the communication needs of their children and guiding them to utilize specialized techniques with their child across their daily routines has become what is commonly known as coaching (Hanft, Rush & Shelden, 2004). Woods et al. (2011) describe the SLP's role in guiding and teaching during the coaching process, as a part of a singular component of the collaborative consultation process, which is the explicit goal of intentionally and systematically promoting the mastery of skills. Parent coaching is an adult learning technique that focuses on adult learning styles (Rush & Shelden, 2008).

Coaching empowers parents and gives them hands-on tools to use in interventions with their children (Shelden & Rush, 2007). Campbell (1997) defined an early interventionist's roles as being more of a coach than just a direct service provider. Hanft and Pilkington (2000) attest that early childhood practitioners may benefit from reconsidering their roles and assume a role as a coach rather than lead player. Flaherty (1999) defines coaching as "not telling people what to do, [but] giving them a chance to examine what they are doing in light of their intentions" (p.xii). Rush (2000) asserts that coaching gives parents the skills that they need to improve their child's ability rather than working directly with the child. Without strong evidence to support application to children who only have communication disorders, the parent coaching model as described by Rush (2000) is being utilized in many Part-C early intervention programs that serve young children. This model is being utilized in early childhood settings with typically developing children and as a model for providing specialized therapy services for disabled children. ASHA (2008) describes promoting adult learning as a critical skill set for speech-language pathologists. Wilcox et al. (2011) states that a truly individualized family-centered approach, which incorporates adult learning must be characterized by a relationship with bidirectional teaching and learning.

There are gaps in the research that evaluates family-centered services. Dunst and Bruder, (2002) site a lack of valid and reliable measures, adequacy of sample size and representation and consistency of definitions, as constraints in previous studies of family-centered services. Studies that have used parent coaching strategies in

natural environments for children with communication disorders have not clearly defined what the coaching included and as a result are difficult to replicate (Roberts & Kaiser, 2011). Often the time spent in training or the specific details included in the training are not described (Roberts & Kaiser, 2011). According to recent research findings, family involvement in early intervention practices is poor and many of the services provided in naturalistic settings are child focused rather than family oriented (Campbell & Sawer, 2007). Hebbeler, Spiker, Morrison, and Mallik (2008) surveyed early interventionists and found that 44% of the services that they provided were child focused. Similarly, Peterson et al. (2007) found that less than 1% of early intervention time was utilized to coach the caregivers.

The adult learning strategy fostered by coaching is designed to build the capacity of a learner, improve their existing abilities, facilitate the development of new skills, and to gain deeper understanding of practices that can be used in current and future situations (Rush & Shelden, 2011). As stated in the introduction, the five components of coaching in early childhood according to Rush and Shelden, (2011) include initiation, observation, action, reflection, and evaluation. The coaching process according to Rush and Shelden (2008) is non- linear and the coach and caregiver should be transitioning to and from each coaching component numerous times. The observation component of coaching according to Rush and Shelden (2008) involves the coach observing the caregiver's interactions and serves as an opportunity to start communication about the coaching process and give caregivers an opportunity to discuss their concerns. The action components of the coaching process as defined by

Rush and Shelden (2008) are the events that occur and that are used by the caregiver to demonstrate use of new skills. These actions can be planned or unplanned but are naturally occurring. Reflection is what Gallacher (1997) states are a defining difference between coaching and consultation. During this process, the coach asks questions that prompt the caregiver to reflect upon what is currently happening, what they want to have happened and what the caregiver can do to ensure that this reflected concept happens. The goal of reflection is to encourage the caregiver to analyze their behavior or practices in order to change or improve their behavior. It is after the reflection process that the coach provides feedback to the caregiver. The final component of coaching according to Rush and Shelden (2008) involves evaluation. During this component, the coach and caregivers determine if the goal has been met or if additional coaching is needed or desired.

None of the foundational research regarding parent coaching as an adult teaching method as described by Rush and Shelden (2008), was utilized with individuals who only had communication disorders. It is clear that significant contribution to support educational coaching was derived from early childhood education literature which focused on educating teachers on coaching strategies in educational settings (Pugh & Johnson, 1995; Tschantz & Vail, 2000; Phillips & Glickman, 1991, Miller, Harris & Watanabe, 1991).

Clearly Defined Uses of Coaching

Roberts, Wolfe and Spidalieri (2014) investigated the effects of the Teach-

Model-Coach-Review Instructional approach on caregiver use of milieu strategies and children's expressive language skills. This study was a single subject multiple baseline approach with four caregiver-child dyads between the ages of 24- 42 months with language impairment. Results indicate that the Teach-Model- Coach-Review Instructional approach facilitated and increased caregiver use of EMT strategies. This study clearly defined the adult teaching method that was utilized to teach the caregivers to implement the interventions. The researchers utilized the teaching model described by Dunst and Trivette (2009) which includes six methods on knowledge, skills, self-efficacy, beliefs, and attitudes.

Similar to the model promoted by Rush and Shelden (2008) which contains four separate components, Dunst and Trivette (2009) utilized introduction, illustration, practice, evaluation, reflection, and mastery components. During the introduction, the caregivers were given a preview of the strategy that they would be using. During the illustration component, the strategy was demonstrated by the interventionist. During the practice component, the interventionist allowed the caregiver to practice the strategy. During the evaluation component, the child's language skills use outcome was evaluated based on the caregiver an interventionist's use of the strategy. During the reflection process, the caregiver interventionist determined the next step in the learning process. The mastery component involved determining if the goals had been met. Dunst and Trivette (2009) calculated the effect size for each learning method measured for the adults in their study. Their results indicated that when five of six learning methods were utilized simultaneously, there was an effect of 1.25 compared

to an effect size of .20 when no strategy or only one strategy was used. When 2-3 adult strategies were used, there was an effect of .75.

Parent Perspectives Regarding Implementing Interventions

It is very important for us to understand those aspects of children's behavior that prompt changes in their family systems and will lead to support for the child's development (Sameroff & Chandler, 1975). Kaiser, Hemmeter, Ostrosky, Fischer, Yoder and Keefer (1996) explored results from a parent satisfaction survey that was completed post-intervention and again following the second follow up. Parents expressed high levels of satisfaction with the study outcome and their training experiences in the survey. Similar parent reports of satisfaction for parent-implemented language interventions were reported by researchers such as Girolametto (1998) and Hemmeter and Kaiser, (1994).

Kashinath, Woods, and Goldstein (2006) explored enhancing generalized teaching strategy use in daily routines by parents of children with autism. Parents were taught to use two teaching strategies across target routines with their autistic children. Their intervention resulted in parents being able to demonstrate proficiency with using the teaching strategies across their child's routines. The children in the study all had positive communication outcomes because of the intervention. The parents in the study responded to a written questionnaire at the end of the study to evaluate their perspectives and experiences. Parents overwhelmingly responded that the intervention had positive effects on their

child's communication outcomes.

Parent Perspectives Regarding Receiving Coaching

Brown and Woods (2015) investigated coaching parent-implemented communication interventions. This parent-implemented intervention was replicated across nine parent-child dyads. The participants in this study were all toddlers with either Down syndrome, ASD, and developmental delays. Parents were coached to implement communication strategies across natural routines. Although the research states that the parents were coached, the coaching strategies were not defined in the study. Parents completed a questionnaire following the intervention phases regarding their perception of the interventions utility, acceptability, and feasibility (Brown & Woods, 2015). Results showed that parents felt more effective in being able to support their child's language and communication goals.

Roberts, Kaiser, Wolfe, Bryant and Spidalieri (2013) investigated four caregiver dyads to examine the effects of the Teach-Model-Coach-Review Instructional approach on caregiver's use of four enhanced milieu teaching prompts. The children of the parents in this study were between the ages of 24- 42 months, and all had a primary developmental language impairment. Some of the child participants had receptive or expressive impairments, whereas others had a combination of a receptive-expressive impairment. Results from this study found that the instructional approach was an effective way to teach caregivers to use EMT language support strategies during play, but they did not provide information about the parent's

perspective of the coaching experience. When evaluating the efficacy of a six-month course of responsivity education on 51 preschool children with developmental delays and its effect on parent stress (Fey, Warner, Brady, Finestack, Bredin Oja, Fairchild, Sokal & Yoder, 2006) it was found that the milieu intervention had no effect on parent stress.

Romski et al. (2011) investigated parent's perspectives and perception of their child's language development after participating in early intervention. For this study, parents completed pre-and post-assessments using the Parent Perception of Language Development survey. The children of the parents in this study were between the ages of 20 and 40 months and had speech impairments characterized by having an expressive vocabulary of fewer than ten spoken words. At the end of the three-month intervention period of parent coached language intervention, the parents in this study expressed that they had more positive perceptions of the communication interactions that they had with their child.

Purpose of the Present Study

This study evaluates the effectiveness of teaching parents to implement, modeling, mand modeling and use of a time delay in natural settings to preschool children with expressive communication delays. Parents will be coached using the SPC model described by Rush & Shelden (2008). These five steps will include initiation, observation, action, reflection, and evaluation. (See Figure 1.)

Dependent Variables :

a) Total number of Parent Uses of Milieu Teaching Strategies Per Session

b) Total number of target words used by the child

c) Total number of words used by the child

Independent Variable:

a) Use of SPC to implement parent use of milieu teaching strategies

The following research questions will be addressed utilizing an AB single subject research design to simultaneously measure child and caregiver behavior across participants.

1. Will use of Specific Parent Coaching to implement modeling, mand modeling and time delays as milieu teaching strategies increase a child's ability to use target words?

2. Will use of Specific Parent Coaching to implement modeling, mand modeling and time delays as milieu teaching strategies increase a child's total word use?

1. Will the use of Specific Parent Coaching to implement milieu teaching strategies, result in the parents' use of models, mand models and time delays in naturalistic routines with their child?

2. Will the use of Specific Parent Coaching impact parent's perception of being able to help their late talking child improve their use of target

words?

3. Will the use of Specific Parent Coaching change the parent's perception of their child's communication ability and efforts?

Methodology

Participants

The researcher recruited one 18 month old child from an English speaking home with (a) 1 spoken word in the expressive lexicon, as reported by the Primary Caregiver and the on the MacArthur Communicative Development Inventories: Words and Gestures (MCDI, Fenson et al., 1993); (b) a cognitive score of 86 on The Developmental Assessment of Young Children, Second Edition (DAYC-2) (c) the participant had a receptive language standard score of 84 and an expressive score of 78 on the DAYC-2 (d) normal or corrected, vision per parent report and (e) motor skills sufficient to sit unsupported and engage in play with the interventionist (f) the ability to imitate motor movements

(g) and a parent with the ability to participate in 9 home based therapy sessions.

Selection Criteria

Exclusionary Criteria were considered for this participant. The participant did

not meet the exclusionary criteria of having (a) a below average score on The Modified Checklist for Autism in Toddlers-Revised (M-CHAT-R) (b) history of recurrent otitis media or hearing loss in both ears, as determined by a hearing screening and parent report (c) parents that had received previous milieu training or coaching to remediate speech-language delays (d) parents with cognitive disorders (e) parents who were unaided and deaf or hard of hearing and/or only used sign language to communicate (f) parents who were able to participate in 2- 3 naturally occurring routines in the home.

When the study was approved, the investigator met with the participant dyad at their home where qualifying assessments were completed. The following measures were used to determine that the child met the criteria for inclusion in the study.

1. The researcher administered the (M-CHAT) which is a 23-item parent questionnaire developed to screen for autism in children between the ages of 16-30 months.
2. The (DAYC-2) was used to identify with possible delays in the child's cognition and language. The researcher only tested two domains. The DAYC-2 is a standardized, normed developmental assessment for children aged birth through age 5-11.
3. MacArthur-Bates Communicative Development Inventory: Words and Gestures (MCDI, Fenson et al., 1993) was used to determine the expressive vocabulary of the participant. This parent reported vocabulary checklist is comprised of 396 words and was used to

capture the expressive words, gestures, and receptive vocabulary that the child demonstrated in the week before the checklist administration. This assessment was administered at enrollment and the end of the intervention.

Because the child and parent participant met the criteria after administering the child assessments and verifying the parent's exclusions and willingness to participate in the study at her home, consent for participation was obtained. After consent was obtained, the investigator completed intake paperwork which included obtaining demographic information about the parent and child and completion of parent questionnaires.

Parent Measures (See a list of the parent and child Assessments in table 1)

A demographic questionnaire was administered to the parent. Questions included in the questionnaire pertained to the family composition, number of people in the household, and parent's education. (See appendix 1 for the Intake Questionnaire and Table 2 for demographic information)

The Parental Attitudes on Pediatric Communication Progress Questionnaire, which was developed by the researcher, assessed parental attitudes regarding the child's communication and the parent's ability to help the child improve her communication. This questionnaire was administered at intake and the end of the intervention phase. (See Appendix 2)

Portland Functional Communication Parent Questionnaire (Wilson &

Gildersleeve-Neuman, n.d.) assessed the functional communication needs of the child and interests of the parent to determine word targets for the child. (See Appendix 3.)

At the end of the intervention phase, the parent was given a Likert-Type Coaching Experience Scale to rate their coaching experience. (Appendix 4.) The Likert-Type Scale ranged from 1-5. A score of 1 indicated that the respondent strongly disagreed with the statement whereas a score of 5 indicated that they strongly agreed with the declaration.

Participant Demographic Information

The parent participant was a 52-year-old white female who worked as a medical assistant in a regional hospital. She had two years of technical school training post high school. The parent was married and lived at home with her husband, who worked as a mechanic. The parent's thirty-year-old daughter, and two custodial children, ages three and 18 months old, also lived in the home. The child participant was an 18 month-old Hispanic and White female who attended daycare five days each week. English was the dominant language of the home. Although the family and the child participant had exposures to Spanish, the language was used infrequently in the home. Demographic details are listed in Table 2.

Settings and Materials

As an incentive for participating in the study, the family received a set of age appropriate toys. The toys could be used as stimulus if the family chose to use the

materials. The toys included the following: car, baby, ball, blocks, bubbles, and a book. At intake, the parent/child dyad was provided information about language disorders and the importance of using natural routines to interact with the child. Baseline and intervention sessions occurred in the home environment of the dyad. Each baseline and intervention session was video and audio recorded. The dyad was free to choose any area of their home for the session. Distractions that interfered with the session were minimized as much as possible.

A Sony HD Video Recording HDRCX405 HDR-Cx405/B was used to record each baseline and treatment session. The camera was set at an angle so that the parent and child interactions could be captured.

Response Definitions and Measurement Procedures

SPC refers to specific parent coaching utilizing the coaching model defined by Rush and Shelden (2008, 2011).

Modeling occurred when the parent or interventionist provided a model of the child's communication target. An example of a model would be the parent saying "cup" while giving the child her cup.

Mand Modeling occurred when the parent or interventionist gave the child a specific directive. For example, the interventionist or parent said to the child "tell me up." If after briefly pausing, (3-5 seconds) the child did not say the word, the parent modeled the word and provided the child the target.

A time delay occurred when the parent or interventionist waited for a short

period (8-10 seconds) to prompt the desired response. An example of this prompt was waiting eight to ten seconds for the child to say "up."

Target words were the words chosen for the dyad as stimuli for this study. The child was given credit for her production of a whole word or any components of the target words. For example, if the target was ball and the child says "ba" she will be given credit for the production of the word. At least one phoneme of the target word must present in the child's production of the word to get credit for the attempt.

Procedures of Study

Experimental Design

A single-subject, A-B design replicated across one parent-child dyad was used to examine the use of Rush & Shelden (2008) coaching approach (SPC) with parent use of three distinct MT language teaching strategies (modeling, mand modeling and time delay). The use of the A-B design allowed an objective measure of each participant's behaviors in precisely defined and controlled conditions. There were three consecutive data points in the baseline and six data points in the intervention phase to support current theoretical assumptions about parent coaching.

Data collection

Parent use of the model, mand modeling and time delay were graphed for each probe and treatment session. The child's total number of target words, total number of words and total number of different words were collected via data

collection regarding parent and child utterances. This data was collected each session. The parent-child dyad was coded as D1. All data was stored on an external drive, and all forms and paper copies of data sheets were stored in a locked file.

Baseline Condition

Each baseline session occurred in the participant's home. Across three consecutive days, the parent was observed interacting with the child across naturally occurring routines. The parents' use of models, mand models, and time delay were tallied each session. The child's use of target words and the total number of words were tallied each session. The child's total number of target words, the total number of words and the total number of different words were analyzed at the first and last baseline session. During each baseline session, the interventionist arrived at the child's home and used an identical scripted response for each session. The first scripted response was as follows: "I would like you to choose a snack, book or play routine for me to observe you encouraging your child to communicate using the word target _____and_____." Next, the interventionist told the parent the target words for the session. The parents were allowed to see the target words. Two different target words were used each session. The target words were words that were not currently in the child's expressive vocabulary. The baseline sessions lasted approximately 25-45 minutes. The session lengths varied based on the routine that the parent chose. The parent was asked not to view any other training materials or videos during the study. An implementation checklist (See AppendicesAppendix 5.) was used to document the

target words, describe the routine or routines used by the parent during the session and totally for each use of models, mand modeling, and time delays. The interventionist did not give the parent any suggestions or strategies during this period. The interventionist's interaction with the child during the baseline period was minimal and limited to friendly remarks, greetings, and salutations.

The intervention phase consisted of 6 in home sessions. The sessions occurred twice each week for three weeks. A coaching implementation checklist (See Appendix 6) was utilized to ensure that all basic procedures were identical for each intervention session. The parent was coached on how to implement models, mand modeling and time delay strategies in a snack, book, or play routine initiated by the parent. Each session was thirty to forty-five minutes long. Variations in the length of the intervention were due to the routine, parent questions or the routine that the parent chooses. Two target words that were not in the child's current vocabulary were incorporated into each session. The therapist used a scripted introduction for each coaching session. The interventionist started the session by initiating discussion about how the parent viewed the child's use of words to communicate during routines. A scripted response for the introduction was used, i.e. "Tell me how things are going with getting your child to use words across your routines?" The interventionist then said, "I would like to take a look at how things are going. What routine would you like to work on today?" After the parent chose either a snack, book or play routine the interventionist told the parent what the two target words were for the session. Next, the interventionist made observations of the parent's use of models, mand- model and

time delay strategies to elicit the target and communication of words during the routine with the child. The parent was guided to use examples of milieu teaching strategies by modeling the skill. Next, if necessary, the interventionist demonstrated use of the strategy for the target words and gave the parent opportunities to practice. These parent opportunities to practice the skill constituted the action phase of coaching. Next, the interventionist encouraged the parent to reflect on how they could implement the target words in their child's routines. Finally, the interventionist evaluated the parent's use of strategy and determined if more coaching was necessary. A joint plan for the next session was determined by the coach and the interventionist. The joint plan outlined what the parent planned to practice with the child outside of the intervention. (See Figure 1. Coaching Components)

The interventionist cycled through the coaching components as necessary. Rush and Shelden (2008) believe that coaching is non-linear and that the coach and caregiver should transition to and from each coaching component numerous times. Like the baseline phase, the parents' use of models, mand models, and time delay were tallied each session. The child's use of target words and the total number of words were counted each session. The child's total number of words and the total number of different words were assessed at the first and last intervention session. The interventionist's use of coaching was checked by the parent in the form of a coaching implementation checklist (See Appendix 7.) at the end of each session. The parent signed to indicate that they received each component of coaching. Each of the uses of models, mand models and time delays to elicit a child response was

documented on an intervention implementation checklist. The parents were encouraged to use the strategies to get their child to use word targets each session. The routines chosen by the parent as well as the target words used for each session were documented on the implementation checklist.

Reliability

Reliability was assessed by having a second observer view the video and tally sheets. This data will consist of the tally of the parents' use of models, mand models, and time delay, as well as a tally for the child's total number of words. It also includes the total number of words, the total number of different words and the total number of target words used by the child. A word record summary was used to document the words used by the child. (See Appendix H)

The second observer checked for reliability by reviewing a total of three sessions for the participant (one baseline session and two intervention sessions). There was a total of 18 agreements and 0 disagreements. Reliability was computed by dividing the number of agreements plus disagreements and multiplying this ratio by 100 to obtain a percent-reliable score. The mean reliability rating was 100%.

Fidelity

Measures to ensure implementation and treatment fidelity were used throughout the study in the form of checklists and scripts. Fidelity was measured to monitor how the intervention was being implemented and for evaluating the intervention outcomes. Implementation checklists were used at baseline and during

the treatment phases to ensure that milieu teaching strategies were tallied, target words were identified and monitored and that the child's use of words were tallied. The implementation checklists outlined the planned components of each session to ensure that the interventionist conducted each session as planned.

Attendance for each session was recorded, makeup sessions were provided for all missed sessions. Intervention fidelity was measured using a weekly review of each parent's coaching checklist (Appendix F). Child assessments were an administered post intervention as a measure of treatment fidelity. The interventionist reviewed one video of baseline and two videos of the intervention sessions to review a total of 3/9 sessions to determine if there is implementation fidelity.

Social Validity

The coaching questionnaire was completed by the parent. The parent responded to a Likert-Type 5-point scale with questions about the coaching process. This helped to determine if the intervention procedures were socially valid and if the participants judged them as being acceptable.

Data Analysis Procedures

Data were collected on five primary measures: a) parent's use of 3 different milieu teaching strategies b) total number of target words used by the child in each phase C) total number of words used by the child in each phase, d) standardized measures of child language development and, e) measures of parent satisfaction.

The results of the intervention of coached parent-implemented milieu teaching

strategies and the dependent variables of child communication of words and parent use of strategies were analyzed through visual inspection and descriptive statistics of graphed data. The level, trend, and variability of data across phases for the participant was used to provide the context for the analysis. Levels of the data were measured with the means of each phase. The means of the first three intervention sessions were used to measure the immediacy of the intervention effect. The means of the last three intervention sessions will be used to measure the effect of sustained intervention. A visual analysis of the slope provided information of the trend. Variability was measured utilizing a visual analysis of the deviation from the slope. The percentage of non- overlapping data was calculated to determine the percentage of overlap and to determine the relative change between condition A and B. The five question Likert-Type Coaching Experience responses were rated by analyzing the participant's scaled responses. The pre-and post-responses from the Parental Attitudes on Pediatric Communication Progress Questionnaire were compared to determine the number of parent changes of "yes" or "no" responses from baseline to post-intervention.

Table 1. List of Parent and Child Assessments

Parent
Demographic Intake Form
Parental Attitudes on Pediatric Communication Progress Questionnaire
Portland Functional Communication Parent Questionnaire
Coaching Experience Questionnaire
Child
Modified Checklist for Autism in Toddlers (M-Chat)
Developmental Assessment of Young Children (Second Edition)
McArthur Bates Communicative Developmental Inventory: Words and Gestures (MCDI)

Table 2. Demographic Data

	Parent/Grandmother	Child
Age	52	18 months
Education	Two years of Technical Training	Attends daycare
Occupation	Medical Assistant	NA
Siblings in Home	NA	1
Languages Spoken/Used in the Home	English/ Spanish	English/Spanish
Race	White	Hispanic/White
Individuals in home	Spouse, Daughter	

Results

The purpose of this study was to measure the use of Rush and Shelden's (2008) Specific Parent Coaching (SPC) to teach milieu teaching strategies to the parent of a late- talking toddler with 1 spoken word. The term specific is being utilized to differentiate this coaching model from generalized minimally- defined coaching practices. The parent's ability to learn to use three milieu teaching strategies via coaching from the interventionist and the child's ability to learn to use target words were examined. In addition to learning to use the milieu strategies, the parent was given target words to teach the child. Parent perceptions regarding the child's communication abilities and the ability to meet the child's communication needs were assessed pre-and post-intervention. The parent's perceptions of the coaching experience were also explored post intervention. The parent is the grandmother who is the caregiver- but will be referred to as the parent.

There was one parent- child dyad in this study. This parent child dyad participated in a total of nine sessions. There were three consecutive baseline sessions. The baseline sessions were followed by six coaching sessions. The coaching sessions were characterized by two home sessions each week for 3 weeks. Each session included the following components (a) joint planning, (b) observation modeling of the strategy by the interventionist with the child, (c) action/practice (d) reflection/review (e) feedback. The coaching components are listed in Figure 1. Modeling and practice

occurred in play interactions and routines such as book reading, eating a snack, or playing. Because early language delay can be highly variable at young ages and caregivers vary in their use of language facilitation strategies (Roberts and Kaiser, 2015), the intervention was individualized based on the needs and wants reported by the parent. The target words (Figure 3.) were chosen for the participant based on parent report, results of the MacArthur Communicative Development Inventories: Words and Gestures (MCDI, Fenson et al., 1993) and the child's current phonetic repertoire. At the beginning of the study, the MCDI indicated that the child produced only one word in her expressive vocabulary which was uh-oh. The phonetic repertoire of the child consisted of /b/, /d/ and vowels /ah/, /oh/ and /uh/. The parent reported that the child pointed, grunted, and cried to get her needs met. The communication and cognitive components of the Developmental Assessment of Young Children, Second Edition (DAYC-2, Voress & Maddox, 2013) was administered. The child received a standard score of 78 on the expressive communication subtest and an 84 on the receptive subtest. The child had a cognitive score of 86. The Modified Checklist for Autism in Toddlers Revised (M-CHAT-R/F; Robins, Fein, & Barton, 2009) was administered and based on this administration, the child did not show any signs of autism. See Table1. for a list of parent and child assessment tools.

Portland Functional Communication Parent Questionnaire

The Portland Communication Parent Questionnaire(Wilson & Gildersleeve-Neumann; n.d) was used to determine the child's functional use of

language, communication styles and preferred family routines. The information from this questionnaire was also used to develop target words for this study. The questionnaire included the following topics: names, activities, places, requests and needs, emotions and feelings, toys and materials, food and drink, household items and places, clothing, question words, and yes /no responses. Results from the questionnaire gave the interventionist important details on the names and words that the child used to communicate and the meaningful words and names the parent would like her child to communicate about. The interventionist completed this questionnaire with the parent.

Meaningful Names

Based on the results in this questionnaire, it was determined that the child did not use any names. The parent thought that it was meaningful for the child to learn to say “Grandma, Grandpa, Papa and Mama.”.

Meaningful Activities

The activities that the parent reported the child enjoyed was playing with her brother. Community activities that the child participated in included attending daycare, and going to the park. The parent also indicated that the child enjoyed playing peek-a - boo. The parent reported that she would like for the child to communicate about “putty” time.

Meaningful Places

Places that were identified as meaningful to the child and a part of her routine

and schedule were daycare, the park, and home. The parent indicated that she would like for her child to communicate about home, daycare, mealtime and playtime.

Meaningful Requests and Needs

This portion of the questionnaire indicated that the child and beckoned with her hands and cried to show that she needed help, wanted food or drink, wanted an object, or needed a diaper change. The parent reported that the child did not report when she was done with something and that she does not tell others when she wants to engage in activities. Instead of telling others the child would go get the items herself. The parent did not indicate any meaningful requests that she wanted the child to communicate about.

Emotions and Feelings

This portion of the questionnaire surveyed a variety of positive feelings and emotions to determine what words the child used to communicate her message. The parent indicated that the child cried for all negative emotions and laughed for all positive emotions. The parent also indicated that the child does not get frustrated when she is not understood. The parent indicated that she would like for her child to communicate meaningful feelings and emotions.

Toys and Materials

The parent indicated that there were no toys that the child used or requested often. She indicated that the child liked books and would often request her blanket. The materials that the parent reported that the child enjoyed using were blocks, baby

doll, bubbles, toy piano and a mechanical ball toy. Although the parent stated that the child liked books, she indicated that there was not a specific book that she enjoyed reading. The parent reported that she would like for the child to communicate about all her toys and materials.

Food and Drink

The parent indicated that there were no specific food items that the child communicated about often. According to the parent, the child did not make any requests for food or drinks. The parent stated that she wanted her child to learn to say “eat”.

Household Items and Places

Results from this portion of the questionnaire indicated that the child did not communicate about household items or places. The parent was interested in the child learning to communicate about the kitchen and the bathroom.

Clothing

The child currently did not communicate about any clothing items. The grandmother was interested in her learning to communicate about the following clothing items: hat, shirt, jacket, sweater, pants, shorts, underwear, socks, shoes.

Question Words/ Yes and No Responses

The child was not reported to use any question words. The parent was interested in the child learning to ask what and where questions. The child did not currently say “yes” or “no” nor did she nod her head “yes” or “no”. The parent

indicated that she communicated “no” by crying.

Social

The parent indicated that the child did not use any social words to talk to or greet other people. The parent listed the following words as words that she would like for the child to use socially: hi, bye, up, down, eat.

Description of Baseline and Intervention Phases

The parent received individual coaching using the parent coaching model by Shelden and Rush (2008). The parent coaching strategies were used to teach the parent how to use three milieu teaching strategies at home with her child. The caregiver was coached to use three milieu teaching strategies during naturally occurring routines (snack, play, or book reading) with the child in his/her natural environment.

Each baseline session included the interventionist providing the parent two target words, and asking the parent to choose a play, snack or book reading routine to interact with the child and get the child to use the target words supplied. The baseline sessions occurred across three consecutive days. The first baseline session included a book routine. The second and third baseline sessions included a snack routine.

The intervention included parent coaching and parent- implemented child intervention. The length and frequency of the intervention sessions were aligned with

community-based early intervention service delivery models which typically range from one to two, 30-45 minute sessions per week. During the first intervention session, the caregiver was first taught to use models. The interventionist modeled the strategy and gave the parent multiple opportunities to practice the strategy. After the parent could demonstrate use of modeling, the mand model was introduced and practiced. After the mand model was introduced and practiced the time delay strategy was introduced and practiced. The interventionist explained how and when to use each strategy and modeled the use with the child. The parent could observe the interventionist's use of strategy and practice the strategy as many times as she felt was necessary.

Each subsequent intervention session started with a review of how use of the strategies was being utilized across the natural routines. The interventionist reviewed each strategy during each intervention session and modeled the strategy use during the selected routines with the parent and child.

Child's Use of Target Words Across Baseline and Intervention Phases

At baseline and during the intervention, the mean usage of target words was 0 and the median score was 0. The child did not use any target words during the baseline or intervention. There were no scores below or higher than 0 in the range of scores during condition A. The variance was 0 and the upper 2SD band was 0.00. The lower SD band was also 0.00. None of the six intervention data points fell outside of the 2SD band, which indicates that the results are not significant. The mean intervention score was 0. The range of scores during the intervention fell between 0-0.

Within Condition Analysis

The percent of gain across the intervention was > 0. The visual analysis of data shows that the absolute level of change within the baseline (condition A) was 0 with a zero-celerating trend indicating a stable baseline. The absolute level of change within the intervention phase (condition B) was 0 with a flat trend indicating that there was no improvement. The relative change within conditions A and B was 0.

Between Condition Analysis

The absolute level change from condition A to condition B was 0. The relative level of change from condition B to A was 0. The absolute and relative level changes from A to B indicates that there was no immediate or delayed treatment effect. There were no mean or median changes across adjacent conditions. There was no variability in the data and the trend was zero-celerating. The percentage of non-overlapping data (PND) was calculated at 0% which indicates that the treatment was not effective for producing target words. (See Figure 4 and Figure 5. to examine the visual analysis for Target Word Use.) (See Table 3 for the data analysis for Target Word Use)

Child's Total Use of Words Across Baseline and Intervention Phases

At baseline, the mean usage of total words was .33 and the median score was 0. The range of scores at baseline ranged from 0-1 (the child produced one word during one baseline session and zero words the other two baseline sessions). The baseline scores were stable based on the 80-20 rule (Gast & Ledford, 2014). The variance was .33 and the upper limit of the 2-standard deviation band was 1.49 and

the lower limit of the 2-standard deviation band was-0.82. Two of the six intervention data points fell outside of the 2SD band which indicates that the results are significant (Gast & Ledford, 2014). The mean intervention score was 3 and the median intervention score was 1. The range of scores during the intervention fell between1-9.

Within Condition Analysis

The percent of gain across the intervention was 18%. The visual analysis of data shows that the absolute level of change within condition A was 1. The absolute level of change within condition B was 1 to 0 and decreasing. The relative change within condition B was 5 to 1 and decreasing. The relative level of change for condition A was 0 to .5 and improving.

Between Condition Analysis

The absolute level change from condition B to condition A was 0. The relative level of change from condition B to A was +5 and improving. The absolute level change from B to A indicated no change and that there was no immediate return to baseline. The mean change across adjacent conditions was .33 to 3 and the median change across adjacent conditions was from 0 to 1. There was variability in the data and the trend was accelerating; although, the PND was calculated at 33.33% and indicates that the treatment may not have been effective. The visual analysis of the data for the total words used is displayed in Figures 6 and 7. The data analysis for total words used is displayed in table 4.

Total Different Words Used by the Child across Baseline and Intervention Phases

When we look at the data supporting the child's total different words in Figure 8., the variance at baseline is .33. The standard deviation is .35 and the mean is 0.33. The upper 2SD band is 1.49 and the lower 2SD band is -0.82. The baseline median score was 0 and intervention median score was 1. The range of scores at baseline fell within the range of 0-1 and the range of scores during the intervention were 1-3. The results for total different words are not significant as only 1 data point fell outside of the upper and lower standard deviation bands. The percent gained across the intervention is 22%.

Within Condition Analysis

The results for the analysis of the total different words indicated that the levels at baseline and for the intervention were variable. Less than 80% of the data points fall within 25% of the median values of the data points. The baseline trend was improving to deteriorating. The absolute level of change within condition A was 1-0 and deteriorating. The relative change within condition A was .5 to 0 and deteriorating. The relative level of change within condition B was from 1 to 1 and zero-celerating and the absolute level in condition was 1 to 1 and did not change.

Adjacent Conditions Analysis

The relative levels of change in adjacent conditions were 0 to 5 and improving from condition A to B. The absolute change for adjacent conditions was 1 to 1. There was no change between the median baseline and intervention scores. The PND was 22%. See Figure 8 and 9 for the visual analysis of data related to total different words

used by the child. See Table 5 to view the data analysis for total different words used by the child.

Results of Parent Use of Milieu Strategy

During each session, the parent's use of milieu strategies was measured during one 3-5-minute play-based caregiver–child interactions in which the caregiver and child interacted within the natural environment. The 3-5-minute play based measurement was completed once each session.

Results of Parent Use of the Model Strategy across Baseline and Intervention Phases

At baseline, the parent's mean usage of models was .33 and the median of the baseline was 0. The variance was .61 and the upper 2 SD band was 1.90 and the lower SD band was -1.23. Four of the six intervention data points fell outside of the 2SD band, which indicates that the results are significant. The mean intervention score was 3.3 and the median intervention score was 5.5. The range of scores at baseline was between 0-1 and the range of scores during the intervention fell between 1-9.

Within Condition Analysis

The percent of gain across the intervention was 23%. The visual analysis of data showed that the absolute level of change within condition A was 0. The stability envelope was 0.2-,which indicates that the baseline was stable. The absolute level of change within condition B was +2 and improving. The relative change within condition

A was 0 and +2 for B. The relative level of change for condition B indicates improving results. The relative and absolute level changes in condition B indicate a positive level change in the direction of improvement. The relative and absolute changes in condition A indicate no change in level within the condition which is optimal for a baseline condition.

Between Condition Analysis

The absolute level change from condition A to condition B was 0. The relative level of change from condition B to A was 0. The level and absolute changes from A to B means that there was no immediate treatment effect. The relative level of change across adjacent conditions was 1.33 and positive. The mean change across adjacent conditions was 1 to 2.33 and the median change across adjacent conditions was from 1 to 2.5. There was minimal variability in the data and the trend was slightly accelerating. The PND was calculated at 66.66% which indicates that the treatment was minimally effective. See Figures 10 and 11 to examine the visual analysis of the data for model use. See Table 6 to view the data analysis for model strategies used by the parent.

Results of Parent Use of the Mand Model Strategy Across Baseline and Intervention Phases

At baseline, the mean usage of models by the parent was .33 and the median score was 0. The baseline range was 1 to 1. The variance was .33 and the upper 2SD band was 1.49 and the lower SD band was 0.82. Two out of the six intervention data

points fell outside of the 2SD band, which indicates that the results were significant. The mean intervention score was 1.0 and the median intervention score was 1.0. The range of scores at baseline was between 0-1 and the range of scores during the intervention fell between 0-2. The stability envelope for model use was 25% of 2.5 and ranged from 3.75 to `1.875 and was variable.

Within Condition Analysis

The percent of gain across the intervention was 16%. The visual analysis of data shows that the relative level of change within condition A was 0.5 and improving. The relative level of change within condition B was 0-2 and improving. The absolute level change within condition A was 0-1 and improving, and 0-2 and improving for B. The relative level of change for condition B indicates improving results. The relative and absolute level changes in condition B indicate a positive level change in the direction of improvement. The trend direction was accelerating in condition 1 and 2. The stability was consistent in condition 1 and variable in condition 2. There were not multiple paths within the trend.

Between Condition Analysis

The absolute level change from condition B to condition A was 1 to 1 which is stable and shows no change. The relative level of change from condition B to A was 0 to 0.5 which is improving. The mean change across adjacent conditions was 0.33 to 1 and the median change across adjacent conditions was from 0 to 1. There was minimal variability in the data and the trend was accelerating. The PND was calculated at 33.%.

See Figure 12 and 13 to examine the visual analysis of the data for mand model use. See Table 7 to view the data analysis for mand model strategies used by the parent.

Parent Use of the Time Delay Strategy Across Baseline and Intervention Phases

At baseline, the mean usage of time delays was 0 and the median score was 0. The range of scores fell between 0-0. The variance at baseline was 0 and the upper 2SD band was 0 and the lower SD band was 0. Two out of six intervention data points fell outside of the 2SD band, which indicates that the results are significant. The intervention mean was 0.33 and the median score was 0. The range of scores during the intervention fell between 0-1.

Within Condition Analysis

The visual analysis of data showed that the level was low and there was minimal variability in the data. The trend was improving minimally. The relative and absolute level change for condition A was 0 and did not change. The relative and absolute level of change for condition B was 0 and did not change.

Between Conditions Analysis

The relative level change from condition B to A was 0. One hundred percent of the data are within 80% of the mean which indicates a stable baseline. The absolute level of change between condition B and A was 0. The mean level of change was 0.25 and the median level of change was 0 which indicated minimal change. The PND was 33% and the POD was 67%. Figures 14 and 15 show the visual

analysis of the slope for parent use of time delay. See table 8 to view the data analysis for time delay strategies used by the parent.

Figures 14 and 15 show the visual analysis of the slope for parent use of time delay. See Table 8 to view the data analysis for time delay strategies used by the parent.

Results of Pre-and Post- Parent Perceptions Analysis

This study sought to determine if the use of specific parent coaching (Rush and Shelden, 2008) changed the parent's perception of the child's efforts to communicate. Like most naturalistic interventions, this intervention was individualized. The skills were modeled at the caregiver's request or at the interventionist's discretion. Like results reported by Roberts and Kaiser (2015), the parent participant rated the intervention strategies as easy to use throughout the day. Two out of 10 of the parent participant's responses regarding Parent

Attitudes on Child Behavior (Robinson, 2017) changed from pre-to posttest. Prior to study participation, the parent's response to the statement "My child does not try to use words to communicate very often" changed from a "no" response to a "yes" response. Prior to participating in the study, the parent believed that the child tried to use words to communicate often, and at the end of the study, her perspective regarding this changed. The parent's response to the statement "My child does not try to tell me important things that he/she wants" changed from a "No" response to a "Yes" response. Prior to participating in the study, the parent believed that the child did try to communicate important things that she wanted and now she does not

believe that she tries to communicate important things". I feel frustrated because I don't know how to help my child" changed from a "yes" response to a "no" response. The "Because my child does not use enough words, I feel stressed" statement changed from a "no" response to a "yes".

This study also assessed parent perspectives regarding the coaching experience. A five-question researcher-developed Likert type scale was utilized to survey parent perceptions of the coaching experience. The ratings on the scale were Strongly Disagree (SD), I disagree (D), I don't have an opinion (N), I agree (A), I Strongly Agree (SA). The parent strongly agreed that coaching helped her learn to use milieu strategies and made her feel more confident about being able to help her child communicate. The parent disagreed that coaching made her feel less confident about being able to help her child communicate. The parent strongly agreed that coaching experience was positive. The parent also strongly agreed that she thought it was important to continue to use what she learned from the coaching experience.

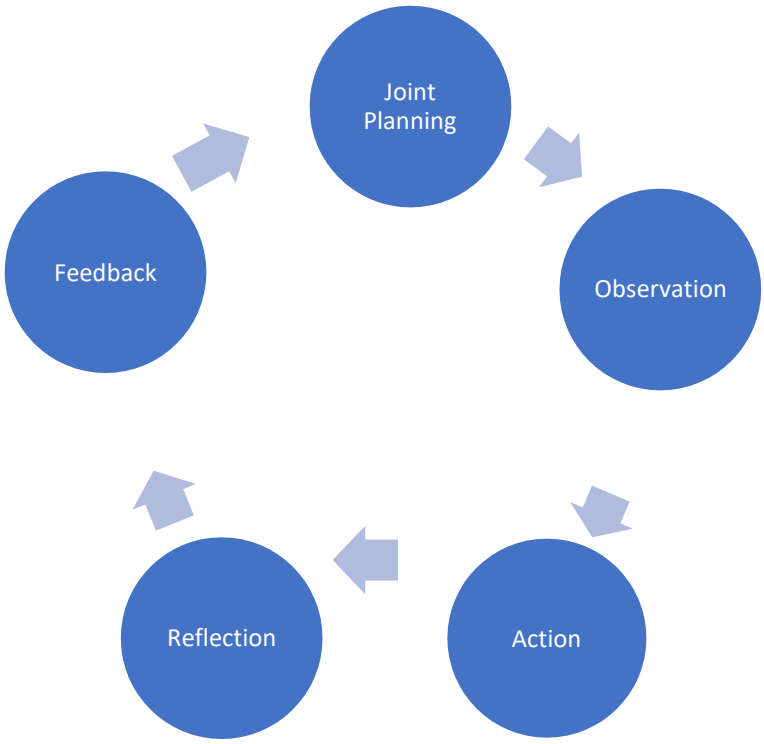

Figure 1. Components of the Shelden and Rush (2008) Coaching Model

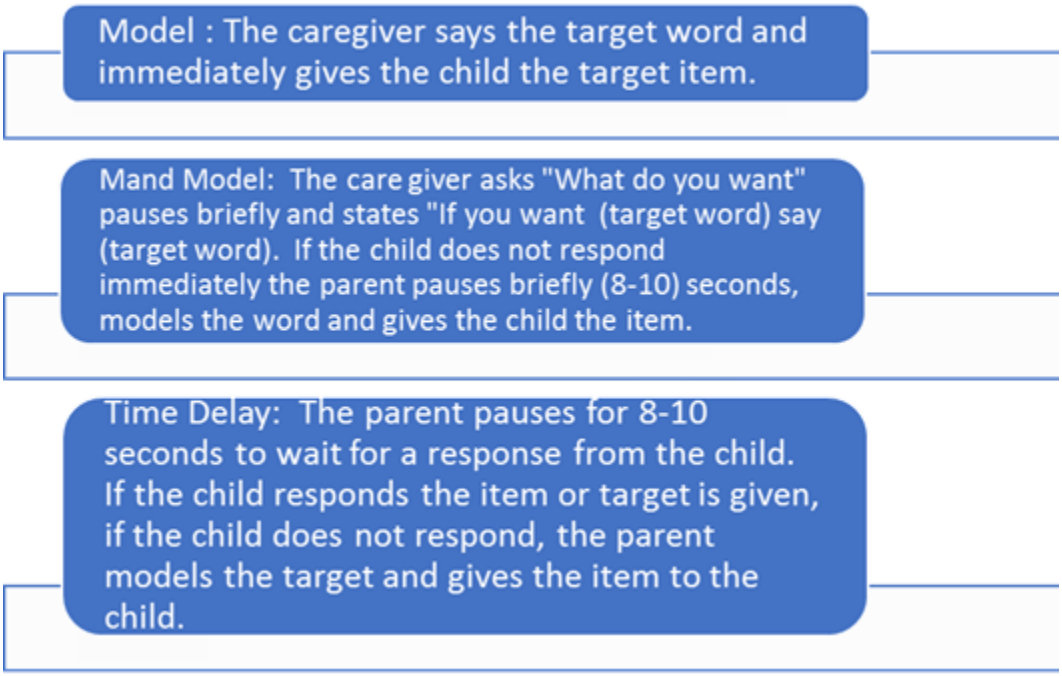

Figure 2. List of Milieu Strategies Used

Session	Target Word 1	Target Word 2
Baseline 1	Play	Please
Baseline 2	More	Eat
Baseline 3	Cookie	Cup
Intervention 1	Book	Open
Intervention 2	Ball	Baby
Intervention 3	Up	Down
Intervention 4	Bubbles	Pop
Intervention 5	Go	In
Intervention 6	Out	Me

Figure 3. Target Words

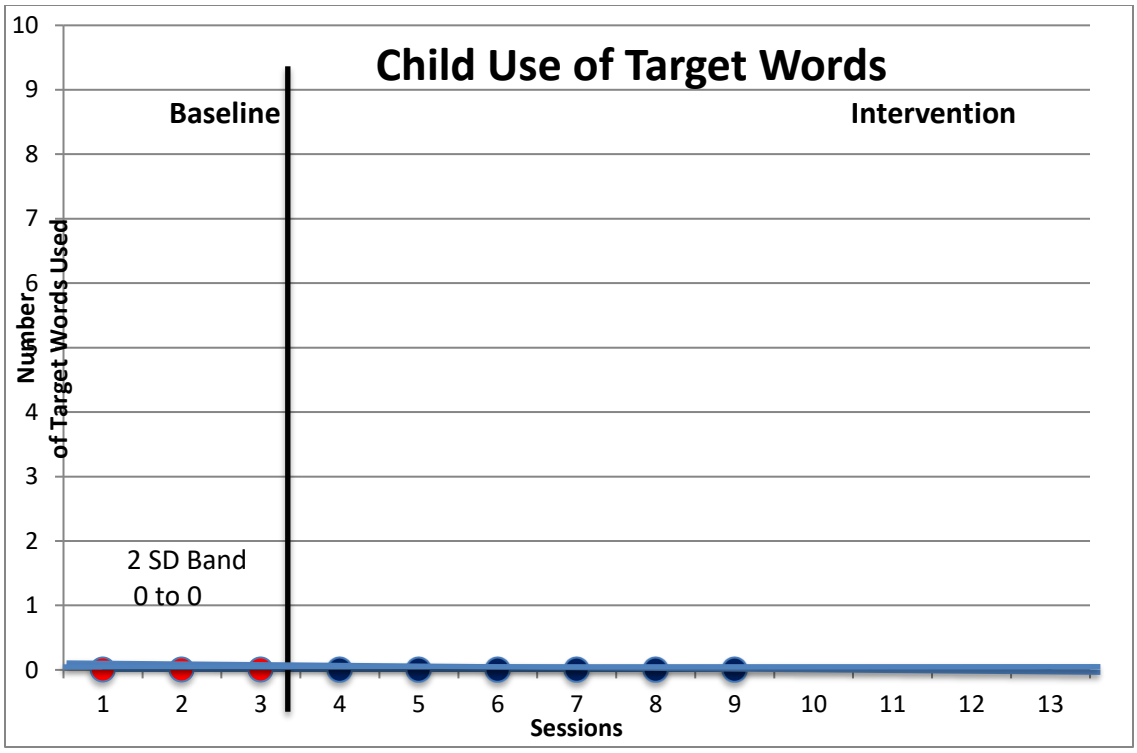

Figure 4. Target Words Used by the Child

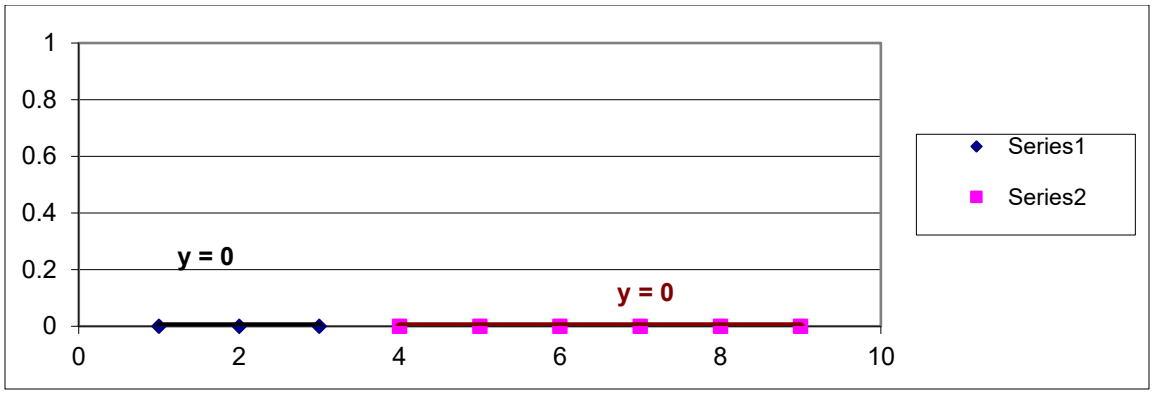

Figure 5. Slope of the Total Words Used by the Child

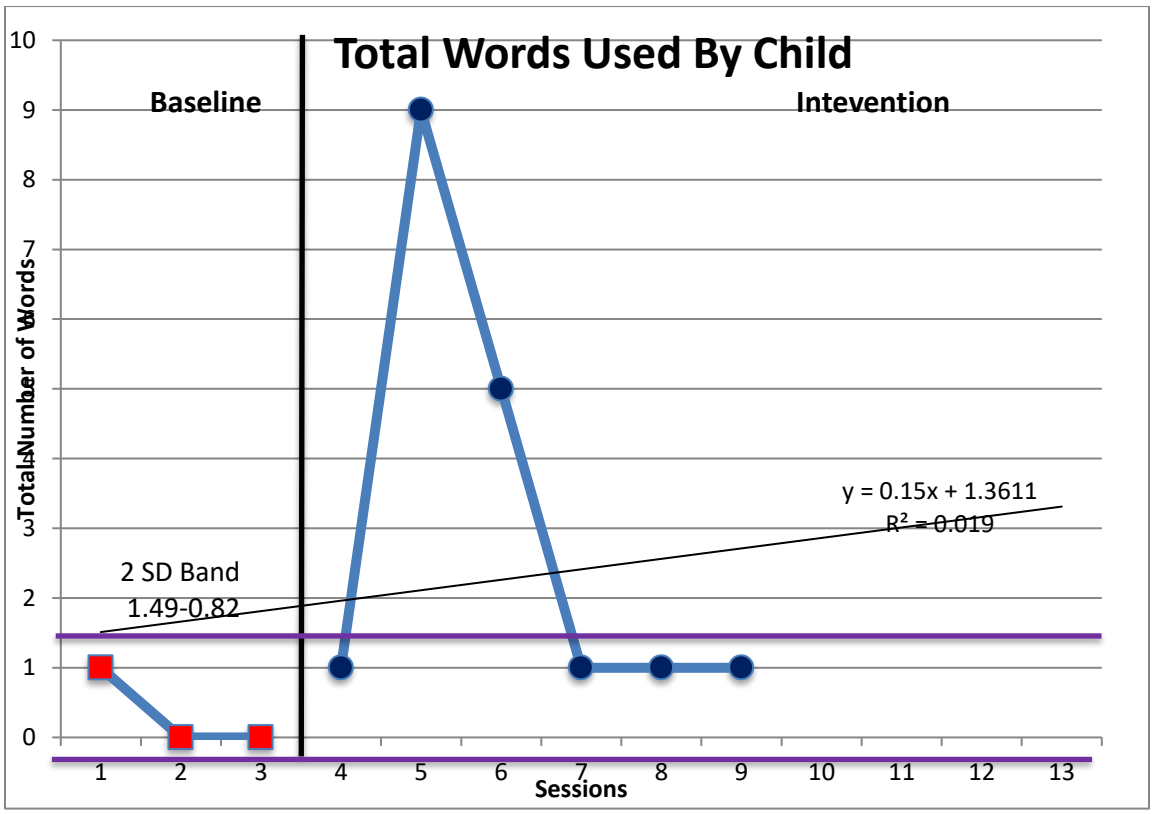

Figure 6. Total Number of Words Used by the Child.

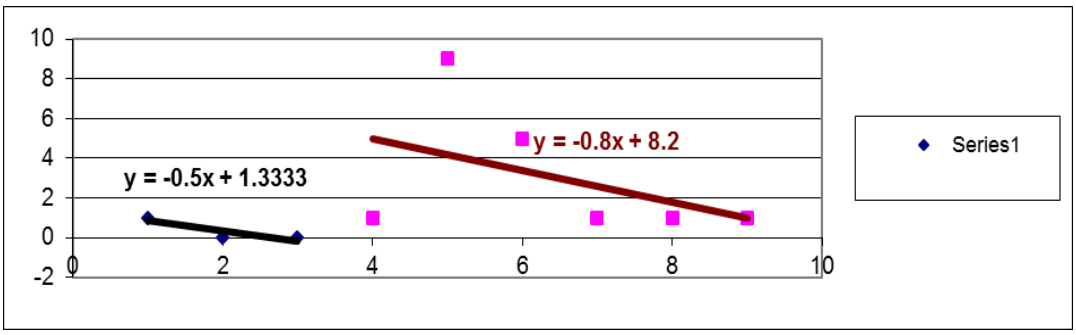

Figure 7. Slope for Total Number of Words Used by the Chil

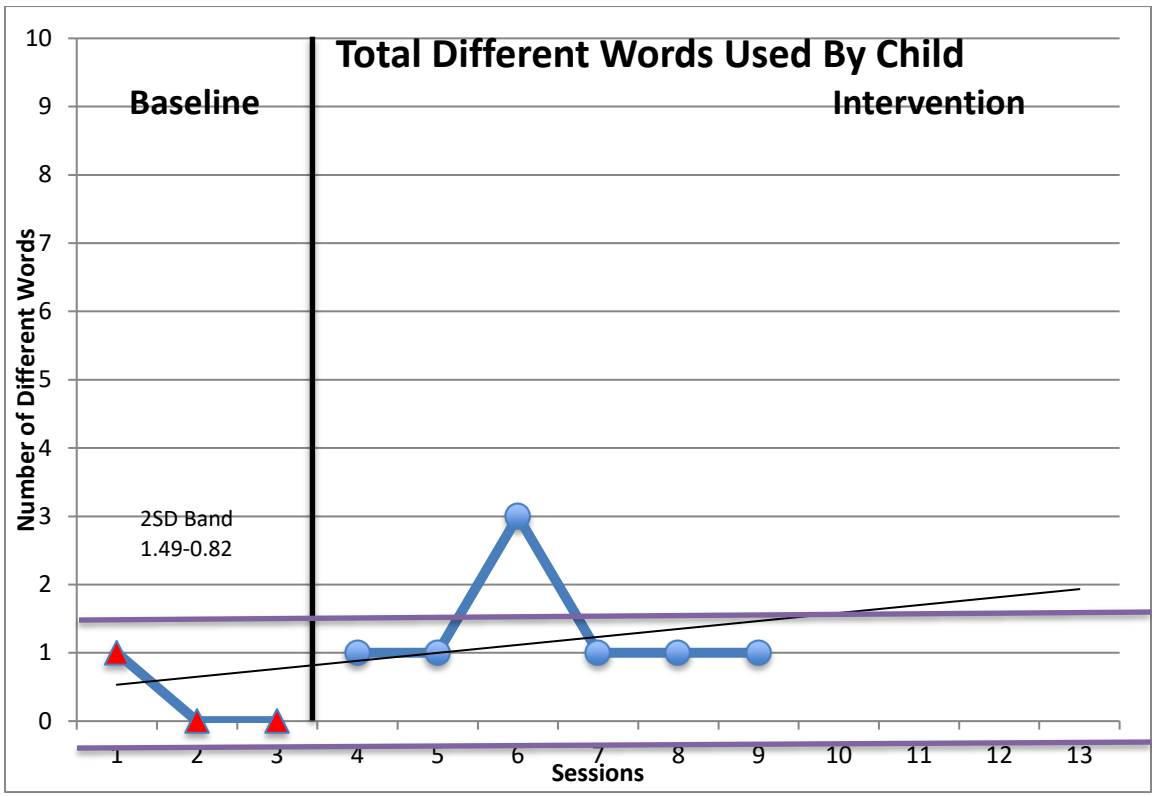

Figure 8. Total Different Words Used by the Child During the Study

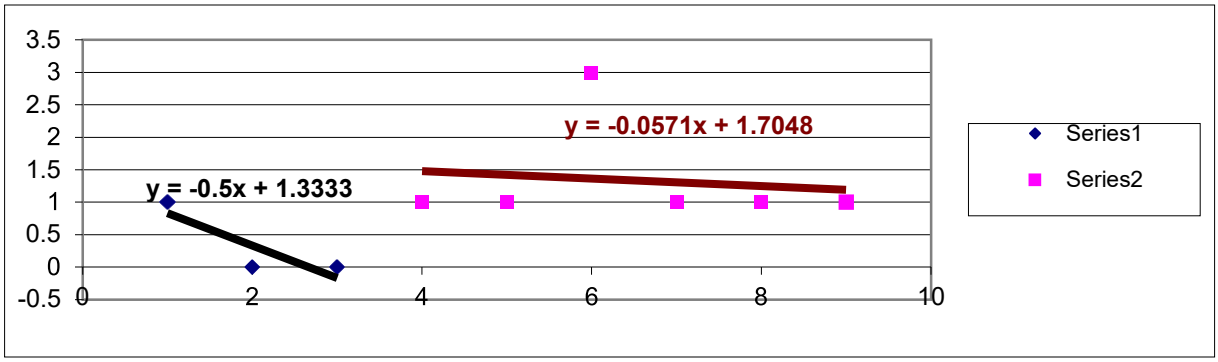

Figure 9. Slope of the Total Different Words Used by the Child During the Study

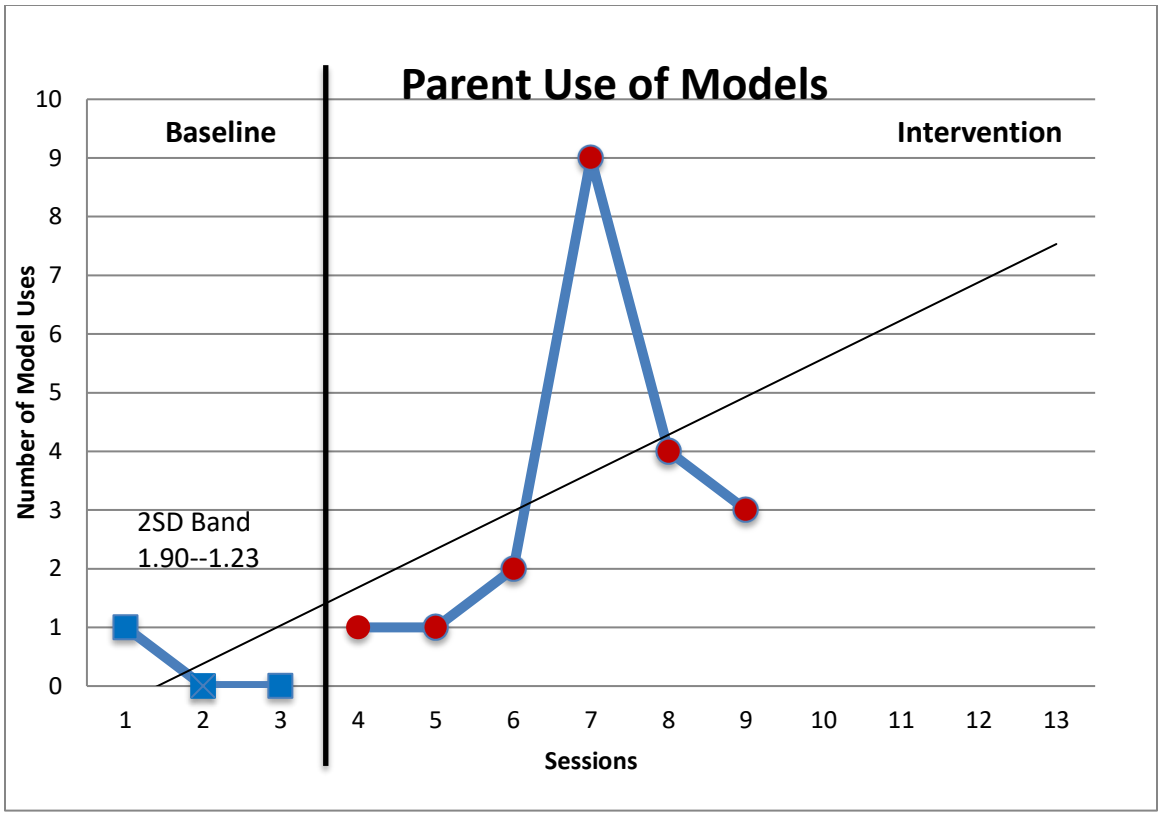

Figure 10. Parent Use of Models

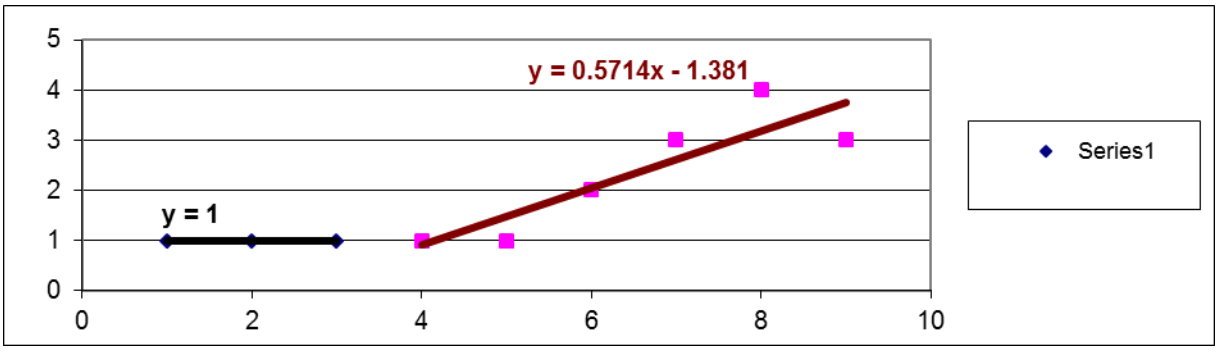

Figure 11. Slope for Parent Model Use

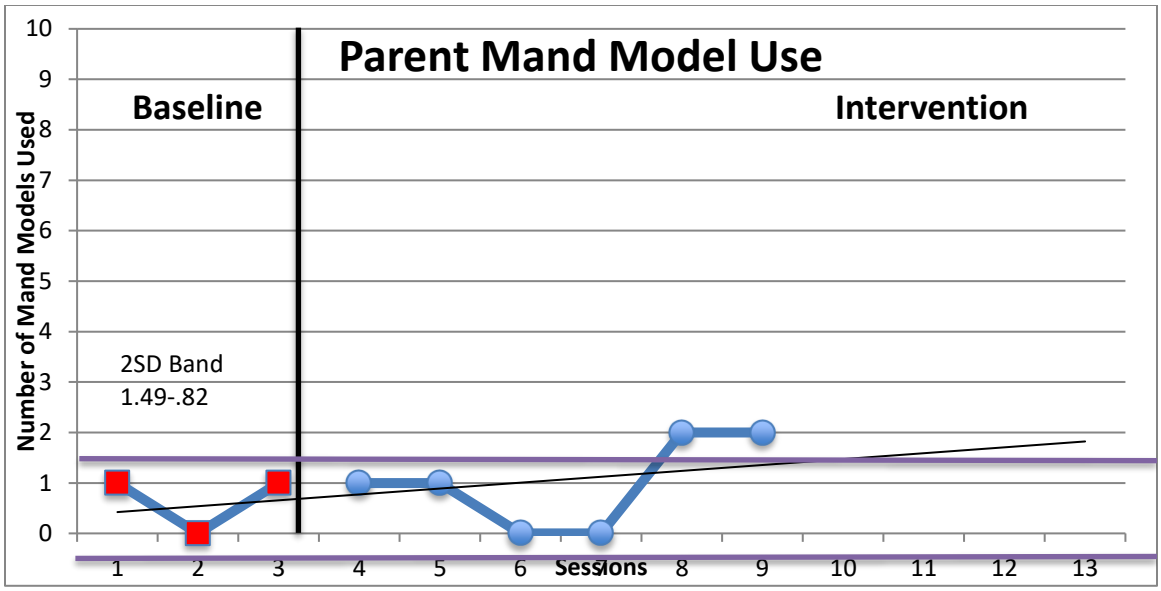

Figure 12. Number of Parent Uses of Mand Mand Model Strategy

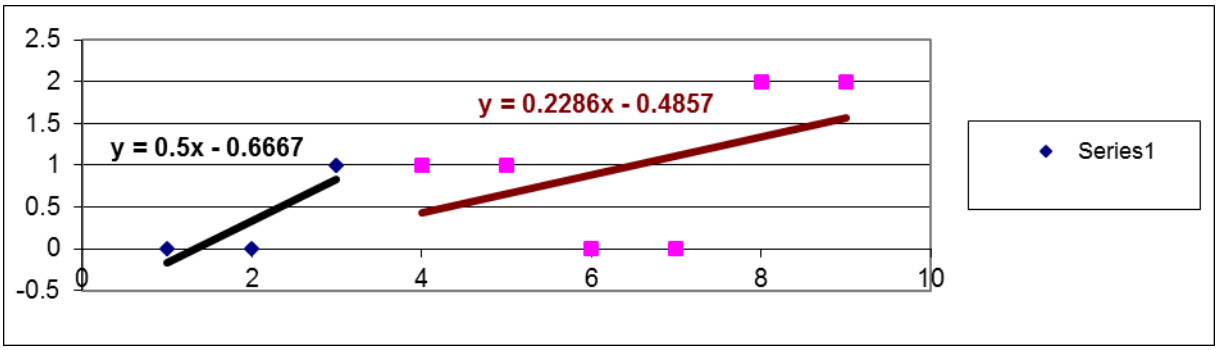

Figure 13. Slope for Mand Model Use

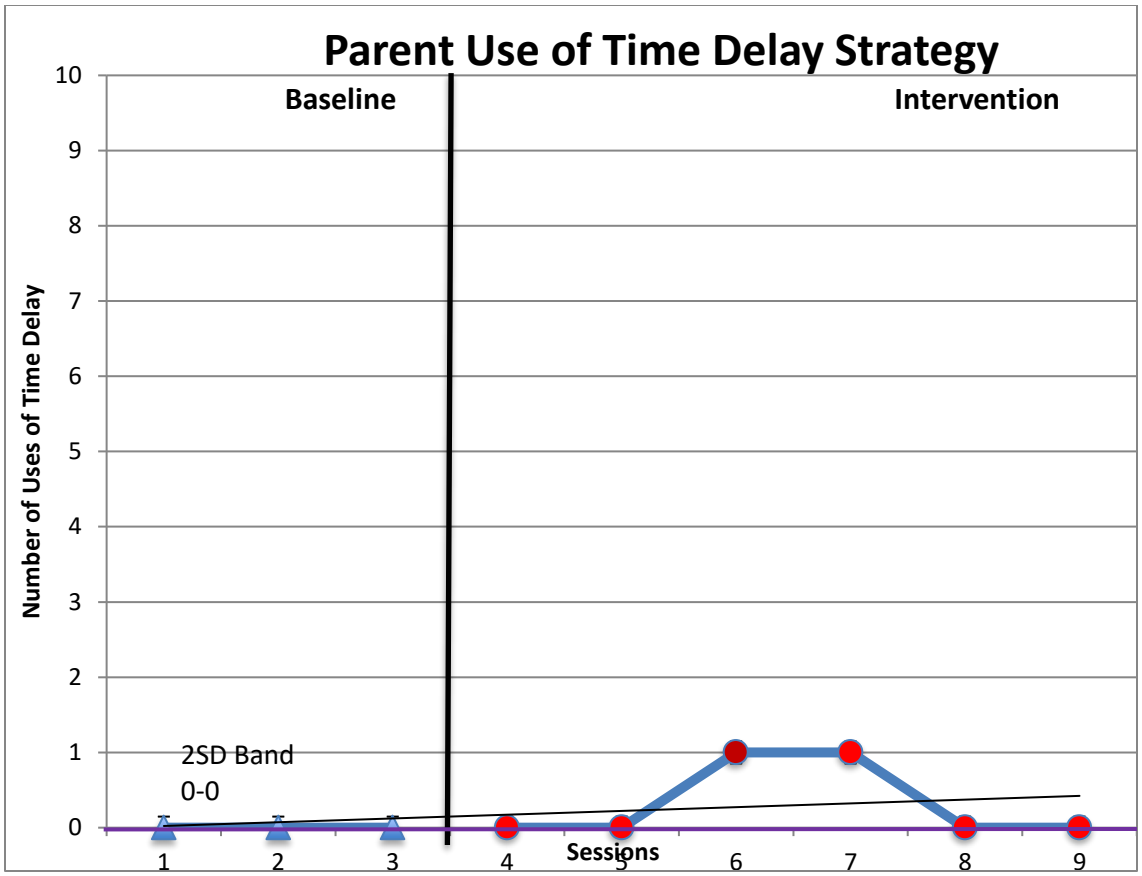

Figure 14. The Total Number of Parent Uses of Time Delay

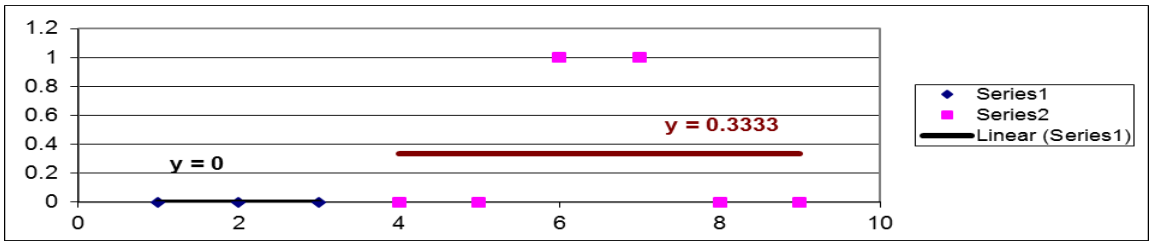

Figure 15. Slope of The Total Parent Use of Time Delay

Table 3. **Data Analysis for Target Words Used by the Child**

Target Words	**Baseline**	**Intervention**
Standard Deviation	**0**	
Variance s2	0	
n	3	
mean	0	0
median	0	0
Stability Envelope	0, stable	
Percent Gained	>0	
PND	0	
Absolute Level Change Within Condition A	none	
Within Condition B		none
Relative Level Change Within Condition A	none	
Within Condition B		none
Absolute Level Change Adjacent Condition	none	
Relative Level Change Adjacent Condition	none	
Trend	Zero -celerating	
Median Change	none	
Mean Change	None	

Table 4. **Data Analysis for the Total Words Used by the Child**

Total Words	**Baseline**	**Intervention**
Standard Deviation	**.577**	
Variance s2	0.333	
n	3	
mean	0	3
median	0	1
Upper 2SD Band	1.49	
Lower 2SD Band	-0.82	
Stability Envelope	0, stable	
Percent Gained	18%	
PND	22.22%	
Absolute Level Change Within Condition A	.5, deteriorating	
Within Condition B		0, no change
Relative Level Change Within Condition A	.5, deteriorating	
Within Condition B		-4, deteriorating
Absolute Level Change Adjacent Condition	improving	
Relative Level Change Adjacent Condition	improving	
Trend	Improving	
Median Change	none	
Mean Change	None	

Table 5. **Data Analysis for the Total Different Words Used by the Child**

Total Different Words	**Baseline**	**Intervention**
Standard Deviation	**.577**	
Variance s2	0.333	
n	3	6
mean	0	6
median	0	1
Upper 2SD Band	1.49	
Lower 2SD Band	-0.82	
Stability Envelope	0, stable	
Percent Gained	18%	
PND	11.11%	
POD	88.89%	
PEM		
Absolute Level Change Within Condition A	1, deteriorating	1, no change
Within Condition B		0, no change
Relative Level Change Within Condition A	0, deteriorating	0, no change
Within Condition B		-4, deteriorating
Absolute Level Change Adjacent Condition	improving	
Relative Level Change Adjacent Condition	improving	
Trend	Improving	
Median Change	01, improving	
Mean Change	06 improving	

Table 6. **Data Analysis for the Models Used by the Parent**

Total Different Words	**Baseline**	**Intervention**
Standard Deviation	**.0**	
Variance s2	0.333	
n	3	6
mean	1	2.3
median	1	2.5
Upper 2SD Band	1.0	
Lower 2SD Band	1.02	
Stability Envelope	.2, stable	
PND	66.66%	
Absolute Level Change Within Condition A	1,	
Within Condition B		2
Relative Level Change Within Condition A	0,	
Within Condition B		2
Absolute Level Change Adjacent Condition	1	
Relative Level Change Adjacent Condition	1	
Trend	acceleration	
Median Change	1 to 2.33, improving	
Mean Change	1 to 2.5, improving	

Table 7. **Data Analysis for Parent Mand Model Strategy Use**

Mand Model	**Baseline**	**Intervention**
Standard Deviation	**.577**	
Variance s2	0.33	
n	3	6
mean	.33	1
median	0, stable	1
Upper 2SD Band	1.49	
Lower 2SD Band	.82	
Stability Envelope	0, stable	
Percent Gained	16%	
PND	33%	
Absolute Level Change Within Condition A	1, improving	
Within Condition B		2, improving
Relative Level Change Within Condition A	.5, improving	
Within Condition B		2
Absolute Level Change Between Conditions	1, no change	
Relative Level Change Between Condition	.5, improving	
Trend	Accelerating	
Median Change	0 to 1, improving	
Mean Change	.33 to 1, improving	

Table 8. **Data Analysis for Parent Time Delay Strategy Use**

Time Delay	**Baseline**	**Intervention**
Standard Deviation	**0**	
Variance s2	0	
n	3	6
mean	0	.33
median	0	0
Upper 2SD Band	0	
Lower 2SD Band	0	
Stability Envelope	0, stable	
Percent Gained	16%	
PND	22.22%	
Absolute Level Change Within Condition 1	0, no change	
Within Condition 2	0, no change	
Relative Level Change Within Condition A	0	
Within Condition B		0, no change
Absolute Level Change Adjacent Condition	0, zero accelerating	
Relative Level Change Adjacent Condition	0, zero accelerating	
Trend	Minimally Improving	
Median Change	none	
Mean Change	0-.33, improving	

Discussion

There are few studies that focus on teaching parents/caregivers to use milieu teaching strategies with toddlers who only have expressive language delays (Roberts, Wolfe, & Spidalieri, 2014). There are no known studies that have used the coaching methods described by Rush and Shelden (2008) to teach the parents of late talkers to implement milieu teaching strategies. This research will contribute to the limited evidence to support use of coaching interventions for parents of late talkers who participate in Part C early intervention programs. Although all child outcomes were not met, benefit from the intervention was reflected in the data reported. Positive parent outcomes were achieved that support the use of coaching parents to implement therapeutic interventions in the natural environment of the child. More importantly, the intervention in this study is supportive of the expectations that services for children under the age of three build parent's capacities to support children's development in every day family identified activities and routines (Brown & Woods, 2015).

Coaching Parent Use of Milieu Teaching Strategies

Joint Planning /Observations

Incorporating family-centered communication interventions in the natural environment while supporting adult learning can often be a challenge. Helping caregivers learn to incorporate communication interventions into their daily routines

is encouraged by coaching (Hanft, Rush, & Shelden, 2004). The coaching process started with the interventionist using the demographic data to determine the family dynamics and make observations regarding the communication styles being utilized by the family. Next, the Portland Functional Communication Questionnaire (Wilson & Gildersleeve-Neumann;n.d) and the expressive communication component of the DAYC-2 (Voress & Maddox, 2013) were used to determine the words that the child currently used across natural routines. Information from the Portland Functional Communication Questionnaire was also used to help determine words that the parent was interested in the child learning. Next, careful observations of the family dynamics were observed during intake. Dyad 1 consisted of the child and a grandparent who was the legal guardian and parenting the child. The child's biological mother was also in the home. The biological mother was unable to parent the child and no longer had custody due to her mental illness. These issues required the interventionist to be sure to a) seek out and respect both caregiver's views (parent and grandmother), b) ensure equal participation of family members in the decision- making process; c) respect caregiver's rights to decide even when they were contrary to professional views and d) recognize and accept the role of culture, values, and family beliefs (Dunst, Trivette, & Hamby, 2007).

The coaching implementation checklist (see Table 7.) verified the interventionist's use of parent coaching each session. Starting with the first intervention session, the interventionist explained the coaching process to the parent. Each component of coaching was reviewed. At the end of each treatment

session, the parent signed an implantation checklist verifying that the coaching occurred. The amount of time used during each coaching component varied based on the routine and the amount of coaching required. Each intervention session lasted 30-45 minutes with over half of the intervention time being dedicated to coaching the caregiver. Three to five minute segments were used for data collection. The data collection occurred at the end of the coaching. Increments of 3-5 minutes were used because it was the typical length of a single routine or activity. The interventionist was concerned that not pre-determining the length of a data collection segment would distort the data collection and give the parent more opportunities to demonstrate use of strategy in longer data collection segments. Not having a pre-determined length of time for data collection would also give the child more opportunities to use words in longer sessions and fewer opportunities in shorter sessions.

Target Words, Total Words and Total Different Words

The independent variable did not increase the child's ability to use target words but may have had some effect on the child's total word use. Nine out of eighteen target words were selected due to the parent's responses on the Portland Functional Communication Questionnaire (Wilson & Gildersleeve- Neumann(n.d)). (See Figure 3 to the review the target words) The other words were chosen due to the child's current phonetic repertoire and the functional relevance of the word. For example, the child did not use any words to make requests so the interventionist

introduced the words “more” and “please”. The target word results for this study are like previous studies by Law et al. (1999) and Wake, Tomblin, and Girolametto et al. (2011). These studies did not result in positive expressive language outcomes. Even though the parent was coached, the parent’s use of milieu strategies resulted in minimal to no benefit to the child’s use of target words. Each time the child said a word it was recorded. In this research study, in two out of six intervention sessions the child increased the total number of words produced twice by eight words and four words, respectively. The participant in this study produced one word (uh-oh) during the baseline phase of the study. Her maximum number of words produced occurred in session five. During session five she produced a total of 9 words. However, the child only increased the number of different words by two words in one out of the six intervention sessions. The benefit to the child’s total word use was more obvious than the benefit of the total different words used. One reason that might explain why the child did not use the target words could be due to the fact that the child had two new words each session. It is possible that the dyad was given too many target words to incorporate into their daily routines. The dyad was given a total of 18 new target words across a four-week period. This may have been overwhelming for the family. The study did not require the parent to stimulate use of the previously targeted words in each session. It is possible that with exposures of the target words across multiple sessions, the child would have demonstrated use of the target words. Yoder et al. (1991) suggests that the general efficacy of an intervention program may be impacted by the developmental level of the child. Any

gain in a child's expressive vocabulary is important to the caregiver and parent. Gains in a child's vocabulary provide the child additional meaningful words which can be used to increase communication between the caregiver and child. Although the child had good joint attention skills, her verbal repertoire consisted mostly of bilabial CV productions. This may have been another reason why the child produced few new words. The child's phonetic repertoire could not support the addition of target words outside of her sound production. Thus, a limitation of the study may be that the target words should have been more carefully selected to represent the sounds in the child's phonetic repertoire and routines and toys that the child found interesting.

Gestures Used by the Child

In lieu of sound and word production, the child signed "more" and used the sign appropriately at least twice during intervention sessions, although this was a skill which was not taught during the study. The child used many other gestures that seemed to be meaningful during the intervention period. For example, to communicate the target word "pop" she clapped her hands. To communicate the target word "up" she raised both her arms up. She did not demonstrate any of these gestures prior to the study.

Parent Use of Milieu Strategies

The independent variable did result in parent use of milieu teaching strategies in naturalistic routines with her child. Results indicated that the parent made the most

progress with use of models and time delay strategies. Although data was not kept on the number of failed attempts that the parent made at using each strategy, she appeared to make the most errors with the mand-model strategy. The mand-model strategy required her to give the mand, and wait for the child's response. If the child did not respond, the next step was to model the word and then give the target item to the child. The parent would frequently give the mand but not model the word and give the item to the child after she modeled the word. Even though she did not master the use of all the strategies during the 3-week intervention period, the parent made many attempts at using each of the strategies and changed her communicative responsiveness to the child from baseline. At baseline, she rapidly completed play routines and rarely paused to give the child enough time to respond. For the baseline sessions, she used parallel talk and gave the child many opportunities to follow her verbal directions. She gave the child more opportunities to respond receptively than expressively. After receiving the parent coaching intervention, the parent gave the child more opportunities to practice using words and slowed down her rate of speech. The parent seemed to have a difficulty thinking of ways to embed the target words into the child's routine and frequently required a model from the interventionist. This provided the interventionist opportunities not only to explain how to use the strategy but to also express why it wasimportant Woods et al., 2011). These demonstration opportunities provided the parent opportunities to practice using a specific strategy during the routines modeled by the interventionist (Woods et al., 2011). The interventionist allowed the parent to choose which routine to use to focus on the

target words. According to current research, when caregivers participate in the decision-making process they have a greater capacity to generalize strategy to other activities, routines, and settings (Kashinath et al., 2006).

The parent's responsiveness to the child's communication increased over the course of this study. The changes in the parent's expectations of the child's communication may have impacted the child's communicative behaviors. If the study were longer, a better assessment of the relationship between the parent's responsiveness and the child's communicative behaviors could be made.

Due to the limited number of intervention sessions, there may not have been enough time to learn to generalize a strategy to multiple target words. All treatment sessions occurred in the evening after the parent in the dyad had finished work and the child participant had been in daycare all day. The parent was caring for her two non-biological children and her (biological) adult daughter who was hospitalized for two days during the intervention period. Although she eagerly participated in the sessions, she did not have many opportunities to practice the strategies outside of the intervention times. Woods et al. (2011) suggest that inconsistent practice will not result in optimal progress. Woods et al. 2011) further states that the caregiver must be able to focus attention on the child and respond for the practice to be meaningful. During this study, there were many distractions in the home environment. The parent was also the legal parent guardian of a second child who was 3 years old and for at least half of the treatment sessions was playing in the same room. During a few

sessions, the sibling did attempt to participate in the treatment activities with his sister. For example, he wanted to play with the bubbles during a bubble routine. The sibling did not participate because the parent expressed frustration about the sibling interacting during the routine. Because the child's biological mother would sometimes distract the parent with negative comments during the interventions, this may have challenged the parent's ability to focus during the sessions. The behavior of the adults in the family provides a perfect example of one of the challenges and benefits of providing services in the naturalistic environment. If the family were being coached outside of the research study, coaching could provide all adults in the family opportunities to learn self- improvement strategies and behaviors that could improve the development of the child.

Feedback/Reflection: Coaching Components

The parent participant requested feedback multiple times across the intervention sessions. Feedback was embedded during the action/practice opportunities and at the end of each coaching session. Examples of feedback that was provided to the parent included "Make sure you give her (the child) enough time to respond before you ask another question or give her (the child) another direction". An additional example of feedback used during the study is "that was a great model, you gave her the item after you said the word". Examples of reflective questions posed to the parent included "How do you think your use of the strategy can be applied to other routines?" "What do you think helped?" "What could you do differently?" After the

final coaching session, the interventionist and the parent reflected on ways strategies were being utilized and ways they could be expanded across the natural environment.

Natural Environment Influences

Dyad 1 consisted of the child and a grandparent who was the custodial parent and parenting the child. The child's biological mother who no longer had custody of the child and had been designated as unable to care for the child, was also in the home. The child's biological mother had been recently released from a mental hospital due to her addiction to drugs and alcohol, and unmanaged bipolar disorder. The biological mother was present for two of the intervention sessions. Because of the sensitive nature of the relationship between the biological mother and the custodial parent of the child, the interventionist attended to the input and recommendations from the biological mother as much as possible when she was in the home. For example, during one intervention session, while the custodial parent was engaging in a bubble routine with the child, the biological mother turned the television on to show the child's favorite television show. She proceeded to sing Twinkle Twinkle Little Star and distracted the child. Instead of discouraging the biological mother's behavior the interventionist engaged with the biological mother to see if there were any other songs that the child liked and discussed ways that the singing of songs could be included in her daily routine. During an additional intervention session, the biological mother made multiple rude remarks during the intervention session to the custodial parent. The custodial parent ignored the biological mother as did the interventionist.

Although the biological mother was not newly diagnosed, the custodial parent indicated that the biological mother had been having difficulty maintaining her emotional stability over the past six to nine months. It is difficult to know how the family dynamics impacted the child's language development or the outcomes measured for Dyad 1. Because there was only one participant in this study it is difficult to determine if outcomes would vary for a family who presented with a different set of dynamics.

Parent Perceptions

According to the Parental Attitudes on Pediatric Communication Progress checklist, the use of specific parent coaching may have influenced the parent's perception of helping her late talking child improve his use of target words. The checklist also indicated that parent's perception of the child's communication abilities and needs also changed from pre-to post intervention. Yoder and Warren (2011) state that responsivity and other maternal interaction variables influence the child's behavior and role expectations with other adults and therapists. Yoder and Warren (2011) also state that variables such as maternal education and maternal responsivity along with child characteristics may impact how children respond to treatments. As stated by Yoder et al. (1994), the parent responded to the child's linguistic communication more than her pre-linguistic communicative efforts. Prior to the intervention of this study, the parent participant did not feel frustrated because she did not know how to help her child and was not stressed because her child did not use

enough words. Post intervention she continued to not feel frustrated about not knowing how to help her child, but felt stressed because her child did not use enough words. After intervention, the parent seemed more aware of her child's strengths and weaknesses. Prior to intervention, the parent believed that the child tried to communicate across daily routines; post intervention she did not believe that the child did. Pre-intervention the parent believed that the child tried to communicate important things to her, post intervention her perception of this changed. Similar to results expressed by Brown and Woods (2015), the participant in this study believed that coaching made her feel more confident about being able to help her child communicate. The participant also expressed that the parent coaching experience was positive and that it helped her learn to use milieu strategies. The participant strongly agreed that it will would be important for her to continue to use what she learned from the coaching experience.

Interestingly, a 6-month study conducted by Fey et al. (2006) to evaluate the efficacy of a 6-month course of responsivity education and its effect on parent stress found that milieu intervention had no effect on parent stress. Based on the responses on the questionnaire for this study, the parent's perception of the child's communication abilities and efforts appear to have changed from pre-to post intervention. Romski et al. (2011) examined parent perceptions of the language development of toddlers with developmental delays before and after they received parent- coached language interventions. Results from their study found that parents participating in interventions focusing on spoken language perceived their children's

communication difficulties to be more severe post treatment.

Limitations

The current findings should be considered in the context of several limitations. First, the long-term outcomes remain unknown due to the short duration of this study. The baseline consisted of three data points and the intervention included six data points as there is currently limited empirical guidance to determine an appropriate number of treatment sessions and an appropriate length of each session (Brown & Woods, 2015). Additional treatment sessions, may have produced different results. Secondly, the study included one parent child dyad. Characteristics of additional dyads could have provided more information. Thirdly, instructional methods were limited to live coaching with the parent in the naturalistic environment. It is possible that the parent would have attained greater accuracy with use of each milieu strategy if multiple teaching modes (reading materials, and videos) were used during the coaching opportunities. Because it could be confusing to learn all three sessions in one day, it may have benefited the parent to have each strategy introduced during a different session. Woods et al. (2011) indicate that direct instruction and teaching (written or illustrated handouts, role playing, videos) should be utilized during coaching if the caregiver views them as valuable. The interventionist did not ask the parent what learning method she thought was most valuable prior to the start of the intervention. Fourthly, due to the A-B design of this single subject research study, the researcher is unable to state the effect of the

intervention of the independent variable on the dependent variables. The researcher is unable to conclude that using SPC to implement interventions administered in naturalistic environments of late talking toddlers will yield better outcomes than other treatments that use parent coaching to implement interventions as this was not a comparison study. Furthermore, although target words have been used in milieu teaching (Kaiser and Roberts, 2013), it is possible that a different set of target words would have elicited increased word production from the child. It is also possible that exposures of the target words across multiple sessions would have increased the child's use of the target words. Additionally, the target words that the dyad was provided may not have represented meaningful items or activities that would encourage the child's use of the target words.

Future Research

Future research should include evaluating the effects of using specific parent coaching to implement milieu strategies to parents of toddlers who are delayed talkers with a larger group of participants and over a longer period. It is difficult to generalize the outcomes of this study due to the limited number of participants and the study design. Designs such ABA and ABAB include experimental control and thus results could be attributed to a change in dependent variables. There have been large randomized controlled trials that have evaluated long term outcomes for late talkers (Rescorla, 2005) The late talkers in these studies did not receive coaching interventions and were found to have difficulties with vocabulary and grammar,

verbal memory, and reading comprehension, even though their language skills were within average range. It would be interesting to explore the long-term effects of using specific parent coaching to implement milieu strategies to late talkers to determine if the academic and social impacts linger in similar ways that they have been reported for late talkers who receive traditional non-coaching interventions (Rescorla, 2005).

This study focused on preschool aged late talkers who had primary expressive language disorders. Future studies should explore the relationship between individuals with primary receptive and expressive language disorders and the utilization of parent coaching to implement milieu teaching strategies. There are few studies that have focused on receptive and expressive language interventions (Roberts, Kaiser, Wolfe, Bryant & Spidalieri, 2013). To examine the effects of the Teach-Model-Coach-Review Instructional approach on caregiver's use of milieu teaching, prompts were explored. Their investigation included four caregiver dyads who had primary developmental language impairments. Some of their participants had either an expressive or receptive language delay and others had a combination of a receptive -expressive impairment. Future studies to explore the use of parent coaching to deliver treatments for children with receptive-expressive language impairment strengthen the body of evidence to support the use of parent- implemented interventions. Although research for individuals who are younger than 3 years of age or less have proven that the natural environment is best practice for service delivery, it would be interesting to evaluate the effects of using parent coaching in the natural environment as a service delivery model for individuals with expressive or receptive language delays who are school aged.

Parent coaching of the strategies utilized by clinicians to deliver interventions outside of the home might improve the outcomes of school aged individuals who receive intervention services outside of their natural environment. This treatment approach might also improve parents' responsiveness to the learning needs of their child. Roberts and Kaiser (2011) conducted a study that included child participants between the ages of 18 and 60 months. This study compared parent- implemented interventions to speech language pathologists implemented interventions for treating expressive language, expressive vocabulary, and rate of communication. Roberts and Kaiser (2011) found that parent implementation of interventions had a positive effect on parent use of intervention strategies and a large effect on parent responsiveness. It would be interesting to see if using parent coaching to provide services in the home for school aged children with communication difficulties improves the outcomes for the child and decreases the amount of intervention needed in the school.

Many of the studies that evaluate parent coaching for communication have focused on language development and not speech. Has (2015) completed a study that included 17 children with cleft palate and their mothers who received parent training to implement speech language interventions. Nine mother and child dyads did not receive the treatment. Results for this study showed that children who received a parent-implemented intervention exhibited significant improvement on language measures based on standardized tests and quantitative language and speech measures from spontaneous utterances. The children whose parents were trained to implement the intervention showed a significantly greater extent of change in

expressive vocabulary size, number of total words, and mean length of utterance than did those who did not receive the intervention. The intervention group in this study showed a decrease in the percentage of compensatory misarticulation following the intervention. The control group showed an increase in the percentage of compensatory misarticulation following the study.

Many of the studies that have evaluated parent implemented interventions appear to have used women as the individual to implement the interventions. Future research should focus on teaching strategies to fathers and preschool teachers. There are studies that have explored differences between mothers and fathers when parenting a child (Lindsey & Caldera, 2006). This study examined differences in mother and father behavior during a triadic interaction session, and differences in mothers' behavior across triadic and dyadic interaction. The study included, 60 two-parent families with an 11- to 15-month- old child (30 boys, 30 girls). Interestingly, results from this study revealed that mothers were not as involved, less sensitive, and displayed more negative behaviors during triadic than during dyadic interaction. This study also indicates that the gender of the child may have impacted the behavior and responsiveness of the parents. The researchers indicated that mothers of sons displayed more emotion during triadic interaction than the mothers of daughters. The researchers from this study also indicated that mothers were more involved with children than fathers were during triadic interaction. This study also reported that the fathers involved in this study displayed more emotion than mothers did during the triadic interactions. More investigations regarding the role that gender plays for

parent implementation of coaching strategies will be a valuable tool to determine parent characteristics that lead to effective implementation of communication strategies and to support the use of parent coaching.

Although, this study did not focus on child gestures or vocalizations, the child participant demonstrated an increase in her use of gestures at the end of the study. Fey, Yoder, Warren and Bredom-Oja (2013) used word targets as a guide to determine when to advance therapy goals while using parents to implement milieu teaching. Their study measured the child's use of words and signs. Future studies should compare the child's ability to use signed words and gestures with parents coached as implementers of the treatment intervention.

Cross-cultural studies have indicated that different groups of people possess beliefs and behaviors that may be normative in their culture but are not necessarily normative in another culture (Bornstein, 2012). Future studies should examine how culture might impact an individual's ability to implement milieu strategies with their child.

Summary

The results from this study provided promising outcomes for the use of specific parent coaching model to implement milieu strategies to late talking toddlers. Although the outcomes for improving the child's total use of words and target words were not as promising, the results are useful for the development of future studies and to help determine what might be most effective for short term treatments in the

natural environment.

Like studies conducted by Kashinath et al., 2006 and Woods et al., 2004, this study provides support for using family- guided routines to implement parent coached interventions. Despite the variations in the parent's use of milieu teaching strategies, this study still lends support to the adult learning principles expressed by previous authors (Dunst & Trivette, 2009; Shelden & Rush, 2011; Woods & Brown, 2011). It also supports the premise of using family- prioritized (Brown & Woods, 2015) routines in the natural environment as the parent participants could choose which naturally occurring routine they wanted to practice with their child. In addition to using family-prioritized routines (Brown & Woods, 2015), this study shows that parents can learn to use milieu teaching strategies during a short intervention period. Results from this could lead to more investigations to support expanding eligibility requirements in many early intervention programs to include funding for individuals who only have primary expressive language impairments. The child participant in this study is currently uninsured;the intervention strategies that the parent has learned will give the parents tools to stimulate the child's language development until insurance is obtained and further treatment is pursued. Roberts and Kaiser (2015) have already determined that caregiver participation improves the effects of early intervention and is a cost-effective intervention approach. This research is a positive step in thedirection of finding interventions that are effective, meet the requirements of early intervention practices, and are cost effective to implement. Late talkers who only have primary expressive language difficulties, are often underserved and at risk of life long

social and academic difficulties. It is imperative that continued efforts are utilized to determine effective intervention practices. More importantly, the intervention in this study is supportive of the expectations that Part C services build parent's capacities to support children's development in every day family identified activities and routines (Brown & Woods, 2015).

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Appendix A.Parent Child Intake Questionnaire and Consent

Child Name: Child Age: Parent Name: Parent Age:	Date of Birth: Address:	Date of Intake:
Name of Pediatrician:	Gender:	Ethnicity:
Primary language in home: Other Languages in home:	Parent Education Level: Circle One GED High school Diploma College 1 2 3 4 Graduate 1 2 3 4 Parent Employment: Full Time Part Time Career or Type of Work:	Parent Concerns Regarding Child Development:
Number of siblings:	Ages of Siblings:	
Names and relationship of all individuals living in the home:		
Total number of spoken words:	List total words spoken by child:	Have you (parent) ever received training or coaching regarding your child's speech or language development? Yes No
Can Your child imitate you when you make silly faces and clap your hands? Yes No	Has your child ever had speech therapy or any home-based treatments? Yes No	
Can your child sit without support on the floor? Yes No		
Is your child deaf or hard of hearing? Yes No		
Has your child had recurrent ear infections or fluid in the ear? Yes No	If yes, does your child have or plan to get ear tubes? Yes No	
Did your child's pediatrician complete the MCHAT? Yes No	Did your child pass? Yes No	
Preschool Language Scale 5 Expressive Language SS: Auditory Comprehension SS:	McArthur Bates SS:	MCHAT Score:
Other Scores:		

Appendix B. Parent Attitudes on Communication Progress Questionnaire

Parental Attitudes on Pediatric Communication Progress
Please answer yes or no to the following questions.

A. Parental Attitudes on Child Behavior

1. My child communicates similarly to his/ her peers.
2. My child values communicating.
3. My child responds to my attempts to communicate with him/her.
4. My child tries to use words to communicate.
5. My child does not try to use words to communicate.
6. My child seems frustrated when he/ she is not understood.
7. My child does not try to tell me what he/she wants.
8. I talk to my child even when he/she does not talk to me.
9. My Interactions with my child are frustrating to me due to his/her poor communication.
10. My child enjoys our interactions.

B. Parental Attitudes on Parent Behavior

1. My child is making progress with his/ her communication.
2. I feel confident in my ability to help my child at home.
3. I look forward to helping my child use more words each day.
4. I feel frustrated because I don't know how to help my child.
5. I want to learn ways to help my child communicate.
6. I know how to help my child access things in his/her environment.
7. I am comfortable with the way my child communicates.
8. I believe that I am capable to help my child improve his/her communication.
9. I would like to be taught how to help my child with things that are important to me.
10. Because my child does not use enough words, I feel stresse

Appendix C. Portland Functional Communication Questionnaire

Purpose

This questionnaire gathers information to directly assist clinicians and families as they select treatment targets and goals for children with speech sound disorders. The information provided by caregivers can help create a therapy program that is individualized and meaningful to children, and that incorporates caregiver's ideas in the construction of motivating speech goals.

Instructions

Please read each question and provide answers to the ones that apply to your child. As you answer the questions, think of the words and phrases that your child communicates, *as they say it*. For example, if your child says "*mommy*" rather than "*mom*," please write down "*mommy*." This questionnaire is designed to explore your child's language use, so that meaningful words can be chosen for individualized therapy. For many of the questions, we have included example words and phrases in parenthesis. If your child uses a means of communication other than verbal words to convey a message (for example, pointing, signing, facial expressions) please include that information.

This questionnaire is comprehensive and intended to gather as much information as possible regarding your child's communication. It is long, and you may choose to skip sections that you feel are not important for your child now. Below are the section names and the corresponding page numbers for the questionnaire.

Yes and No Responses p. 8

Social p. 9

Other words (blank page) p. 10As you go, or when you finish, please mark with a star the 10 20 50 words that you believe are most meaningful to your child. These may be the words that are targeted first in treatment.

Names

Think about the names and the words that your child and your family uses when communicating about people, pets, toys, and characters. If it is not clear, please indicate the relationship of the name to your child (e.g., *Alex* (brother), *Michelle* (friend at school), *Erick* (physical therapist)).

Family Members
What specific names and/or words does your child use when communicating about family members? (e.g., *mom*, *mama*, *daddy*, *Alex* (brother), *Uncle John*).

Teachers and Other Professionals
What specific teachers or other adults does your child communicate about frequently, or like to communicate about, and what are their roles? (e.g., *Erick* (physical therapist), *karate teacher*).

Friends
What specific friends does your child like to communicate about? Please write down the names your child would use (consider nicknames).

Pets and Animals
What are the specific names of pets or other animals that are important to your child? Please indicate the types of animals (e.g., *Jordan* (dog, pet at home)).

Please list any names that your child would like to communicate about, or that you would like her to communicate about.

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Activities

What activities does your child enjoy doing at home? (e.g., drawing, puzzles, dress up, watching movies)

What activities does your child enjoy doing at school? (e.g., *art*, *music*).

What are some other activities that your child participates in? These could be community activities or social activities (e.g., *swim class*, *cooking with mom*, going to a specific person's house).

What are the games that your child enjoys playing?

Which of the following home/school activities does your child talk about? If your child uses different words for the example, please write down the word(s) that he would use (e.g., *supper* for *dinner*).

- Breakfast
- Lunch
- Dinner
- Snack time
- Nap time
- Bed time
- Story time
- Play time
- Art time
- TV
- Other:

_____

_____

Please list any activities that your child would like to communicate about, or that you would like him to communicate about.

Places

Think about the specific places that are meaningful to your child, and the places that she likes to communicate about.

What are the places that are typically part of your child's routine or schedule? (e.g., *school*, *park*, *house*).

What are the other specific places that your child likes to communicate about? (e.g., *the beach*, a specific restaurant, a specific person's house).

Please list any places that your child would like to communicate about/

Requests and Needs

When considering your child's communication in regards to requests and needs, please write down what he says (e.g., *I'm hungry*) and anything else that he does to communicate his message (e.g., point to food).

How does your child show that he needs help? What does he say?

How does your child show that he wants food or drink? What does he say?

How does your child request objects? What does he say?

How does your child tell you that he needs to use the bathroom, or needs a diaper change?
How does your child request that an action or an object stops?

How does your child tell you that he is done with something?

How does your child request to go somewhere? This could be a room, a specific place, outside, etc.

How does your child tell you or others that he wants to engage in a certain activity? (e.g.,*watch television*, *play with dolls*).

Are there other unique and meaningful requests or needs that your child communicates about, or that you would like him to communicate about?

Emotions and Feelings

she communicates her message (e.g., points, signs, cries, smiles).

Happy:
Excited:
Angry:
Sad:
Tired:
Sick:
Hurt:
Ready:
Hungry:
Thirsty:

Other emotions:

When people do not understand your child's message, does your child get frustrated? If so, what does your child do? What does your child say?

Please list any emotions and/or feelings that your child would like to communicate about, or that you would like her to communicate.

Toys and Materials

What are the specific toys that your child uses and requests often? Include names of toys (e.g. *Judy* (doll)).

What toys or objects are comforting or special to your child? (e.g., a specific blanket or stuffed animal).

What are the materials that your child enjoys using? (e.g., *markers*, *paper*).

What specific books does your child enjoy reading?

Please list any toys and materials that your child would like to communicate about, or that you would like him to communicate about.

Food and Drink

What are the specific foods that your child communicates about and/or requests often? (e.g., *apples*, *cereal*).

What are the specific drinks that your child communicates about and/or requests often? (e.g., *water*, *milk*, *apple juice*).

Please list any foods and drinks that your child would like to communicate about, or that you would like her to communicate about.

Household Items and Places

write down the word(s) that he would use (e.g., "back yard/front yard" for "yard").

- Bedroom
- Kitchen
- Garage
- Bathroom
- Dining Room
- Yard
- Other:

What specific household items does your child communicate about? (e.g., *toilet*, *car seat*, *television*, *bathtub*).

Please list any items and places that your child would like to communicate about, or that you would like him to communicate about.

Clothing

What are the clothing items that your child likes to communicate about? (e.g., *shoes*, *pants*). If your child uses different words for the example, please write down the word(s) that she would use (e.g., *coat* for *jacket*).

☐	Hat	☐	Sweater	☐	Underwear
☐	Shirt	☐	Pants	☐	Socks
☐	Jacket	☐	Shorts	☐	Shoes
☐	Other:				

_____

_____

Please list any clothing items that your child would like to communicate about, or that you would like her to communicate about.

Question Words

☐	Who	☐	Where	☐	Why	☐	How
☐	What	☐	When	☐	Which		

Are there any specific questions that your child asks often? (e.g., *How come?* or *What's that?*).

Are there questions that your child would like to ask, or that you would like him to ask?

Yes and No Reponses

How does your child say "*yes*" to something? (e.g., *yes*, *yeah*, *uh huh*, nods head).

How does your child say "*no*" to something? (e.g., *no*, *nope*, shakes head).

Social

Think of the words that your child uses when talking to and greeting other people. Check the words that your child uses. If your child uses different words for the examples, please write down the word(s) that she would use (e.g., *hi* or *hey* for *hello*). If you child communicates these words in ways other than speech, please include that information (e.g., waving for *hello*).

- Hello
- Goodbye
- Thank you
- Please

Good morning
Good night I love you
How are you?

What are other social words, phrases, or questions that your child uses? (e.g., *What's up*? or *What's your name*? or *See you later*.).

Please list any social words/phrases that your child would like to communicate, or that you would like her to communicate.

Other Words

Please write down any words that are unique and meaningful to your child that you did not write down previously. You may also write down phrases that your child likes to say. This list may include made up words or "silly" words that have a special meaning to your child. You may also write down words and/or phrases that you would like your child to say. If you do this, please indicate which words/phrases these are.

Appendix D. Parent Coaching Perspective Questionnaire

I strongly disagree SD	I disagree D	I don't have an opinion/neutral . N	I agree. A	I strongly agree. SA

Questions		Rating
1.	Coaching helped me learn to use milieu teaching strategies.	SD D N A SA
2.	Coaching made me feel more confident and capable of helping my child communicate across natural routines.	SD D N A SA
3.	Coaching made me feel less confident about being able to help my child communicate.	SD D N A SA
4.	My experience with coaching was positive.	SD D N A SA
5.	I think it is important to continue to use what I learned from my coaching experience.	SD D N A SA

Appendix E. Baseline Implementation Checklist

Child Name: Parent Name: Date:

I would like you to choose a snack, book or play routine for me to observe you encouraging your child to communicate using the word targets _____ and_____.	
Circle the Routine: Snack Story Play	
Target Words:	
Tally of parent attempts to encourage the child to communicate word targets:	
Tally of use of models:	
Tally of use of mand models:	
Tally of use of time delaya:	
List of targeted words used by child:	
Non targeted words used by the child:	
Other observations:	

Appendix F. Coaching Implementation Checklist

Please sign under each row as indicated and check each practice that occurred.

Phase B	Joint Planning	observation	Action/Practice	Reflection	Evaluation	Signature/ Date
Session						
1						
2						
3						
4						
5						
6.						

Appendix G. Treatment Implementation Checklist

<table>
<tr><td colspan="3">Scripted Responses:

How are things going? What routine would you like to work on today? Your target words will be_ and_____.</td><td colspan="2">Scripted Coaching Phrases: I noticed that_, What do you think helped_____, Would you like to try _____,How do you think that went? What should we do next? What joint plan should we have for our next session?</td></tr>
<tr><td>Joint Planning</td><td>Observation</td><td>Action/Practice</td><td>Reflection</td><td>Evaluation</td></tr>
<tr><td colspan="3">Circle the Routine: Snack Story Play</td><td colspan="2"></td></tr>
<tr><td colspan="3">Target Words:</td><td colspan="2"></td></tr>
<tr><td colspan="3">Tally of use of models:</td><td colspan="2"></td></tr>
<tr><td colspan="3">Tally of use of mand models:</td><td colspan="2"></td></tr>
<tr><td colspan="3">Tally of use of time delays:</td><td colspan="2"></td></tr>
<tr><td colspan="3">List of targeted words used by child:</td><td colspan="2"></td></tr>
<tr><td colspan="3">Non-targeted words used by the child:</td><td colspan="2">Other observations</td></tr>
</table>

Appendices H. Word Record Summary

	Baseline 1	Baseline 3	Intervention 1	Intervention 6
Total words Used				
Total Different Words Used				

Appendix I. Rocky Mountain University of Health Professions Parent Consent to Participate as a Research Subject

Effect of using Specific Parent Coaching of Milieu Strategies for Late Talkers in Naturalistic Settings on Parent and Child Outcomes.

INVESTIGATOR:
Kelly Robinson, M .Ed., CCC-
SLP ClinScD student
Rocky Mountain University of Health Professions
Strong Link Therapy Clinic
(404-713-5374)
stronglinktherapy@gmail.com

RESEARCH STATEMENT

You and your child are being asked to be in a research study. The purpose of this consent form is to give you information you will need to help you decide whether you want your child to be in the study or not. Please read the consent form very carefully. You may ask questions about the purpose of the research, what you will be asked to do, the possible risks and benefits, your rights as a vdunteer, and anything else about the research or this consent form that is not clear. When all of your questions have been answered, you may decide whether you want to be in the study or not. This process is called 'informed consent'. You will receive a copy of this form for your records.

PURPOSE

The purpose of this study is to examine the use of parent coaching of strategies to improve the communication of late talking toddlers who are between the ages of 18-24 months.

WHAT YOU WILL BE ASKED TO DO

Parent Participants

You will not be eligible for the study if the following apply to you:

A. You have received previous milieu training or coaching to remediate speech language delays.
B. You have been diagnosed with a cognitive disorder or learning difference
C. You are deaf or hard of hearing and are unaided and/or use sign language to communicate.
D. You are unable to independently participate in 2-3 naturally occurring routines in the home.
E. You do not agree to participate in and have all sessions in your home

Children Part icipants

Your child must meet the following criteria in order to be considered for this study:

A. They must be 18-24 month old by 5/1/17.

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A. English must be the primary language in their home.
B. Have 10 or fewer spoken or signed words in the expressive vocabulary.
C. Have typically developing cognition, no diagnosed developmental delays or handicapping conditions other than language delays.
D. Have a language standard score of 79 or less on the expressive communication component of the Developmental Assessment of Young Children, Second Edition (DAYC-2). (Must provide proof this test or agree to testing if your child has 10 or fewer words.)
E. Have normal or corrected vision per parent report.
F. Have motor skills sufficient to sit unsupported and engage in play with an interventionist.
G. Have the ability to imitate motor movements.
H. Have passed their new born hearing screening and provide proof of this screening.

If your child meets the preliminary qualifications you will be asked to complete or provide evidence of the following:

- Modified Checklist for Autism in Toddlers (M-CHAT)
  The Developmental Assessment of Young Children, Second Edition (DAYC-2)
- MacArthur-Bates Communicative Development Inventory: Words and Gestures (MCDI)

If you and your child ***are not eligible*** for the study, your or their information will not be retained. Your information and your child' s information will be omitted from this study and shredded to protect your privacy.

If your responses about you and your child indicate that you ***are eligible,*** you will be asked to participate in the training and testing portion of this study . The information you provide will be included in the study.

You will be asked to complete the following :

- Functional Communication Parent Questionnaire will be administered in addition to the previous measures. This will help us learn about the words your child uses and the situations when the words are used.
- Parent/child Language sample collected
- Parent Measures General Family Demographic Data
- Parental Attitudes on Pediatric Communication Progress Questionnaire
- Parent Coaching Perspective Questionnaire

Study Procedures

You and your child will participate in a total of 9 sessions in your home. You will be asked to participate in a snack, book, or play routine with your child. You will be given two target words that you will try to get your child to produce during the routine. The first 3 sessions must be held across 3 consecutive days and will involve the speech language pathologist/ interventionist observing your communicative interactions with your child across either a snack, book, or play

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routine. During the last 6 sessions you will receive coaching from the speech language pathologist/interventionist on strategies to improve your child's communication.
All 9 sessions will be audio and video recorded for this study so that the investigator can collect data regarding your child's word use, your use of strategies and signatures to ensure that coaching practices are being utilized. The video will only be available to individuals associated with this study. You will be given the opportunity to review the recordings and delete any portions. After the data is collected from the recordings the recordings will be destroyed.

TIME COMMITMENT
You and your child will 5e asked t o participate in sessions across 3 consecutive days for your first 3 sessions. The following 3 weeks you will asked to participate in 2 sessions per week. The first 3 sessions will take approximately 30 minutes. The last 6 sessions will last 30-45 minutes each.
Each session will involve you and your child's participation.

WHAT IS EXPERIMENTAL IN THIS STUDY
None of the procedures or questionnaires used in this study is experimental in nature. The only experimental aspect of this study is the gathering of information for the purpose of analysis.

POTENTIAL RISKS, STRESS, OR DISCOMFORT
There are minimal risks to you from participation in this study.

A potential risk for this study is that your child could respond adversely or feel uncomfortable having the interventionist/researcher in his home environment. A provision to address this risk is for the interventionist to spend extra, non- therapeutic time establishing rapport with the child. If your child continues to feel uncomfortable, he/she may discontinue participation, either temporarily or permanently.

A potential risk for this study is that you could feel uncomfortable responding to some survey questions that are personal in nature. You may choose not to respond to any questions on the surveys.

POTENTIAL BENEFITS
There may be no direct benefits from this study for your child or you. The results from this study may help improve your child's communication and may teach you strategies to help teach your child to use words. I cannot guarantee, however, that you or your child will receive any benefits from participating in this study.

ALTERNATIVE METHODS OF **TREATMENT**
If you choose not to participate in this study it is recommended that you contact your child's pediatrician for a referral to services in your community.

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CONFIDENTIALIIY

- Strict confidentiality will be maintained. No information about your child will be shared. Where possible, all identifying references will be removed and replaced by numbers and or numbers and letters.
- Participation in this research is voluntary and involves minimal loss of privacy. All videotapes, daily logs, questionnaires, and data to be used in computer analyses will have number codes rather than your child's name.
- Your name and child's name will not be recorded on the information or reported in any scientific paper or professional meeting to protect your identity. All data collected will be reported in aggregate (group fashion) at a professional meeting or in a scientific journal so that no one can identify any information about your child.
- A master list of code numbers will be kept confidential by the researchers and will be stored in a locked file cabinet. All other data pertaining to you and other subjects will be kept in a separate locked file in the researcher's office.
- Data that will be used for computer analyses will be stored on an external drive and only researchers involved in this study and representatives of the RMUoHP Institutional Review Board will have access to the records and information about this study.
- All researchers, especially individuals who will code and score videotapes of testing sessions, will have extensive training in all confidentiality measures of this study.
- All video tapes will be kept in a locked cabinet and then destroyed (shredded or erased) three {3 years after the completion of the study.
- All original hardcopy data will be shredded three (3) years after the completion of the study.

COSTS AND/OR COMPENSATION FOR PARTICIPATION

You will not have to pay for anything for your child to participate in this study . You will receive a set of 5-6 age appropriate toys for your child as an incentive for your participation in this study.

QUESTIONS ABOUT THIS STUDY

If you have any questions about the research now, please ask. If you have questions later about the research, you may contact me from 2:00-6:00 p.m. M-F at (678) 310-0436 or email me at stronglinktherapy@gmail.com.stronglinktherapy@gmail.com.

If you have questions regarding your child's rights as a human subject and participant in this study, you may call the Institutional Review Board at Rocky Mountain University of Health Professions [or use the name of the primary Human Subjects Review Board where the study will be conducted. As appropriate, the RMUoHP IRB highly recommends that you use the name and phone number of the chairperson of the IRB where you are conducting your study instead of the RMUoHP IRB]. The telephone number of the IRB is {443) 926-6243. You may also write to the committee at: Institutional Review Board, Rocky Mountain University of Health Professions (irb@rmuohp.edu) or fax 801-734-6771.

VOLUNTARY NATURE OF PARTICIPATION

Participation in this study is voluntary. Your choice of whether or not you allow your child to participate will not influence his/her or your future relations with Rocky Mountain University of Health Professions If you decide to allow your child to participate, he/she is free to withdraw their consent and to stop his/her participation at any time without penalty or loss of benefits to which he/she is allowed.

CONSENT JO PARTICIPATE

The Institutional Review Board Committee at Rocky Mountain University of Health Professions has approved this consent form as signified by the Committee's stamp. This consent form must be reviewed at least once every v,ea9. The expiration date is indicated on the approval i5tamp.

b, c l\Y *L. Robinson* [redacted] *3Jl7U7* x

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Printed name of Investigator Date Signature of Investigator Date

Parent's Statement

"This study has been explained to me. I agree to participate and to allow my child to take part in this research. I agree to have all sessions **in** my home. I have had a chance to ask questions. If I have questions later about the research, I can ask one of the researchers listed above. If I have questions about my child's rights as a research subject, I can call the Rocky Mountain University of Health Professions Institutional Review Board Committee at (443) 926-6243. My signature also indicates that I can change my mind and withdraw my consent or my permission to allow my child to participate at any time without penalty. I will receive a copy of this consent form."

Please initial the appropriate lines.

I agree to be videotaped and audio taped for study purposes.

I agree to have my child videotaped and audio taped for study purposes.

l?oso. *Fox*

Printed Name of the Participant

Patti Fox

Printed Name of Parent/ Legal Guardian

Signature of Parent/ Legal Guardian

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Date

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Approval expires: 15 Mar 2018

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Appendix J. Parent Information Packet

Parents:

Thank you for agreeing to participate in this study. This packet will provide you with introductory information about the following:

a. Information on the importance of getting intervention for language delays

b. Information explaining the importance of intervention in natural environments

c. A description of the length of the study and the time frame for each session.

d. A description of the participation requirements.

e. An explanation of the goal of the study which is help parents learn strategies to teach their children to use words.

What is a language delay?

When a child has problems with understanding, this is called a receptive language disorder. When a child has problems with talking it is called an expressive language disorder. Some children have problems with both receptive and language. A language disorder is called specific language impairment, or SLI. (American Speech Hearing Association, 2016)

Individuals with preschool language disorders may have problems with:

- Understanding basic concepts, questions, and following directions
- Learning and using new words
- Saying words in the right order in sentences
- Having conversations and re-telling stories and giving information

Who is a late talker?

Historically, a late talker (LT) or individual with Late Language Emergence (LLE) is a child who has fewer than 50 words and does not combine words by the age of two (Rescorla, 2011).

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Why is early intervention important for late talkers?

- Some studies have found that when a child only has an expressive language delay, 70-80% of them will outgrow their language delay (Ellis & Thal, 2008).
- Late talkers who have both receptive and expressive language delays willlikely have greater risks of poor outcomes (Marchman & Fernald, 2013).
- Unfortunately, the 20-30% of children who do not outgrow their delayswill not catch up to their peers (Dale, Price, Bishop, & Plomin, 2003).
- Duff, Nation, Plukett, & Bishop (2015) stress the importance of intervening early to give LT's a better chance of not having the worst outcomes.

Why is it important to learn language in natural environments?

At this time there is a large body of empirical support for using a variety naturalistic teaching methods for preschool aged children (ASHA, 2007).

- A natural environment is any setting that despite a child's disability, he or she spends time in (Schwartz, 2003). This could be a school, playground, home or any other community based setting.
- Children learn from what they see caregivers doing and saying. Natural environments allow children to learn skills and concepts that are functional and important for their lifestyles.

About This Study:

This study will last 4 weeks and will include 9 sessions. Each session will occur in your home environment and last 20-45 minutes. The first 3 sessions will be held consecutively during the first week. The following sessions will be held twice a week for 3 weeks. During the first three sessions your interactions across either a snack, book, or play routine will be observed. You will be given two different target words to use with your child during these sessions. During the last six sessions, you will be coached on strategies to improve your child's use of words. You will be given two different target words each session.

The goal of the study is to explore treatments that might help late talkers learn to use new words and to help parents learn how to facilitate their child's learning

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Appendix K. Recruitment Flyer

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Who:

Children18-24 months old by 5/1/17 with10 or fewer spoken words and a parent.

Child Requirements:

Have typically developing cognition, with a diagnosed or suspected language delay.
Have normal or corrected vision.
Have motor skills sufficient to sit unsupported and play.
Have the ability to imitate motor movements.
Have passed their new born hearing screening and provide proof of this screening.

Parent Requirements:

Have not received previous training or coaching to remediate speech language delays.
Not diagnosed with a cognitive disorder or learning difference.
Not unaided and deaf or hard of hearing and/ or only use sign language to communicate.
Able to independently participate in 2-3 naturally occurring routines in the home.
You must agree to participate in and have all sessions in your home.

What will you be asked to do?

Participate in home based coaching to learn strategies to help their child improve their word use.

Time:

Each Session will range from 20-45 minutes. There will be a total of 9 sessions.

Benefit/Risk:

There are no significant risks or direct medical benefits for participating in this study.

Incentive:

A set of 5-6 age appropriate toys for your child.
Contact:
Kelly Robinson at: 678-310-0436 or email: stronglinktherapy@gmail.com

Protocol #170208-02

Curriculum Vitae
Kelly LaRue Robinson

Education

2017 Rocky Mountain University of Health Professions. Speech Language Pathology, Provo, UT, Doctor of Clinical Science

1998 University of Georgia. Communication Sciences and Disorders, Athens, GA, Master of Education

1996 Shaw University. Speech Language Pathology and Audiology, Raleigh, NC, Bachelor of Science in Speech Language Pathology and Audiology

Licensure

Speech Language Pathology, State of Georgia

Clinical Experience

2013-Pres Director of Strong Link Therapy Services Kennesaw, GA

2003-Pres Owner and Clinician for More Than Words Speech Language Therapy Services, Kennesaw, GA

2005-2008 Speech Language Pathology Sub-Contractor, Cobb Pediatrics, Kennesaw, GA

2001-2002 Speech Language Pathologist, Shepherd Center Acquired Brain Injury Day Program, Atlanta, GA

1998-2000 Speech Language Pathologist, Dekalb County Schools, Decatur, GA

Awards

Presidential Scholar, Shaw University, 1992-1996

Professional Affiliations

Member of American Speech Hearing Association (1998-Present)