

St. Cloud State University

theRepository at St. Cloud State

Culminating Projects in Child and Family
Studies

Department of Child and Family Studies

12-2020

The Achievement Gap Dilemma/Talking With Children Matters

Anna C. Sindt

St. Cloud State University, anna.ohlsen06@gmail.com

Follow this and additional works at: https://repository.stcloudstate.edu/cfs_etds

Recommended Citation

Sindt, Anna C., "The Achievement Gap Dilemma/Talking With Children Matters" (2020). *Culminating Projects in Child and Family Studies*. 34.

https://repository.stcloudstate.edu/cfs_etds/34

This Starred Paper is brought to you for free and open access by the Department of Child and Family Studies at theRepository at St. Cloud State. It has been accepted for inclusion in Culminating Projects in Child and Family Studies by an authorized administrator of theRepository at St. Cloud State. For more information, please contact tdsteman@stcloudstate.edu.

Talking with Children Matters

by

Anna Sindt

A Starred Paper

Submitted to the Graduate Faculty of

St. Cloud State University

in Partial Fulfillment of the Requirements

for the Degree

Master of Science in

Child and Family Studies

May, 2021

Starred Paper Committee:
JoAnn Johnson, Chairperson
Ming Chi Own
Hsueh-I Lo

Table of Contents

Chapter	Page
1. Introduction.....	4
Research Questions.....	6
Importance of the Topic.....	7
Literature Search Description.....	7
Definitions.....	8
2. Literature Review.....	10
Keys to Child Learning.....	17
Maternal v. Paternal Interactions.....	21
The Role of Neuroscience in Language Development.....	24
Decontextualized Language.....	28
Why Do Children Benefit from Responsive Language Parents?.....	34
Hart and Risley Study.....	45
3. Summary/Conclusions.....	49
Conclusions.....	50
Recommendations for Future Research.....	51
Implications for Practice.....	51
4. Position.....	53
References.....	54

Chapter 1: Introduction

“Making effective communication, a human right, accessible and achievable for all”

(American Speech-Language-Hearing Association [ASHA]).

As an Early Childhood Special Education Teacher and former Speech-Language Pathologist, I have made it my goal to create a language rich learning environment for the children entering my classroom, so that everyone can be wrapped in a hearty environment of listening, speaking, reading, and writing. This way, no matter the level of skills, each child can feel safe and be at their optimal level of learning. These young learners who enter the classroom come from a multitude of ability levels, culture, religion, and socioeconomic status and backgrounds. When first beginning my career, I saw how lack of language can impact a child’s ability in the classroom. Language is a skill that is built on foundational building blocks, and when you are missing blocks, there are other areas of development in which young children may struggle. Following directions, describing, conversations, etc. are areas that are impacted by lack of language development. Using books in therapy sessions as a clinician and now providing a rich literacy and language classroom, I feel that all students are able to learn safely in their ability level with support.

Children begin their life with a flexible, pliable, moldable 1-pound gelatinous organ in their heads. As a child's brain grows to an adult 3-pound brain, the experiences and input the brain receives is what builds the highway system that connects all the most important jobs in the body. One important area of the brain is the language center. I have the opportunity to work with young children of various backgrounds and learning abilities. These are not dual language

or English Language Learners (ELL), but diverse families who come from different backgrounds, statuses, experiences, and children at varied levels of language development.

According to a working paper study at Harvard University, a baby's brain grows 80% in the first 18 months of life. This is the critical time when babies are soaking up information to start building their neural synapse to connect with the world around them. As babies grow into their toddler and young years (ages 3 and 4) one of the critical areas of development is at its peak. The language center is a portion of the brain that is developing during this critical point where the term “use it or lose it” comes into play as connections that are not used or stimulated are lost.

Hart and Risley (1995) posed a research study relating to the “30 million-word gap” in young children, and how backgrounds can influence the amount of words a young child hears. Their longitudinal study analyzed 77 children from a variety of backgrounds, experiences, and socioeconomic status and compared them to determine word and language comparisons and what that meant in the children's later educational outcomes, and what early intervention can do to help close the gap.

According to a 2003 study, Hart and Risley (1995) believed that children’s socioeconomic background was the strong determinant in why there was a “word gap” in the young years that transferred to an “achievement gap” by third grade. They indicated words heard in the low socioeconomic homes were far less than in the professional more affluent homes. They also looked at strategies and interventions to help close the gap.

A purpose of this paper was to review research literature on the Hart and Risley (1995) study and consider if similar research supports the conclusion of the original study. An example

of support for the study is “Providence Talks,” a 2013 project to teach poor parents how to speak to their children utilizing an electronic device to count words. This project was made possible by a 2013 award from Bloomberg Philanthropies Mayor’s Challenge. An additional example is the Clinton Foundation’s “Too Small to Fail Initiative” (2014) which hosted the White House Word Gap Event in 2014 (Sperry, Sperry, & Miller, 2018). Support is also indicated in a 2006 study by Hoff which found that differences in word exposure partially or fully explain the SES gap in language skills

While Hart and Risley (1995) have support for their quantity of word theory, research indicates there are various aspects related to greater language development beyond quantity of words. The question of word quantity may be more critical at specific years of growth. For example, the quantity and quality of words a parent uses matter differently the first 3 years of life. Quantity of input is more important in the second year, while quality is more important in the third year (Rowe, 2012).

Research considering the validity of Hart and Risley (1995) findings is addressed in this paper. Further, this paper also reviews recent research as it relates to the total picture of language development, including the critical role parents play in that task, what happens to the child's brain during growth, and the role of neuroscience in child development.

Research Questions

1. Is the language achievement gap due to the quantity of words heard by young children as indicated in the Hart and Risley (1995) study?
2. Is the child's socioeconomic background (Hart & Risley, 1995; 2003) a significant determinant of the language achievement gap?

3. What role should parents play in their child's development?

Importance of the Topic

As an Early Childhood Special Education teacher and former Speech-Language Pathologist, I have seen how lack of language can impact a child's abilities in the classroom. Language is a skill built on foundational building blocks, and when you are missing blocks, there are other areas of development in which young children may struggle. Difficulty following directions, describing objects and events, and conversing are examples of areas impacted by the lack of language development. As a result of this paper, I hope to sharpen my abilities to help these young children to learn.

Also important is the fact that more than 2 decades have passed since Hart and Risley's (1995) findings, we still have a language achievement gap. In order to address it, we need to determine the validity of Hart and Risley's findings and decide the direction necessary to close the gap if that is possible.

Literature Search Description

My goal was to limit my research to the past 15 to 20 years. I was able to accomplish it with the exception of references to some earlier publications my research cited. The earlier research citations were reinforced by the more recent research citations. I utilized electronic databases, as noted in References at the end of this paper. Library access of papers pertinent to my research are from St. Cloud State University, St. Cloud, Minnesota; St. Mary's University, Twin Cities, Minneapolis, Minnesota; and Concordia College, Portland, Oregon.

Definitions

Broca's Area. The language center of the brain (Romeo et al., 2018).

Contiguity. Temporally connected in responsive behavior as in a parent responding to a child's action (Tamis-LeMonda, Kirchirko, & Tafuro, 2013).

Contingency. The concept co-dependencies between a child's action and a parent's response (Tamis-LeMonda et al., 2013).

Conversation Turns. Back and forth nonverbal and verbal exchanges wherein parents provide feedback that is constantly adjusted to the infant's linguistic needs (Ramirez, Lytle, & Kuhl, 2020).

Decontextualized Language. Conversations that discuss non-present events or answer open-ended questions (Leech, Wei, Harring, & Rowe, 2017).

Episodic Future Thinking. The cognitive ability to project forward to future time (Leech et al., 2017).

Language Achievement Gap. A deficiency of a child's learning skills relative to what is expected at certain ages. These gaps are typically more prevalent in low-income children (Hart & Risley, 2003).

Language Development. The process of a child's learning ability to express or communicate by vocal sounds; the enhancement of a child's speech skills (Golinkoff, Can, Soderstrom, & Hirsh-Pasek, 2015).

Neuroplasticity. The brain's ability to change as a result of experiences during infancy and early childhood (Meltzoff & Kuhl, 2016).

Parental Responsiveness. Responding to a child's cues, a parent's response affirms the child's actions and provides labels for objects and events that are the focus of the child, which supports their language and cognitive skills (Tamis-LeMonda, Bornstein, & Baumwell, 2001; Tamis-LeMonda, Kuchirko, & Song, 2014).

Parentese. Also known as infant directed speech (IDS). A higher pitch speech with slower tempo and melodic intonation typically used by parents when speaking to their infant (Ramirez et al., 2020).

Prospection. A decontextualized conversation element that refers to the ability to converse about past and future events (Tulving, 2001, as cited in Leech, Leimgruber, Warneken, & Rowe, 2019).

Semantically Contingent. A parental response that is contingent upon the child's gesture, vocalization, and focus, which supports the child's learning (Golinkoff et al., 2015).

Scaffolding. A process where new skills are built on earlier learned skills. The term is from Vygotsky's zone of proximal development which refers to a child's ability to learn more quickly with assistance or guidance (Tamis-LeMonda et al., 2014).

Chapter 2: Literature Review

The process of language development is influenced by genetics, but also by environmental factors including parent behavior especially in the early years of childhood. Development of language is crucial to each child as it predicts their academic and career success as well as social competence and mental health. Parents have a significant role in their child's development and in their future (Madigan et al., 2019).

Parental talk and interaction with their infant are strong predictors of a child's language achievement. A February, 2020, University of Washington study of 6-, 10-, and 14-month-old infants and their parents were assigned to two groups. The intervention was assigned to have parents talk and interact with their infant including allowing time for the infant to respond to the parent input, which encouraged the use of turn-taking between the child and parent. The control group did not receive directions to talk or interact with their child. Socioeconomic status (SES) of the study's families varied widely and was matched between the two groups to assess the potential role of SES on effects of intervention. The groups were also matched on children's age, gender, and number of adults and siblings in the home (Ramirez et al., 2020). The following are the hypotheses of the subject study:

1. The intervention will increase parental use of parentese between 6 and 18 months but not their use of standard speech, or the overall quantity of speech.
2. The intervention will produce measurable enhancements in parent-child turn-taking between 6 and 18 months.

3. The intervention will enhance the frequency of children's vocalizations between 6 and 18 months and will produce enhanced child language at 18 months, 4 months after the coaching appointment.

Conversations were audio-taped by parents, and at 6 and 18 months the parent intervention group showed significant improvement in language skills and improvement in the child's social language turn-taking skills. Use of higher pitch speaking, slower tempo, and exaggerated intonation are typically used by the parent when speaking to their infant. This parentese was first observed in the 1960s. It was documented as a speaking style with young children in many countries (Ramirez et al., 2020). It had simple phonology and grammar, few and simple lexical items, high pitch, and exaggerated intonation (Ferguson, 1964, as cited in Ramirez et al., 2020).

Several studies show that infants prefer parentese when given a choice between it and common adult speaking (Cooper & Aslin, 1994; Fernald & Kuhl, 1987, as cited in Ramirez et al., 2020). This preference is true in many countries as indicated in studies North America, Europe, and Asia have confirmed (Bergelson et al., 2017, as cited in Ramirez et al., 2020).

Parentese analysis has determined it to be fully grammatical. It uses words referring to objects and actions as well as phonology that avoids complex consonant clusters (Newport, Gleitman, & Gleitman, 1977; Snow, 1977, as cited in Ramirez et al., 2020).

Further analysis showed parentese vowels temporally and spectrally expanded across languages (Burnham, Kitamura, & Vollmer-Conna, 2002; Kuhl, et al., 1997, as cited in Ramirez et al., 2020), which makes it easier for infants to distinguish phonetic differences (Bradlow et al., 1996, as cited in Ramirez et al., 2020). Parentese or infant directed speech (IDS) vowels are

farther apart in space than adult directed speech, which also makes it simpler for the infant to construct vowel categories (Kuhl et al., 1997; McMurray et al., 2013, as cited in Golinkoff et al., 2015).

The following are results of the coached study:

1. Coached parents increased their use of parentese and engaged with their children in more conversation turns compared with parents who were not coached. The more back and forth exchanges, the greater opportunity for children to learn language skills.
2. Children of coached parents significantly increased vocalizations between 6 and 18 months and spoke more words at 18 months. The home audiotapes indicate parentese is most effective when parents interact with children one-on-one.
3. Growth in parentese and turn taking between 6 and 18 months correlated with growth in children's vocalizations in the same period indicating that parental and child language behaviors both evolved. Parentese intervention is a benefit to child language development, and interventions of parent-child language interactions can enhance child language skills.
4. Previous studies indicate parents are seldom aware of their own language behaviors (Gilkerson et al., 2017, as cited in Ramirez et al., 2020; Suskind et al., 2013; Suskind et al., 2016). The Ramirez study raised parent's awareness of parentese use as parents were surprised to hear themselves on the recordings. Through listening to their recordings, they realized their interaction promoted their child's language development.

5. Parental input enhances children's language development regardless of socioeconomic status (SES) of parents as this study utilized families from a range of SES backgrounds (Ramirez, et al., 2020).

Although researchers in the above study have been aware of the fact that use of parentese improved child language, they also believed the benefits were a result of its simplified linguistic structure and exaggerated sounds. This study also suggests the infant welcomes the “happy” sound of the higher pitch and slower tempo which encourages the infant to respond.

Parent surveys of this study estimated that the coached 18-month children’s vocabulary averaged 100 new words between 6 and 18 months of age compared to 60 among children in the control group (Ramirez et al., 2020). Parents’ language and interaction with their infant at the cooing stage can have a remarkable effect on the infant's language within 18 months! The simplified syntax, slower tempo and melodic intonation of parentese encourages a social response from infants (Golinkoff et al., 2015; Tartter 1980, as cited in Ramirez et al., 2020). Exaggerated intonation highlights utterances and informs the infant how words group together which assists the infant in organizing speech and retaining memory of it (Golinkoff et al., 2015). When an infant points to an object and an adult responds in parentese, the infant is more likely to learn the function of the object than when the adult responds to another object the infant did not point to. Infants actually look to the parent for participation (Begus, Gliga, & Southgate, 2014, as cited in Golinkoff et al., 2015). A necessary element of language learning is a result of the shared interaction between child and parent with the infant participating and the parent responding to the child (Golinkoff et al., 2015). Cues an infant utilizes to learn language change as a child develops. For example, a study by Rowe (2012) found the quantity and quality of

words a parent used mattered differently the first 3 years of the child's life. Quantity of input was more important in the second year, while quality was more important in the third year (Rowe, 2012, as cited in Golinkoff et al., 2015). Parentese is significant for infants' language learning perceptually, socially, and linguistically. Infants utilize parentese to learn. As the child develops, reliance on parentese appears to decline (Golinkoff et al., 2015).

Through back and forth turns, parents provide feedback that is constantly adjusted to their infants' linguistic needs. In turn, infants change their vocalizations in response to parent vocalizations (Bornstein, Tamis-LeMonda, & Haynes, 1999; Braarud & Stormack 2008; Goldstein & Schwade 2008; Ramirez et al., 2020; Smith & Trainor 2008, as cited in Ramirez et al., 2020). This exchange creates a positive feedback loop. However, parents are required to allow time for the infant to respond, either in babbling or word talk, as infants require time to organize thought to the stimuli (Ramirez et al., 2020; Warlaumont et al., 2008, as cited in Ramirez et al., 2020). A child's learning environment, as early as infancy, is a predictor of a child's ultimate language skills (Hirsh-Pacek et al., 2015, as cited in Ramirez et al., 2020).

An earlier study of parent intervention had very similar conclusions (Ramirez, Lytle, Fish, & Kuhl, 2018). Parent coaching of infants 6 and 10 months of age included qualitative and quantitative language feedback, parentese, and back and forth interaction of parent and child. A second group of 6- and 10-month-old infants were placed in a control group with no coaching. Audio recordings were used in the parents' homes, which measured language input using two social interactive variables: percentage of speech directed to the child and percentage of parentese. Both variables were found to be related to growth in infant babbling between 6 and 14 months. In addition, more words were produced by the infant intervention group at 14

months. There is consistency between the two studies that parent coaching has a positive impact on child language development, and parent interventions potentially improve children's language development (Ramirez et al., 2020).

Language Environment Analysis Systems (LENA) record language input and vocalizations in a child's natural environment (Ramirez-Esparza, Garcia-Sierra, & Kuhl, 2014; 2016; 2017, as cited in Ramirez et al., 2018). Ramirez-Esparza evaluated the impact of social interactions on children's language skills by categorizing social interactions into three variables: Speech Partners (Is parental speech directed to the child?), Speech Style (Do parents use standard speech or parentese?), and Social Context (Are parents and children interacting one-on-one or in a group?). Infants at 11 and 14 months old from families in a range of SES were recorded over 4 days using LENA recorders. Results showed the one-on-one speech at 11 and 14 months was positively correlated with more babbling and more productive vocabulary at 24 and 33 months. In contrast, the number of words children heard was not related to child development (Ramirez-Esparza et al., 2014; 2016; 2017, as cited in Ramirez et al., 2018).

A study followed to assess whether coaching parents on the three variables would enhance parental language input and increase children's language growth, as well as assessing the effect of SES on parent language input and potential child language growth (Ramirez et al., 2018). Families of 6-month-old infants were assigned to one of three groups: 1) Parent coaching (PC) included coaching of language input and child growth. They were told of the use of variables and their relationship to language development; 2) Parent coaching plus group support (PC+) included coaching of language input and child growth and the use of variables and their relationship to language development, plus they also attended group support sessions; 3) Control

condition group (C) were given no feedback on language input or social interaction. All families recorded vocalizations on LENA equipment at 6, 10, and 14 months. Parent coaching took place at 6 and 10 months. An analysis compared the PC and PC+ groups on parental input and child language variables. It was determined there was no significant difference between the two groups and they were merged into a single group: Intervention (I). During coaching sessions parents were asked to give examples of routines when they would use one-on-one interactions with their infant. Parents were also coached to listen to the audio recordings to find examples of their use of back and forth one-on-one turn taking exchanges with their infant. The parents who were coached also received Vroom cards (Vroom Brain Building Moments) which gave specific opportunities when the parent might engage in an exchange with their infant (Ramirez et al., 2018).

Results of the above study indicate that infant babbling in the (I) group showed greater increases from 6 to 14 months compared to the (C) group. There was significant correlation between the change in percentage of Speech Directed to child and change in babbling between 6 and 14 months, and a significant correlation between the change in Parentese Speech and change in percentage of infant babbling between 6 and 14 months. This did not change after controlling for SES. Infants showed the largest increases in babbling when parents increased speech input and parentese. Parent coaching greatly improved child interactions measured by two variables: percentage of times with directed speech to infant and percentage of times with parentese. Therefore, parental social language behaviors can be enhanced through parent coaching, and speech development is linked to social environments that infants experience which is true across SES (Ramirez et al., 2018).

Keys to Child Learning

Infants learn about the world through nonverbal social cues such as eye gaze. In one study with infants it was determined they understand that eye gaze connects the looker with their environment at about 12 months of age. For example, as a child sits across from an adult with identical toys on each side of the table, the adult looks at the child, then turns to look at one of the toys. In some instances of this study the adult has her eyes open. In other instances, the adult eyes are closed. If the child understands people see with their eyes open, the child should follow the adult's gaze only when the adult's eyes are open. This occurs at about 12 months of age (Brooks & Meltzoff, 2002, as cited in Meltzoff & Kuhl, 2016). If the adult's view was blocked by a barrier or blindfold, the child will still follow the adult's head turn. This is because the child has the experience of opening and closing its own eyes but does not have the experience of a barrier or blindfold (Meltzoff & Brooks, 2008, as cited in Meltzoff & Kuhl, 2016). Eye gaze is a key in language development. Research has shown that infants who follow gaze before one year of age use more vocabulary at 2½ years-old (Brooks & Meltzoff, 2015, as cited in Meltzoff & Kuhl, 2016).

Watching others is another powerful learning tool of infants. They constantly observe parent and sibling behavior and imitate to learn. It has been described as the "like me" theory of social cognitive development (Meltzoff, 2007, as cited in Meltzoff & Kuhl, 2016). Neuroscience has provided researchers opportunities to study this theory. For example, a 9-month-old infant watched a researcher push a button on a box, then the infant pushed the button as well. A change occurred in the child's brain activity when the researcher pushed the button and again when the child pushed the button (Marshall & Meltzoff, 2014, as cited in Meltzoff & Kuhl, 2016).

Imitating after a delay is a key to infant learning and memory. For example, a 9-month-old infant who sees an adult push a button has the ability to store the action, and then push the button a day later (Meltzoff, 1988, as cited in Meltzoff & Kuhl, 2016). A 16-month-old infant can retain the action they have observed for 4 months (Meltzoff, 1995, as cited in Meltzoff & Kuhl, 2016). Non-verbal behaviors are learned through imitation (Meltzoff & Kuhl, 2016) .

Children need a variety of skills to promote executive function. Research shows that play with parents and peers is an opportunity for a child to further cognitive, language, social-emotional, and self-regulation skills to build a prosocial brain and executive function (Yogman, Garner, Hutchinson, Hirsh-Pasek, & Golinkoff, 2018). Play begins with sensorimotor explorations, including use of the mouth, to object explorations for communication and abstract thought. An important process in play is scaffolding, in which a child builds new skills on earlier learned skills. An infant's smile becomes cooing conversation, which leads to social communication and reading of nonverbal parent cues known as social referencing. This back and forth interaction of child and parent is vital to a child's development (Meyers, 2015, as cited in Yogman et al., 2018).

Play progresses from infant pat-a-cake to motor skills in toddlers (Logan, Robinson, Wilson, & Lucas, 2012, as cited in Yogman et al., 2018). Social skills are learned when children cooperate and negotiate in play. Pretend play encourages self-regulation when children agree about pretending and its various roles. The social emotional skills that are learned are related to academic and economic success (Heckman, 2015, as cited in Yogman et al., 2018). Pretend play leads to playground activity which promotes executive functioning (Walker & Gopnik, 2013, as cited in Yogman et al., 2018).

Free play is critical to children's development as it gives the child opportunity to explore and understand their preferences and interests (Hirsh-Pasek, Zosh, Glinkoff, Gray, Robb, & Kaufman, 2015, as cited in Yogman et al., 2018), while guided play allows a child to learn skills from an adult that would take longer to learn on their own. This is the zone of proximal development introduced by Vygotsky decades ago. Play is approached in a safe, nurturing relationship with an adult who guides the children, without intruding, utilizing scaffolding (Vygotsky, 1976, as cited in Yogman et al., 2018).

As children become more independent, they can self-regulate, focus their attention, and solve problems. They are less impulsive and can better manage the stress of strong emotions (Bodrova, Germeroth, & Leong, 2013, as cited in Yogman et al., 2018).

Play builds the brain in structure and function. During play there are changes in the molecules and cellular functioning leading to neural connectivity. The child's experiences promote learning to adapt and prosocial behavior (Panksepp, 1998, as cited in Yogman et al., 2018). However, depriving a child of play may increase the possibility of attention deficit hyperactivity disorder (ADHD) (Panksepp, 2007, as cited in Yogman et al., 2018).

Various forms of play improve children's skills. For example, preschool children were given blocks to play with at home with limited adult guidance. Language skills showed improvement after 6 months especially children in low SES (Christakis, Zimmerman, & Garrison, 2007, as cited in Yogman et al., 2018). In another study preschool children, with little adult supervision, playing with objects named three times as many uses for the objects as the preschoolers who received directions (Dansky & Silverman, 1973, as cited in Yogman et al., 2018).

Play with tangible toys of various geometric shapes gives children an opportunity to learn and name the shapes which may open the door to geometric knowledge. In a study one group of 3-year-old children played with traditional geometric shaped objects while the parents introduced the names of the different shapes to their children. A second group of parents and 3-year-old children were provided an app in which they heard the shape names. The group who played with tangible shapes used more words and more spatial language than children in the app group. Also, parents used more shape names with sons than with daughters and adjusted their use of spatial language more in response to varied shapes with their sons. Interactions children have playing with traditional geometric shapes may be an introduction to geometric knowledge (Verdine et al., 2019).

Parents and caregivers who guide a child's play, without intruding, encourage the child's independent exploration and learning. Play promotes the opportunity for parents to observe and understand their infant's nonverbal behavior and share in the back and forth interaction which builds a healthy relationship between parent and child. Play is critical to child development (Yogman et al., 2018).

Executive functioning skills are the foundation for school readiness and academic success. Support of interventions that enhance various skills of children is valuable so that when they enter preschool and kindergarten, they know how to learn and are naturally curious (Resnick, 2017, as cited in Yogman et al., 2018). Curriculum has been developed and tested in preschools to help children develop executive functioning skills. Such programs include Tools of the Mind or Promoting Alternative Thinking Strategies--Preschool and Kindergarten (Bodrova & Leong, 2007; Domitrovich, Cortes, & Greenberg, 2007, as cited in Yogman et al., 2018).

Scaffolding is a tool frequently utilized to support skills such as buddy reading where children take turns learning to read by listening to each other read aloud. This activity improves executive functioning and improves brain functioning as seen on functional MRIs (Blair, Raver, & Willoughby, 2014; Blair & Granger, 2011, as cited in Yogman et al., 2018; Diamond & Lee, 2011).

While guiding children in play activities, it is important for parents to realize that items that promote children's play and creativity are the simple inexpensive items such as blocks, puzzles, balls, crayons, boxes, and household objects like wooden spoons. Parents who encourage their children to read, read to them, watch and play with their children, and talk with and listen to them are giving attention to their children that will enrich their lives (Yogman et al., 2018).

Maternal v. Paternal Interactions

In the past mothers spent more time with the infant because the father worked outside the home while the mother was in charge of home duties. Increasingly, both parents work outside the home and, therefore, the child spends time with another caregiver. As a result, mother and father increasingly share care giving duties of their child. This change in roles has made more research available on paternal interactions, whereas, earlier research was primarily of maternal interactions. Research finds that both mother and father contribute to the development of their child, but in different ways.

For example, research of fathers and their young children from a range of socioeconomic backgrounds indicates a variable paternal vocabulary and complexity of speech that relates to their child's expressive and receptive language ability (Tamis-LaMonda, Baumwell, &

Cristofaro, 2012, and Tamis-LeMonda, Shannon, & Cabrera, 2004, as cited in Salo, Rowe, Leech, & Cabrera, 2015). Previous studies show low income fathers use questions and clarifying requests during combined book reading and toy play (Leech, Salo, Rowe, & Cabrera, 2013, as cited in Salo et al., 2015). The father's communicating manner is also more challenging than the mother's (Rowe, Coker, & Pan, 2004, as cited in Salo et al., 2015).

The following several paragraphs discuss a study by Salo et al. (2015) which indicates how paternal vocabulary and complexity of speech affects their child's language abilities. Salo et al. studied 69 father-child pairs from low income families who were videotaped during book reading and toy play in their homes. Of the 69 fathers, 38 were African American, 31 were Latino. Fifty fathers spoke English, 15 spoke a mix of English and Spanish, and four spoke only Spanish. The average age of children was 2 years, 4 months. Fathers were instructed to progressively work through three bags they were given. The first bag contained a book, "The Very Busy Spider." The second had a toy pizza and telephone, and the third bag had a toy barnyard with animals. All utterances were videotaped during a 10-minute session. There were two transcripts from each father-child dyad, one of the books reading interaction, and one during toy play of bags 2 and 3. The focus of children was on vocabulary diversity. Fathers' focus was number of words, use of wh questions, clarification requests, explanations, directives and labels (Salo et al., 2015). Fathers' use of clarification and explanations assists the child's ability to understand.

African American fathers produced more clarification requests than Latinos. Latino fathers asked more wh questions and produced more directives than African American fathers. Fathers spoke more word types, questions, wh questions and labels per minute during book

reading than in toy play. Fathers spoke more directives and explanations per minute during toy play than book reading. Fathers' morphemes were significantly greater in toy play than in reading (Salo et al., 2015).

As the Salo et al. (2015) study continued, fathers who spoke more, used greater diverse vocabulary, asked more questions and used labels while reading. Their children also produced more word types. Fathers who produced longer morphemes had children who said longer morphemes, and father and child word types positively correlated.

During book reading fathers asked more questions, especially wh questions, which positively correlated with children's MCDI (Macarthur-Bates Communicative Developmental Inventories) scores (Fenson, Pethick, Renda, Cox, Dale, & Reznick, 2000, as cited in Salo et al., 2015). This correlation concurs with previous research (Leech et al., 2013, as cited in Salo et al., 2015).

Fathers talked more, used more diverse vocabulary, more labels, and asked more questions during book reading than toy play. Book reading scaffolds children's speech by talking about concepts and eliciting the use of more vocabulary by child and parent, which ultimately promotes the child's language development (Hoff, 2010, as cited in Salo et al., 2015).

Fathers' complexity of speech was greater during toy play than book reading. This input may benefit children's language skills. This contrasts previous research which indicated mothers produced more complex speech during book reading than toy play (Hoff-Ginsberg, 1991, as cited in Salo et al., 2015).

Findings of the Salo et al. (2015) study were similar for African American fathers and Latino fathers with one exception. The complexity of father's speech and children's language

skill during toy play was relative to Latino dyads and was not significant of African American fathers.

Book reading has previously been recognized as an important tool for child language development. Therefore, parents have been encouraged to read to their children. The Salo et al. (2015) study confirms this and suggests that fathers and mothers interact similarly with their children during book reading and toy play. However, the father's syntactic complexity of speech during toy play may encourage greater child language development.

The Role of Neuroscience in Language Development

Advances in neuroscience have provided new information about brain development during infancy and early childhood. As a child responds to a parent's touch or speech, there is an eruption of neural activity in the child's brain. Rapid infant learning happens in these social interactions. Four main tools provide vital information when exploring an infant's brain: electroencephalography (EEG), magnetoencephalography (MEG), functional magnetic resonance imaging (fMRI), and functional near-infrared spectroscopy (fNIRS), (Meltzoff & Kuhl, 2016).

The EEG has sensors that measure electrical activity when an infant performs tasks such as touching, listening, and looking. Magnetic resonance imaging (MRI) takes detailed photos of the brain as it develops. The fMRI is a related tool that shows the brain's structure and gives detailed information about brain activity by measuring changes in blood oxygen levels, which alters during brain activity. This device is difficult to use with young children because it is very noisy and the child has to remain very still to get a clear photo of the brain. The fNIRS is related to the fMRI but allows some movement of the infant, is less expensive, and is portable. This tool

measures hemoglobin in blood as it flows to different areas of the brain. Although it indicates which area of the brain is active, it does not indicate when an activity occurs in the brain. The fNIRS is often combined with the EEG to obtain temporal information. The MEG indicates to the millisecond which areas of the brain are at work. This tool provides spatial and timing information and allows the child to move during its use. It has the capacity to reveal brain mechanisms that underlie cognitive, linguistic and social-emotional child development (Meltzoff & Kuhl, 2016).

A child is born with 86 billion neurons in the brain which are not all connected at birth. During the first years of life the neurons reach out to other neurons each with multiple connections that will be shaped and reshaped by the child's experiences. The brain has a great ability to change with experience during infancy and early childhood. This is called neuroplasticity, which indicates the brain is open to revision. The child's experiences shape the brain (Meltzoff & Kuhl, 2016).

Through use of the MEG a study indicated that an infant's brain lays the groundwork for forming words before they speak (Kuhl et al., 2014, as cited in Meltzoff & Kuhl, 2016). The MEG revealed brain activity in various regions of infant's brains including Broca's area, the cerebellum and the auditory area known as the superior temporal gyrus. The regions are responsible for planning motor movements needed for speech. As infants listen to language, the brain areas are activated by speech sounds which are coordinated even before the infant talks. The brain rehearses the mechanisms of speech preparing for first words. This information shows the value of back and forth conversations with the infant even before they talk (Meltzoff & Kuhl, 2016).

A study was performed with 9-month-old English speaking infants who listened to 12, 25-minute sessions of Mandarin Chinese. In addition to the sessions, one group also met with a native Mandarin speaker as she sang songs, read books and played with the children. A second group watched a television recording of the same sessions but without live action. Another group listened to audio recordings of the sessions. The fourth group was the control group and listened only to English during the sessions. Infants who listened to Mandarin and played with the Mandarin speaker spoke Mandarin Chinese as well as infants raised in Taiwan. These results indicate that social language learning allows an infant's brain to process words and sounds, and put them to memory (Kuhl, 2007; 2011, as cited in Meltzoff & Kuhl, 2016).

A 2018 study provided the first evidence that an infant's language experiences may influence brain development (Romeo et al., 2018). In that study an MRI measured neural activation (Broca's area) of 36 SES diverse 4- to 6-year-old children from home audio recordings. Children listened to short, simple stories appropriate for young children. The stories were recorded by a native English female. To keep the children's attention to the story, a stick figure on a gray screen appeared throughout the story. They were promised a prize at the end of the task for listening attentively. The goal was to record the children's brain responses during natural language comprehension. Parents were given LENA digital recorders for 21 days in which adult token words, the total number of child utterances, as well as adult-child conversation turns were determined. Since conversation turns include both linguistic information and nonverbal communication such as temporal contiguity, adult responsiveness, joint social attention and exchange of information, it may be a better measure of interpersonal conversation (Romeo et al., 2018).

Results of the subject study indicate that parental education significantly predicted verbal scores, but income did not. Children who experienced more conversation turns with adults had greater activation in Broca's area during language processing. This was independent of SES, IQ, and number of words and utterances. Children require opportunities to talk about their interests in parental conversations (Romeo et al., 2018).

Conversation turns are already known to be important in 2- to 48-month-old children's language skills (Zimmerman et al., 2009, as cited in Romeo et al., 2018). The 2018 study extends the importance of language turn taking to language skills of 6-year-olds. The conversation turns provide the child with increased opportunity to practice their language and receive adult feedback (Romeo et al., 2018; Zimmerman et al., 2009, as cited in Romeo et al., 2018). This research of 4- to 6-year-olds reveals that the number of parent-child conversation turns correlate with stronger more coherent white matter connections in language areas of the brain, an effect independent of SES (Romeo et al., 2018).

The Romeo et al. (2018) study supported that language development relies on social interaction and social neural circuitry (Kuhl, 2007, as cited in Romeo et al., 2018) and that prelinguistic communication turn taking was essential to evolution of language (Levinson, 2016, as cited in Romeo et al., 2018). The study further provides evidence of a neural mechanism that relates to children's language exposure and language processing, which is consistent with findings that language input relates to infants' responses in left frontal regions of the brain during phonological tasks (Garcia-Sierra, Ramirez-Esparza, & Kuhl, 2016, as cited in Romeo et al., 2018). Linguistics has an influence on language processes in the left prefrontal cortex in infancy continuing through early childhood to 6-year-olds. This is the first study to find a direct

relationship between conversation turns and brain function during language processing. Early language exposure may alter the way a child's brain processes language (Romeo, et al., 2018).

These findings all suggest that parents need to spend a greater amount of time in back-and-forth interactive conversation with their children (Leech et al., 2017; Romeo et al., 2018; Ramirez et al., 2020; McGillion, Pine, Herbert, & Matthews, 2017, as cited in Romeo et al., 2018).

Decontextualized Language

Decontextualized conversations are conversations that discuss non-present events or answer open-ended questions. These conversations are very challenging for preschool children (Demir, Rowe, Heller, Goldin-Meadow, & Levine, 2015; Rowe, 2012, Rowe, 2013; Uccelli, Demir, Rowe, Lecine, & Golden-Meadow, 2017, as cited in Leech et al., 2017).

Children who are exposed to more decontextualized conversations have a larger vocabulary, narrative, and syntactic skills between ages 3 and 5 (Demir et al. 2015; Rowe, 2012; Tabors, Roach, & Snow, 2001, as cited in Leech et al., 2017). However, parent-child conversations utilizing decontextualized language is less than 30% of total parent-child conversations (Demir et al., 2015; Dickinson & Tabors, 2001; Rowe, 2012, as cited in Leech et al., 2017).

With this information in mind, researchers planned an intervention to increase the amount of decontextualized conversations parents have with their children. Such interventions have successfully been done in the past which focused on increasing parent-child conversations about past shared events or reminiscing (Boland, Haden, & Ornstein, 2003; Peterson, Jesso, &

McCabe, 1999; Reese Leyva, Sparks, & Grolnick, 2010, as cited in Leech et al., 2017; Reese & Newcombe, 2007).

The following study will include past talk, talk of future events, explanations, and open-ended questions in parent-child conversations. This study began by designing an acronym, R.E.A.D.Y. talk, so that parents could easily remember conversations they would use daily with their parent-child interactions “(*Recall* past events, *Explain* new words and concepts, *Ask* lots of questions, *Discuss* the future, *You* can make a difference in your child's academic success)” (Leech et al., 2017).

The 36 parent-child families in the study were told the purpose of the study was to understand benefits of family mealtimes. Thirty-three of the parents were white, two were Asian, one was mixed race. Children averaged 4 years, 4 months in age; the majority were first born and had at least one sibling. All children spent approximately 22 hours with other adult caretakers. Half of the families were in a “no-treatment” control group and believed the study was only to understand family mealtime benefits. Parents in the intervention half of the study received a 20-minute training, which provided the information of R.E.A.D.Y. talk and watched a 15-minute video explaining decontextualized language. They were given a copy of the video along with a booklet summarizing it and were encouraged to use R.E.A.D.Y. talk over the next month. They also were given an audio recorder to record 10 minutes of four weekly mealtimes at home. During the 4-week study parents received a weekly text to remind them to use R.E.A.D.Y. talk, to record a mealtime conversation for the week, and ask if they had questions (Leech et al., 2017).

Results of the above study indicated that parents produced 19.37 decontextualized utterances during each 10-minute recording or approximately 15%, while children used six decontextualized utterances in each 10-minute recording or approximately 12%. The majority of parents' R.E.A.D.Y. utterances were about the past, followed by explanations, then future, then open-ended questions. It follows that the majority of talk by children was about past events, then explanatory, followed by future talk, and open-ended questions were least frequent. This brief one-time intervention saw an increase in parent's decontextualized talk to include nearly half of their total talk, compared with approximately one-fourth of parent's talk in the control group. Exposure of parent's decontextualized talk caused their children to use it more. The majority of decontextualized speech in both parents and children was about past events. These results add to reminiscing training programs of the past (Peterson et al., 1999; Reese & Newcombe, 2007; Reese et al., 2010 as cited in Leech et al., 2017), which may indicate that discussion of the day's events is a daily family mealtime routine. Two types of temporal conversations, past and future increased, while the other two types of R.E.A.D.Y. talk, explanations and questions, were less responsive to the intervention. This may be partly because past and future talk is spontaneously initiated. The finding that training parents to increase future talk with their children also increases the child's future-oriented talk and is a positive step in child language development (Leech et al., 2017). Decontextualized conversation is a powerful tool in transmitting information from person to person and is critical to children's academic success (Uccelli et al., 2017, as cited in Leech et al., 2017).

Prospection is a decontextualized conversation element that refers to the ability to converse about past and future events. Adults think and make daily decisions. In order to make

these decisions, we have to project forward to future time. This cognitive ability is *episodic future thinking* (Atance & O'Neill, 2005, as cited in Leech et al., 2019) or *prospection* (Tulving, 1984; 2001, as cited in Leech et al., 2019), which includes the ability to plan, make decisions, and delay self-gratification. Thinking and reasoning about their future selves is difficult for preschool children (Atance, 2015; Atance & Meltzoff, 2005; Busby & Suddendorf, 2005, as cited in Leech et al., 2019).

Considerable improvements were seen in children's future-oriented decisions and memory when researchers briefly conversed with 3- to 5-year-olds about events in the next day. Abilities of *prospection* in children were greatest immediately after discussion of events in the near past or near future (Chernyak, Leech, & Rowe, 2017, as cited in Leech et al., 2019). In 2017 a brief study found that training parents to utilize future talk with their children increased their 4-year-old's future oriented language (Leech et al., 2017). It is unclear if the future-oriented conversations involved self or another person. Neither Chernyak nor Leech indicated whether future talk was about self or others. There are three hypotheses relative to this concern:

1. *Future oriented hypothesis*—exposure to future oriented language alone supports the child's *prospection* abilities (Hudson, 2002; 2006, as cited in Leech et al., 2019).
2. *Self-reliant hypothesis*—Thinking of oneself in the present or future will improve the child's *prospection* abilities. A study found that children use personal pronouns to mentally see themselves in the future or past. It may be that the important conversation content is reference to self (Chernyak et al., 2017, as cited in Leech et al., 2019).

3. *Extended self-hypothesis*—One envisions one’s own future rather than someone else’s (Moore, Lemmon, & Skene, 2001; Suddendorf & Corballis, 1997; Tulving, 1984; 2001, as cited in Leech et al., 2019).

When faced with making a decision between current and future preferences, 3 to 5-year-old children make more accurate future decisions for others than for themselves (Belanger, Atance, Varchese, Nguyen, & Vendetti; 2014; Lee & Atance, 2016; Russell, Alexis, & Clayton, 2010, as cited in Leech et al., 2019). Future-oriented thinking about self is a challenge for young children (Leech et al., 2019). With this in mind, Leech undertook a study wherein preschool children’s self-projection was manipulated during future-oriented and present oriented conversations. The effects of temporal distance and projection were assessed using four conditions: future self, future other, present self, and present other. The researcher read children’s stories but varied the use of future oriented and self- projecting language. In the temporal distance she utilized future oriented language, while other children’s stories included present oriented language. In the projection manipulation the reader varied the story’s focus on the target child or on another child the same age and gender as the target child.

The study included 68 English speaking 4- and 5-year-olds. Forty-six percent of the children were exposed to another language at home. The children were randomly assigned to one of the four conditions in which the researcher read two 5-minute stories and asked three questions unique to each condition. In the future self-condition, children were the main character with a photo of the child attached to each page as the researcher turned pages. Actions were expressed in the future tense using personal pronouns (Leech et al., 2019).

In the present self-condition, the same use of each child's photo was used and moved forward on each page. Actions were in the present tense and questions were asked to encourage the child to think of themselves in the present (Leech et al., 2019).

The future other condition also included taking a photo of the child, but instead of using it in the story, another child's photo of an age and gender match to the target child was used. The story text was in the future tense with third person gender matched pronouns. The questions asked what the main character would do in the future (Leech et al., 2019).

The main character and photo used in the present other condition was of a gender and age match to the target child. The story was read in the present tense. Questions focused on the main character's present actions (Leech et al., 2019).

Following the story intervention, a second researcher conducted three prospection assessments: *prospective memory*, *future-oriented decision-making*, and *delay of gratification*. At the beginning of the assessments, the researcher showed a white box to the children saying she had a gift for them if they could remind her to open it at the end of the "games" (Leech et al., 2019).

Within the future oriented decision-making task, taken from Atance and Meltzoff (2005), children were shown photos: one of a dirt road, a playground, a restaurant, and a minivan. The researcher asked them to pretend they were planning an activity that matched the picture they were given. The researcher showed the children three items: water bottle, gift, plant, and asked which one of the items they would take with them to use with the photo given to them (Leech et al., 2019).

In the final assessment, delay of gratification, children were given a choice of receiving one sticker now or two stickers at the end of the “game” time. If the child chose one sticker now, it was placed on a paper and given to the child. If the child delayed gratification, two stickers were placed in an envelope and retained until the end of the assessments. Receiving a larger reward is often the motivator in delaying gratification. This motivator was utilized here (Mischel, Shoda, & Peake, 1988, as cited in Leech et al., 2019).

Future-oriented and self-projecting language resulted in greater ability in prospective memory. Prospection increased when children were encouraged to think and talk about the stories of future self. Future-oriented language can improve children’s use of it by talking with them about the future in everyday activities (Leech et al., 2019).

Prospection develops quickly in preschool children while the support mechanisms remain obscure. Prospection abilities, especially prospective memory, improve as a child gets older. Evidence in this study indicates parent-child conversations specifically increase the vividness of a child’s future self (Leech et al., 2019).

Why Do Children Benefit from Responsive Language Parents?

Numerous studies indicate the significant importance of back and forth interactive parental conversation with their children as cited in this paper. Why do children benefit and what responses are most beneficial? Parents’ responsiveness to their infant’s behavior and communication before the infant speaks strengthens the child’s communication skills (Tamis-LeMonda et al., 2014). As a matter of fact, highly responsive mothers of infants 9 to 13 months were speaking first words, vocabulary spurt and speech, 4 to 6 months earlier than infants whose

parents interacted little with their infant (Tamis-LeMonda et al., 2014; Tamis-LeMonda et al., 2001).

A mother's responsiveness to her child supports the child's language and cognitive skills. This is well documented information (Bloom, 1993; Bornstein, 1989; Bornstein et al., 1999; Landry, Smith, Miller-Loncar, & Swank, 1997, as cited in Tamis-LeMonda et al., 2001).

In 2001 Tamis-LeMonda et al. examined what forms of responsiveness and at which ages specific language milestones could be predicted. The study's goal was to determine the different maternal responses at 9 and 13 months of age to the timing of critical child language skills. An Events-History Analysis determined when different linguistic abilities were responsible for the timing of the emerging abilities. Five significant development milestones of expressive language were considered: "first imitations, first words, 50 words in expressive language, first combination speech, and first use of language to talk about the past." Language was acquired from biweekly interviews with mothers of infants 9 to 21 months, and free play interactions of mother-infant pairs ages 9 and 13 months were videotaped.

The study found that infants at 9 months expressed imitations and first words. By this age cognitive and motor skills are increasing rapidly as children explore their environment. As they explore, a mother's response affirms the child's actions and provides labels for objects and events that are the focus of the child's attention. Descriptions of their focus are especially important to the child at this time (Tamis-LaMonda et al., 2001).

Responsiveness at 13 months was a stronger predictor of the timing of language milestones. Mothers who responded contingently to their child's play and vocalizations spoke first words, expressed 50 words, repeated combination speech, and used past talk earlier than

children with less responsive mothers. By 13 months children's utterances imitate phonetic forms of adult speech, and their play moves from object play to pretend play. Asking questions that require the child to access stored information about past events will help the child remember things. For example, 2- and 3-year-old children of mothers who asked frequent questions showed better memory of events in the present and a year later (Ratner, 1984, as cited in Tamis-LeMonda et al., 2001). Different forms of maternal responsiveness at specific ages encourage shifts in timing of children's language abilities (Tamis-LeMonda et al., 2001).

In a 2008 study, infants were randomly assigned to a contingent feedback condition in which mothers were told to verbally respond to their infants' babbling; or a noncontingent feedback condition wherein mothers were asked not to respond to infants' babbling. Infants in the contingent feedback condition adjusted their babbling to mirror the phonological form of the mother's input; however, infants in the noncontingent form did not make any adjustment (Goldstein & Schwade, 2008, as cited in Tamis-LeMonda et al., 2014).

A 2010 study supports the idea that vocal response to infant vocals assists the infant with word-object identification. However, infants do not learn the word-object association with only a look from the mother. It requires a verbal response (Goldstein & Schwade et al., 2010, as cited in Hong & Gros-Louis 2017.)

Infants do not inherently understand that language is a tool (Tamis-LeMonda et al., 2014). They act on their worlds, parents respond, and infants learn the intention of social interaction (Tamis-LeMonda et al., 2013, as cited in Tamis-LeMonda et al., 2014). Benefits of responses are not only genetic. Parental responsiveness enhances language skills of adopted children (Stams, Jutter, & van IJzendoorn, 2002, as cited in Tamis-LeMonda et al., 2014),

predicts child learning under lab manipulations (Goldstein, King, & West, 2003, as cited in Tamis-LeMonda et al., 2014), and improves child language skills in interventions that target responsiveness (Landry, Smith, Swank, & Guttentag, 2008).

Fathers' responsiveness also determines infants' language skills. In one study, responsiveness of fathers' 2-year-olds predicted greater communication skills, while toddlers of low-responsive fathers were five times more likely to display cognitive delays (Shannon et al., 2002, as cited in Tamis-LeMonda et al., 2014). Also, father's responsiveness to their 2- and 3-year-old children predicted cognitive and language skills even when controlling for mother's responsiveness (Tamis-LeMonda, Shannon, Cabrera, 2004).

Three characteristics of responsiveness improve the chance that new words will be learned by infants: (1) responsive behavior is contiguous (temporally connected) and contingent (conceptually dependent) on infant actions, (2) responsive behavior is didactic (informative) and embodied (multimodal), and (3) responsive behaviors concur with and scaffold infants' skills (Kuhl, 2007, as cited in Tamis-LeMonda et al., 2014).

Contiguity and contingency refer to the temporary connection and concept co-dependencies between an infant's action and a parent's response. For example, a study revealed that a mother was more likely to respond when her 14-month-old infant looked at an object within 3 seconds than if the infant was off task (Tamis-LeMonda, Tafuro, Kuchirko, Song, & Kahana-Kalman, 2013, as cited in Tamis-LeMonda et al., 2014). Similarly, mothers responded following infant vocalizations and gestures (Tamis-LeMonda et al., 2013, as cited in Tamis-LeMonda et al., 2014).

Parents typically use didactic language that describes, labels and asks about objects when speaking to their infant. Responses to their infant naturally coordinate verbal and physical cues such as looking to and pointing at an object (Tamis-LeMonda et al., 2013 as cited in Tamis-LeMonda et al., 2014; Tamis-LeMonda et al., 2014).

Scaffolding makes reference to the parents' change in response as their infants' skill levels advance. For example, mothers of crawling infants respond differently to the infant than they do once the infant is walking and perhaps carrying an object. Mothers respond in new ways as the infant's skills emerge (Karasik, Tamis-LeMonda, & Adolph, 2011, as cited in Tamis-LeMonda et al., 2014).

Timing of responses to an infant is important. Parent responses that are contingent upon the infant's gesture, vocalizations, and focus support the infant's learning because it is easier for the infant to match the word with the object or gesture. This contingency response is known as semantically contingent (McGillion, Herbert, Pine, Keren-Portnoy, Vihman, & Matthews, 2013, as cited in Hong & Gros-Louis, 2017).

In a 2014 study (Tamis-LeMonda et al.) mothers' responses were coded either referential or regulatory. Referential responses refer to an object: "large red ball." Regulatory responses direct an action: "Sit down." Results indicated infants increase their vocalizations, gestures, and exploration after referential responses, but decreased them after regulatory responses.

A University of Iowa study (Hong & Gros-Louis, 2017) compared the impact of a father's responses to his infant with the mother's responses. They focused on different types of responses, sensitive and re-directive, and specific speech acts. They also determined the impact of parents' responses on infant language skills.

Participants in the above 4-month study included seven infants (three males, four females), each 8 months, and their parents. Parents were asked to record mother's and father's interactions separately each month. They were also requested to fill out words and gestures questionnaires each month, and at the infants age of 18 months they measured the infants' language skills. ELAN, a linguistic annotator, which is a free software program, coded the interactions. Infant vocalizations and parents' responses to infants' vocalizations were recorded. Parents' responses included verbal or behavioral responses within two seconds of the infant's vocalization (Hong & Gros-Louis, 2017).

These responses were divided into "No Response," "Sensitive Response," and "Redirective Response." "No Response" is when parents show no verbal or behavioral response. Sensitive responses include "Sensitive Vocalization" (SV) when a parent talks about an object the infant looks at, holds or plays with; "Sensitive Behavior" (SB) when a parent picks up the object the infant looks at, holds or plays with it; "Sensitive Vocalization and Behavior" (SVB) when the parent combines the actions. "Redirective Responses" (RV) is when the parent talks about something not related to the object the infant plays with or looks at. "Redirective Behavior" (RB) is when the parent picks up an object the child is not looking at or playing with. "Redirective Vocalization and Behavior" (RVB) is when the parent combines both actions, talks about, and picks up the object that is not the object the infant is looking at or playing with. Infant vocalizations were classified as "Vowel" (V) or "Consonant Vowel" (CV) (Hong & Gros-Louis, 2017).

When infants interacted with either mother or father their vocal production did not differ. Also, mothers and fathers did not differ in responsiveness to vowel (V) or consonant-vowel (CV)

vocalizations. There was no significant difference in number of vowel-like (V) or consonant-vowel (CV) like vocalizations when interacting with either mother or father. Infants' object vocalizations were far more frequent than any other directed vocalizations (Hong & Gros-Louis, 2017).

A significant correlation was found between mother's responsiveness and infant's increase in comprehension from 8 to 12 months. It also found a significant correlation between father's sensitive responses and an increase in infant's productive vocabulary from 8 to 12 months. Both mothers and fathers produced sensitive responses significantly more than redirective responses. The most frequent type of response was the sensitive vocal response (SV). It occurred more often than sensitive behavior (SB) or sensitive vocalization and behavior (SVB), which indicates parents are more likely to respond to their infant's vocalizations semantically and verbally than semantically and behaviorally (Hong & Gros-Louis, 2017).

Temporally and semantically contingent responses predict vocabulary growth which suggests that sensitive verbal responses may support language development (McGillion et al., 2014, as cited in Hong & Gros-Louis, 2017). This is confirmed in the subject study (Hong & Gros-Louis, 2017) which found that father's sensitive responses increased infant productive vocabulary and mother's responsiveness, which was primarily sensitive, increased the infant's receptive vocabulary. Redirective responses were seldom used by mothers or fathers; however, redirective behaviors (RB) were more frequent than redirective verbal (RV) responses. It follows that when parents tried to shift the infant's attention, they responded with redirective behavior (RB) responses (Hong & Gros-Louis, 2017).

Since most parent responses in the study (Hong & Gros-Louis, 2017) were sensitive verbal responses, the authors classified parents' responses as speech acts. Questioning, naming, imitating and describing were the most frequent; while exclaiming, affirming, and prohibiting were least frequent speech acts.

Earlier studies suggest that use of questions assist infants' language learning (Hoff-Ginsberg, 1985, as cited in Hong & Gros-Louis, 2017) and referential language such as naming and describing improves infants' object explorations, gestures, and vocalizations (Tamis-LeMonda et al., 2014). Whereas, regulatory language such as prohibitive and directive decreases learning. Therefore, responsiveness patterns of parents' support language development (Hong & Gros-Louis, 2017).

Responsiveness is a common characteristic around the world, even though parents of differing cultures respond according to their views and goals and may be of differing socioeconomic strata. Mothers of all cultures display contiguity, contingency and embodiment in their responses. Social learning processes are universal (Rodriguez & Tamis-LeMonda, 2011; Shannon, Tamis-LeMonda, London, & Cabrera, 2002; Tamis-LeMonda et al., 2001; Tamis-LeMonda et al., 2004, as cited in Tamis-LeMonda et al., 2014).

Two meta-analyses examined the association between sensitive responsive parenting and child language, and the association between parental warmth and child language. This recent study concluded that the association between sensitive responsiveness and child language was greater than warmth and child language. A sensitive responding parent to a child's attention stimulates the child's experience, while warmth does not involve contingency or reciprocity (Madigan, Wade, Plamondon, Browne, & Jenkins, 2019).

The child requires the warmth a parent's affection provides; however, warmth is often nonverbal without cues from the child. Responsiveness typically involves utterances or word talk in response to cues, which are critical for the child's development of language. Low and diverse SES groups had even greater association between sensitive responsive parents and child language (Madigan et al., 2019). These findings reflect previous research of the effect of high-quality parent-child interactions of families living in adversity (Madigan et al., 2019; Pace, Luo, Hirsh-Pasek, & Golinkoff et al., 2017, as cited in Madigan et al., 2019).

Previous research relative to responsive parenting has been inconsistent as to when it is critical to be most responsive in infancy, toddler age, or across child development. For example, some studies identify responsive parenting during infancy when warmth and nurturing is most beneficial to the infant. Whereas, a 2001 study results indicated responsive parenting was essential both in infancy and early childhood for positive development cognitively and socially (Landry, Smith, Swank, Assel, & Vellet, 2001, as cited in Landry et al., 2008).

This study determines the best time to implement intervention--infancy, early childhood, or both and the intervention effect on parent behavior and child outcomes for children born at term versus children born with a very low birth weight (VLBW) (Landry et al., 2008).

A playing and learning strategy, known as PALS I, targeted aspects of responsive parenting style was undertaken. Two hundred forty-two mothers with similar backgrounds and their infants were part of the study. Mothers viewed educational videotapes, critiqued their videotaped practice behaviors, and planned how to use target behavior each week of a 10-week session. Two groups of children were in the study, some born at 36 weeks with average birth weight and some with (VLBW), 3.5 lbs., and with a range of health complications at risk for

developmental difficulties. The control group was labeled Developmental Assessment Session I (DAS I), where families received the same number of home visits with information provided about infant development. Each family had 11 home visits plus four assessments. They each received three toys—a book, a puzzle, and a medium sized ball. Families participating were from a large range of ethnicity and from lower to lower-middle socioeconomic status (Landry et al., 2008).

The targeted behaviors in the intervention included three emotional and two cognitive responsive behaviors. The three affective, emotional behaviors included: 1) contingent responsiveness, 2) positive affect, and 3) warm sensitivity. The two cognitive aspects included: 1) support of child focus of interest including maintaining and avoidance of redirecting, and 2) quality of language input with scaffolding and verbal encouragement (Landry et al., 2008).

Responsive behaviors facilitated in PALS I were warmth and nurturing. PALS I mothers of term and VLBW children showed greater warmth than mothers of DAS I. Support of children's focus through maintaining was also targeted in PALS I, and was higher for mothers in PALS I than DAS I. The results of the PALS I intervention remained constant at a 3-month follow-up; however, a question remained as to whether the support during infancy would be adequate to provide the necessary learning outcomes for preschool. To answer the question, it was decided to pursue another intervention. PALS II was initiated by randomly assigning mothers from PALS I or the comparison condition DAS I. One hundred sixty-six families participated in PALS II which adapted PALS I for toddlers between 24 and 28 months to determine if child outcomes could be promoted further in PALS II. Intervention targeted behaviors were carried into PALS II (Landry et al., 2008).

Mothers' quality language input, verbal scaffolding, and encouragement were supported in PALS II. Providing labels, giving explanations, and highlighting objects and actions were also supported in PALS II. Verbal scaffolding was seen in mothers of term born children but not VLBW children (Landry et al., 2008)

The PALS interventions impacted language and social development areas; however, the timing varied on the skill. For example, word use in combination with joint attention is a more complicated language element. Coordinating these two seems to require both PALS I and II because mothers first encourage their children with objects and activities, then build on it by requesting verbalizations from their child during joint attention skills. Greater benefits for children were realized in cooperation and socialization when mothers received both PALS I and II. This suggests that developing a greater range of social skills required PALS I and II. Consistency in learning new language skills is essential for a child to completely develop their language abilities (Landry et al., 2008).

Findings of this study indicate interventions should be brought to a larger scale. Implementing intervention only at infancy or toddler-preschool level means that some aspects of parent responsiveness, and child social and language development will be compromised. Infancy interactions focus on warmth and contingent responsiveness; that is, maintaining attention and interpreting cues. Whereas, the toddler-preschool intervention uses responsiveness to promote cooperation and greater independence. A second intervention at toddler age builds on the skills the infant already has (Landry et al., 2008).

The authors of this research also raised the question as to whether a “booster” intervention beyond toddler-preschool age into childhood would further enhance the positive effects of PALS (Landry et al., 2008).

Hart and Risley Study

Although early studies linked number of words in a child's vocabulary to greater language development (Hart & Risley, 1995), recent research cited in this paper indicates that the number of words is not indicative of a child's language development (Hirsch-Pasek et al., 2015, as cited in Ramirez et al., 2020). Hart and Risley determined that academic success in Grade 3 is dependent upon how much language children are exposed to before age 3, and that exposure depends upon the parent's SES status. They estimated that by age 3 children of higher SES backgrounds heard 30 million more words than children of lesser SES backgrounds. This was supported by Hoff in a 2006 study which found that differences in word exposure, partially or fully, explain the SES gap in language skills. It was supported again in 2012 by Rowe who determined that vocabulary growth is predicted by a variety of aspects of their surrounding environment, in the case of Hart and Risley, the African-American culture.

Critics of the Hart and Risley (1995) study argued that they ignored the cultural context in which language is learned and used; that is the African-American culture, as Hart and Risley studied African-American families. It is unfair to determine the number of words children use without considering the way children use words within their culture. A child's language reflects their cultural norms (Johnson, 2015). Educators need to be more responsive to their student's culture and social interactions (Gonzalez, Moll, & Amanti, 2005, as cited in Johnson, 2015). Johnson (2014) went even further, demanding that educators identify their student's cultural

skills and integrate those skills into classroom practice. Questions are also raised with regard to their assumption that maternal speech directly spoken to the child is what is important. They avoided recording family interactions and by doing so, they eliminated vocabulary likely uttered by the child. No vocabulary from the children's surrounding environment was recorded. Yet, vocabulary growth is predicted by aspects of the child's environment (Sperry et al., 2018). For example, a study determined that children of working class African-American families were often told personal stories. One-on-one reading or conversations with children about their interests are valuable to children's vocabulary development (Sperry & Sperry, 2000). Also, to be considered is that there is variation of quantity and quality of conversations within low income families. A study found considerable mother-child interactions in low income families when examining language variation. This included book reading routines and joint attention with gestures and language (Hirsh-Pasek et al., 2015). The fact that there is substantial variation of early language exposure within each SES is indicative of the variation in children's language (Gilkerson et al., 2017, as cited in Romeo et al., 2018). Research supports that building children's early language skills will help them succeed in school despite low SES of their families (Hirsch-Pasek et al., 2015).

A 2003 Hart and Risley study presented another picture of early childhood experience which has more impact than number of words. For example, the number of encouraging words versus discouraging words from parents gives a compelling picture of children's early experiences. Their study of children's first 4 years of life determined that a child of a professional family accumulated 32 encouraging words and five prohibitive words per hour. A child from a working-class family accumulated 12 encouragements and seven prohibitions per

hour. Whereas, a child of a welfare family accumulated five encouragements and 11 prohibitions per hour. By age 4 a child of a welfare family had 144,000 *fewer* encouragements and 84,000 *more* prohibitions of behavior than a child of a working-class family. This evidence suggests a greater need for intervention to change the direction of children's lives. *Quality* parental word use on a daily basis is required to assure a child's language development skills.

Various aspects of parent speech and language quality are relative to a child's language growth, such as vocabulary diversity and length of utterances (Hoff, 2003; Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010; Rowe, 2012, as cited in Ramirez et al., 2020; Ramirez et al., 2020). Children learn best when conversations are addressed to them. For a child to benefit from overheard speech, the child must direct their attention away from what they are doing to the interaction between other people. Language input that is of interest to the child and builds on what the child is doing at the time is what will improve the child's language skills (Golinkoff, Hoff, Rowe, Tamis-LeMonda, & Hirsh-Pasek, 2019). Ramirez-Esparaza et al. (2014; 2016; 2017) found that number of words children heard was not related to child development. Important is the one-on-one talk with the child. More talk with 11- to 14-month infants positively correlated with more babbling and more productive vocabulary at 24 and 33 months. Findings of Ramirez et al. (2018) confirmed that one-on-one infant directed speech and parentese greatly improved child interactions across SES. Also important are parent-child interactions such as back and forth exchanges, joint attention and responsiveness (Brooks & Meltzoff, 2005, as cited in Ramirez et al., 2020; Hirsh-Pasek et al., 2015; Ramirez et al., 2020; Tamis-LaMonda et al., 2014). Back and forth conversations with an infant are important even before the infant talks. As infants hear language, their brain areas are activated by the speech

sounds. The brain rehearses speech mechanisms preparing for first words (Meltzoff & Kuhl, 2016). The conversation exchanges have more impact on language development than the number of words (Hirsh-Pasek et al., 2015; Zimmerman et al., 2009, as cited in Romeo et al., 2018). Romeo et al. extended the importance of language turn taking to language skills of 6-year-olds. This study indicated the parent's education predicted the child's verbal scores, but parent income did not. Children who experienced more conversation turns with adults had more activation in Broca's area during language processing. This was independent of SES status, IQ, and number of words and utterances (Romeo et al., 2018). Most recent studies indicate it is important to target parental language quality and parent-child interactions. This coaching has a positive impact on child language development regardless of family SES status (Golinkoff et al., 2019; Hirsh-Pasek et al., 2015; Ramirez et al., 2020). Parental input enhances children's language development regardless of socioeconomic status of parents, as studies utilized families from a range of SES backgrounds (Ramirez et al., 2020).

The above research findings determine that various elements of language skills have far greater effect on child language development than quantity of words, and that a family's SES status is not the determining factor of the achievement gap as Hart and Risley (1995; 2003) proposed.

Chapter 3: Summary/Conclusions

The purpose of this paper was to determine whether there is validity to the Hart and Risley (1995; 2003) finding that children of low SES hear 30 million fewer words than their peers, and that this limited exposure to words and low SES are responsible for the achievement gap. This paper discusses research of a variety of elements that are critical in the development of infant and young children's language skills. As Hart and Risley indicated there is an achievement gap, but uttering word after word to a young child will do little to close the gap. Years of research strategies and intervention studies herein indicate that there are various elements related to greater language development beyond quantity of words, such as back and forth language exchanges, joint attention, parental responsiveness, and parentese. There is consistency in studies relative to parent coaching which has repeatedly been found to have a positive impact on child language development. Authors of these studies include Hirsh-Pasek et al. (2015), Golinkoff et al. (2019), Madigan et al. (2019), Ramirez et al. (2018; 2020), and Romeo et al. (2018). Parental input enhances a child's language development regardless of socioeconomic status of parents, as studies cited herein, utilized families from a range of SES backgrounds. The shared interaction between child and parent beginning in infancy with the infant participating and the parent responding to the child is a necessary element of language learning. This turn-taking exchange has more impact on language development than the number of words.

Conversations parents have with their children evolve as the child learns. As children's skills develop, the parent uses scaffolding, a process where new skills are built on earlier learned skills. Once children get to ages 3 and 4, they should be exposed to discussing non-present

events and answering open-ended questions. It is up to the parent to use this decontextualized conversation so that their child becomes comfortable with it.

Children receive ongoing benefits from responsive parents. Mother's and father's sensitive responsiveness to their children helps them learn social interactions. Parent responses which are contingent upon their infant's gestures, vocalizations, and focus assist the infant in matching the word with the object or gesture. An infant of highly responsive parents will speak up to 6 months earlier than infants whose parents interact little with their infant. The PALS interventions found that consistency in learning new language skills is essential for a child to completely develop their language skills. This is apparent in my classroom, especially for children with special needs. As long as the child is engaged in hearing new words from books read to the child as well as conversational interaction, there is remarkable attention and learning. However, a summer or holiday break can set the child back. Obviously, the ongoing stimulus is essential to maintain learning progress.

I believe answers to my research questions have been addressed in this paper. The achievement gap has more to do with language learning elements than number of words or SES backgrounds. The more critical issue in early child development is the conversations and book reading parents need to participate in with their child.

Conclusions

The message is that parents have a critical role in the development of their child from infancy and throughout life. Since a child's experiences literally build the brain, the course of the infant's life determines early childhood abilities and eventual school readiness. Parents need to spend a greater amount of time in conversation exchanges with their child. This is

consistently indicated in several studies including Leech et al. (2019), McGillion et al. (2017), Ramirez et al. (2020), Romeo et al. (2018), Conversations with a child and the language development elements presented in this paper provide a greater opportunity to close the achievement gap than quantity of words as Hart and Risley (1995) suggested in their research. However, I feel a very important finding in Hart and Risley is the fact that children of low-income families hear far too many prohibitive words compared with encouraging words. Children need to hear encouraging words on a daily basis to advance their language skills.

Recommendation for Future Research

The Hart and Risley (2003) study presented a very negative picture of early childhood experiences. The greater number of prohibitive words compared to encouraging words heard by children of low-income families is disturbing. A study to follow up on this is necessary and, if found to be the case, an intervention for change is imperative.

Also, the PALS studies (Landry et al., 2008) found that consistency in learning new language skills is essential to completely develop a child's language skills across the child's infancy and into the toddler years. The authors of the research raise the question of whether a "booster" intervention beyond toddler-preschool age would further enhance the child's learning. I think this would be an interesting and telling endeavor.

Implication for Practice

I grew up in a home where my parents read to us as children. Books were often given to us as Christmas and birthday presents, which continue to this day. As a result, I have a love of books and make time to read. I have always utilized books with my young students. This paper has reinforced the importance of reading with young children or just sharing stories with them.

With the young learners sometimes a story about the pictures with intonations and actions is great entertainment for them. I will continue this practice in my classroom.

Chapter 4: Position

The most important thing parents can do for the development of their child is to have quality conversations with them about topics that interest them. Parents who recall past events and talk about them with their child, explain new words and concepts, ask lots of open-ended questions, and discuss the future with their child will make a positive difference in their academic success. While parents have a great responsibility in seeing that their child consistently develops new language and learning skills to completely develop their language and social abilities, the question may be asked, ‘what assistance is available to parents in this endeavor?’ A second paper, *The Achievement Gap Dilemma*, discusses possible options in preparation for school readiness.

While there still exists a gap in children’s vocabulary learning skills ,which is prevalent in families with low SES as indicated in Hart and Risley (1995; 2003), years of accumulated research as cited in this paper addresses numerous language elements which have repeatedly been confirmed to be more vital to early child language development than quantity of words. Nor can we conclude, as Hart and Risley did, that the strong determinant of the achievement gap is due to the child’s socioeconomic background, as most research studies utilized families from a range of SES backgrounds. Also, as noted in research, a child’s language reflects their cultural norms. Building a child’s language skills will help the child succeed in school despite low SES of the family. The achievement gap has more to do with young children who are not being read to or conversed with regardless of their SES status.

References

- American Speech-Language-Hearing Association. Retrieved from: <https://www.asha.org/about/>.
- Atance, C. M. (2015). Young children's thinking about the future. *Child Development Perspectives, 9*, 178-182.
- Atance, C. M., & Meltzoff, A. N. (2005). My future self: Young children's ability to anticipate and explain future states. *Cognitive Development, 20*, 341-361.
- Belanger, M. J., Atance, C. M., Varghese, A. L., Nguyen, V., & Vendetti, C. (2014). What will I like best when I'm all grown up? Preschoolers' understanding of future preferences. *Child Development, 85*, 2419-2431.
- Blair, C., Raver, C. C., & Willoughby, M. (2014). Closing the achievement gap through modification of neurocognitive and neuroendocrine function: Results from a cluster randomized controlled trial of an innovative approach to the education of children in kindergarten. *PLoS One, 9*(11), e112393.
- Bloom, L. (1993). *The transition from infancy to language*. New York: Cambridge University Press.
- Bodrova, E., & Leong, D. J. (2007). *Tools of the mind: The Vygotskian approach to early childhood education*. (2nd Ed.) New York, NY: Merrill/Prentice Hall.
- Boland, A., Haden, C., & Ornstein, P. (2003). Boosting children's memory by training mothers in the use of an elaborative conversational style as an event unfolds. *Journal of Cognition and Development, 4*, 39-65.
- Bornstein, M. H. (1989). *Maternal responsiveness: Characteristics and consequences*. San Francisco, CA: Jossey-Bass.

- Bornstein, M. H., Tamis-LeMonda, C. S., & Haynes, D. M. (1999). First words in the second year: Continuity, stability, and models of concurrent and predictive correspondence in vocabulary and verbal responsiveness across age and context. *Infant Behavioral Development, 22*, 65-85.
- Braarud, H. C., & Stormack, K. M. (2008). Prosodic modification and verbal adjustments in mothers' speech during face-to-face interaction with their infant: A double video study. *Social Development, 17*, 1074-1084.
- Burnham, D., Kitamura, C., & Vollmer-Conna, U. (2002). What's new, pussycat? On talking to babies and animals. *Science, 296*, 1435.
- Cooper, R. P., & Aslin, R. N. (1994). Developmental differences in infant attention to the spectral properties of infant directed speech. *Child Development, 65*, 1663-1677.
- Demir, O. E., Rowe, M. L., Heller, G., Goldin-Meadow, S., & Levine, S. C. (2015). Vocabulary, syntax, and narrative development in typically developing children and children with early unilateral brain injury: Early parental talk about the "there and then" matters. *Developmental Psychology, 51*, 161-175.
- Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4 to 12 years old. *Science, 333*(6045), 959-964.
- Dickinson, D. K., & Tabors, P. D. (2001). *Beginning literacy with language: Young children learning at home and school*. Paul H. Brookes Publishing.
- Goldstein, M. H., & Schwade, J. A. (2008). Social feedback to infants' babbling facilitates rapid phonological learning. *Psychological Science, 19*, 515-523.

Golinkoff, R. M., Can, D. D., Soderstrom, M., & Hirsh-Pasek, K. (2015). (Baby) Talk to me:

The social context of infant directed speech and its effects on early language acquisition.

Current Directions in Psychological Science, 24(5), 339-344.

Golinkoff, R. M., Hoff, E., Rowe, M. L., Tamis-LeMonda, L. S., & Hirsh-Pasek, K. (2019).

Language matters: Denying the existence of the 30-million-word gap has serious consequences. *Child Development*, 90, 985-992.

Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young*

American children. Baltimore, MD: Paul H. Brookes Publishing Co.

Hart, B., & Risley, T. R. (2003). The early catastrophe. *Education Review*, 17, 110-118.

Hirsh-Pasek, K., Zosh, J. M., Golinkoff, R. M., Gray, J. H., Robb, M. B., & Kaufman, J. (2015).

Putting education in “educational” apps: Lessons from the science of learning.

Psychological Science Public Interest, 16(1), 3-34.

Hoff, E. (2003). The specificity of environmental influence: Socioeconomic status affects early

vocabulary development via maternal speech. *Child Development* 74, 1368-1378.

Hoff, E. (2006). How social contexts support and shape language development. *Developmental*

Review, 26(1), 55-88.

Hong, Y., & Gros-Louis, J. (2017). *Parental verbal responsiveness during pre-linguistic vocal*

development: Variability and association with language outcomes. Honors Thesis. Iowa

City, IA: University of Iowa Honors Thesis. Retrieved from: https://ir.uiowa.edu/honors_

theses

Huttenlocher, J., Waterfall, H., Vasilyeva, M., Vevea, J., & Hedges, L. V. (2010). Sources of

variability in children's language growth. *Cognitive Psychology*, 61, 343-365.

- Johnson, E. J. (2014). (Re)categorizing language minority literacy in restrictive educational contexts. *International Multilingual Research Journal*, 8(3), 167-188.
- Johnson, E. J. (2015). Debunking the language gap. *Journal for Multilingual Education*, 9(1), 42-50.
- Kuhl, P. K., Andruski, J. E., Chistovick, A., Chistovick, L. A., Kozhevnikova, E. V., Ryskina, V. L., &... Lacerda, F. (1997). Cross language analysis of phonetic units in language addressed to infants. *Science*, 277, 684-686.
- Landry, S. H., Smith, K. E., Swank, P. R., & Guttentag, C. (2008). A responsive parenting intervention: The optimal timing across early childhood for impacting maternal behavior and child outcomes. *Developmental Psychology*, 44(5), 1335-1353.
- Lee, W. S., & Atance, C. M. (2016). The effect of psychological distance on children's reasoning about future preferences. *PLoS One*, 11(10), 1-18.
- Leech, K. A., Leimgruber, K., Warneken, F., & Rowe, M. L. (2019). Conversation about the future self improves pre-schoolers' prospection abilities. *Journal of Experimental Child Psychology*, 181, 110-120.
- Leech, K., Wei, R., Harring, J. R., & Rowe, M. L. (2017). A brief parent focused intervention to improve preschoolers' conversational skills and school readiness. *Developmental Psychology*, 54(1), 15-28.
- Madigan, S., Prime, H., Graham, S. A., Rodriques, M., Anderson, N., Khoury, J., & Jenkins, J. M. (2019a). Parenting behavior and child language: A meta-analysis. *Pediatrics*, 144(4), e20183556.

- Madigan, S., Wade, M., Plamondon, A., Browne, D., & Jenkins, J. M. (2019b). Birth weight variability and language development: risk, resilience and responsive parenting. *J Pediatric Psychology, 40*(9), 869-877.
- Meltzoff, A. N., & Kuhl, P. K. (2016). Exploring the infant social brain: What's going on in there? *Zero to Three Journal, 36*(3).
- Moore, C., Lemmon, K., & Skene, K. (2001). *The self in time: Developmental perspectives*. New York, NY: Psychology Press.
- Newport, E. L., Gleitman, H., & Gleitman, L.R. (1977). *Mother, I'd rather do it myself: Some effects and non-effects of maternal speech style in talking to children*. Cambridge, UK: Cambridge University Press.
- Peterson, C., Jesso, B., & McCabe, A. (1999). Encouraging narratives in preschoolers: An intervention study. *Journal of Child Language, 26*, 49-67.
- Ramirez, N. F., Lytle, S. R., Fish, M., & Kuhl, P. K. (2018). Parent coaching at 6 and 10 months improves language outcomes at 14 months: A randomized controlled trial. *Developmental Science*, e12762. Retrieved from: <https://doi.org/10.1111/desc.12762>.
- Ramirez, N. F., Lytle, S. R., & Kuhl, P. K. (2020). Parent coaching increases conversational turns and advances infant language development. *National Academy of Sciences, 117*(7), 3484-3491.
- Ramirez-Esparza, N., Garcia-Sierra, A., & Kuhl, P. K (2014). Look who's talking: Speech style and social context in language input to infants are linked in concurrent and future speech development. *Developmental Science, 17*, 880-891.

- Ramirez-Esparza, N., Garcia-Sierra, A., & Kuhl, P. K. (2016). The impact of early social interactions on later language development in Spanish-English bilingual infants. *Child Development, 88*, 1216-1234.
- Ramirez-Esparza, N., Garcia-Sierra, A., & Kuhl, P. K. (2017). Look who's talking now! Parentese speech, social context, and language development across time. *Frontiers in Psychology, 8*, 1173.
- Reese, E., & Newcombe, R. (2007). Training mothers in elaborative reminiscing enhances children's autobiographical memory and narrative. *Child Development, 78*, 1153-1170.
- Rodriguez, E. T., & Tamis-LeMonda, C. S. (2011). Trajectories of the home learning environment across the first 5 years: Association with children's language and literacy skills at prekindergarten. *Child Development, 82*, 1058-1075.
- Romeo, R. R., Leonard, J. A., Robinson, S. T., West, M. R., Mackey, A. P., Rowe, M. L., & Gabrieli, J. D. E. (2018). Beyond the 30-million-word gap: Children's conversational exposure is associated with language related brain function. *Psychological Science, 29*(5), 700-710.
- Rowe, M. L. (2012). A longitudinal investigation of the role of quantity and quality of child directed speech in vocabulary development. *Child Development, 83*, 1762-1774.
- Rowe, M. L. (2013). *Decontextualized language input and preschoolers' vocabulary development*. Retrieved from <http://dx.doi.org/10.1055/s-0033-1353444>.
- Salo, V. C., Rowe, M. L., Leech, K. A., & Cabrera, N. J. (2015). Low income fathers' speech to toddlers during book reading versus toy play. *Journal of Child Language, 43*, 1385-1399.

- Shannon, J. D., Tamis-LeMonda, C. S., London, K., & Cabrera, N. (2002). Beyond rough and tumble: Low income fathers' interactions and children's cognitive development at 24 months. *Parenting: Science and Practice*, 2, 77-104.
- Sperry, D. E., Sperry, L. L., & Miller, P. J. (2018). Re-examining the verbal environments of children from different socioeconomic backgrounds. *Child Development*, 90(4), 1303-1318.
- Sperry, L. L., & Sperry, D. E. (2000). Verbal and nonverbal contributions to early representation: Evidence from African American toddlers. *Communication: An arena of development. Ablex*, pp. 143-168.
- Suddendorf, T., & Corballis, M. C. (1997). Mental time travel and the evolution of the human mind. *Genetic, Social, and General Psychology Monographs*, 123, 133-167.
- Suskind, D. L., Leffel, K., Graf, E., Hernandez, M. W., Gunderson, E. A., Sapolich, S. G., Suskind, E., & ... Levine, S. C. (2016). A parent directed language intervention for children of low socioeconomic status: A randomized controlled pilot study. *Journal Child Language*, 43(2), 366-406.
- Suskind, D. L., Leffel, K., Hernandez, M. W., Sapolich, S. G., Suskind, E., Kirkham, E., & Meehan, P. (2013). An exploratory study of “quantitative linguistic feedback:” Effect of LENA feedback on adult language production. *Communication Disorders Quarterly*, 34(4), 199-209.
- Tamis-LeMonda, C. S., Bornstein, M. H., & Baumwell, L. (2001). Maternal responsiveness and children's achievement of language milestones. *Child Development*, 72, 748-767.

- Tamis-LeMonda, C. S., Kuchirko, Y., & Song, L. (2014). Why is infant language learning facilitated by parental responsiveness? *Current Directory in Psychological Science*, 23(2), 121-126.
- Tamis-LeMonda, C. S., Kuchirko, Y., & Tafuro, L. (2013). From action to interaction: Mothers' contingent responsiveness to infant exploration across cultural communities. *IEEE Transactions on Autonomous Mental Development*, 5, 202-209.
- Tamis-LeMonda, C. S., Shannon, J. D., & Cabrera, N. (2004). Mothers and fathers at play with their 2- and 3-year-olds. *Child Development*, 75, 1806-1820.
- Verdine, B. N., Zimmerman, L., Foster, L., Marzouk, M. A., Golinkoff, R. M., Hirsh-Pasek, K., & Newcombe, N. (2019). Effects of geometric toy design on parent-child interactions and spatial language. *Early Childhood Research Quarterly*, 46(1), 126-141.
- Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., & Golinkoff, R. M. (2018). The power of play: A pediatric role in enhancing development in young children. *American Academy of Pediatrics*, 142(3), e20182058.

The Achievement Gap Dilemma

by

Anna Sindt

A Starred Paper

Submitted to the Graduate Faculty of

St. Cloud State University

in Partial Fulfillment of the Requirements

for the Degree

Master of Science in

Child and Family Studies

May, 2021

Starred Paper Committee:
JoAnn Johnson, Chairperson
Ming Chi Own
Hsueh-I Lo

Table of Contents

Chapter	Page
1. Introduction.....	4
Research Questions.....	7
Importance of the Topic.....	7
Literature Search Description.....	8
Definitions.....	8
2. Literature Review.....	10
American Academy of Pediatrics.....	12
Community Interventions.....	15
Early Childhood Education.....	16
The Road to High Quality.....	20
Chicago Child-Parent Center.....	22
The State of Our Nation.....	26
Preschool Matters.....	29
Benefits and Costs of High-Quality Preschool.....	31
3. Summary/Conclusions.....	38
Conclusions.....	39
Implication for Practice.....	40
4. Position.....	41
References.....	43

	3
Chapter	Page
Appendices	
A. The State-by-State Costs and Benefits of a Universal Prekindergarten Program	48
B. Government Budget Effects of a Universal Prekindergarten by State.....	50

Chapter 1: Introduction

Young children learn almost everything from their families, and they carry those skills forward to adulthood. Most important is the fact that those early learned skills are also indicative of the child's future. The first 3 years of a child's life are when the greatest developmental changes take place, including rapid brain development, learning capacity, and social progress. It is during this time that parental involvement becomes crucial to the development of their child. The shared interaction of babbling and gestures of the infant child and quality language of the responsive parent begins in infancy with the infant participating and the parent responding to the child. This is a necessary element of language learning (Hirsh-Pasek et al., 2015; Romeo et al., 2018).

Early child poverty in the United States affects one in five children. Poor language skills are typically evident in children raised in poverty (Burchinal, Pace, Alper, Hirsh-Pasek, & Golinkoff, 2016; Hoff, 2013, as cited in Luo, Pace, Masek, Hirsh-Pasek, & Golinkoff, 2016). These disparities, which are often evident in the first year of life and become more pronounced over time, lead to lack of school readiness, lack of academic achievement, lack of attaining an education or a career, which affects individual well-being (Fernald, Marhman, & Weisleder, 2013, as cited in Cates, Weislander, & Mendelsohn, 2016). Low income families frequently live in a home environment with less cognitive stimulation, less parent responsiveness, less quality language interactions, and, as a result, less school success (Cates et al., 2016).

Poverty disparities in early child development and school readiness are a major public health crisis and have led to the development of interventions that target parenting and home language environment (Cates et al., 2016). Legislation in 2010 established state funding for home visits for at risk pregnant women and children from birth to 5 years (Patient Protection and

Affordable Care Act, 2015, as cited in Cates et al., 2016). These home visits included motivational interviews, counseling, modeling behaviors, videotaped interactions with feedback; as well as providing learning materials including books and toys. An evaluation by the U.S. Health and Human Services Department found “evidence of effectiveness” (Avellar, Paulsell & Sama-Miller, 2015, as cited in Cates et al., 2016). Although a success, these home- and center-based interventions are costly and require additional complementary strategies (Cates et al., 2016).

Since the family is where early child learning begins, it is important that parents are motivated to adopt a conversational parent style that follows a child’s interests and repeats conversation, which accelerates a child’s vocabulary development. Intervention is one way to make sure there is more talk and interaction between parent and child. As Suskind (2015) said: “The baby’s brain is still developed by talk.”

This paper addresses legitimate intervention programs that are utilized, their goals, and the extent of their success. Further, it examines what requirements are essential for a successful quality early childhood education program.

The American Academy of Pediatrics has established a variety of intervention programs. Parents make frequent wellness visits to the clinic with their child from birth to school entry; therefore, the intervention simply extends their visit time. These pediatric health clinics are in an excellent position to build on the established rapport between the caregiver and parents for intervention opportunities. Parents, in this setting, are prepared to accept advice from their pediatrician regarding their child’s development and behavior. The clinic is a low-cost option for the intervention program in that the facility and staff already exist (Cates et al., 2016).

Pediatric health care provides several primary and secondary parent intervention programs. One example is Reach Out and Read (ROR) which is a primary care prevention program that targets shared book reading during wellness visits at a cost of approximately \$25 per child each year (Reach Out and Read National Center, 2015, as cited in Cates et al., 2016). Whereas, home visit programs can cost from \$2,000 to \$6,000 per child each year (U.S. Department. of Health and Human Services, 2015, as cited in Cates et al., 2016), compared with center-based programs which cost between \$15,000 and \$20,000 per child each year (Isaacs & Roessel, 2008; 2015, as cited in Cates et al., 2016). The ROR program, during infancy visits, provides children's books to families, and pediatric health care professionals give guidance on reading benefits, and provide shared reading activities. ROR has an established network of 5,000 sites in the United States serving approximately 4,400,000 young children annually, three-fourths of whom live at risk, in low income, and/or ethnically and linguistically diverse homes (Cates et al., 2016). There are several other programs provided by pediatric health care, many of which are discussed in this paper.

Programs in Early Childhood Education are open to all families no matter their economic status. Early education gives the child, from birth through age 5, the opportunity to experience adult interaction and nurturing as well as peer relationships, both add positively to the child's development. Educators have the responsibility to help children overcome obstacles by providing language enrichment. Teachers are partners with parents in child development (Suskind, 2015).

Early childhood educators encounter children from diverse backgrounds and low socio-economic status (SES). The Early Childhood Education provides a stable, secure setting in

which the child has the opportunity to improve cognitive and language abilities which lead to school readiness (Neuman, 2009). Further, children in high quality education are more likely to score higher grades, graduate from college, and secure a career with higher pay (First Five Years Fund, 2017).

There are critics to these programs and to their cost. However, a 2015 study indicated that it would take no more than 8 years for annual benefits of a publicly funded universal preschool to exceed the costs (Lynch & Vaghul, 2015). Benefits and costs are addressed further in this paper.

Research Questions

1. Since reading books and conversing with children promotes their vocabulary, how do we motivate parents to have conversations with their child?
2. What effective intervention programs are available to enhance quality early childhood education not only for children of low SES but all young children?

Importance of Topic

As an Early Childhood Special Education teacher and former Speech-Language Pathologist, I have seen how lack of language can impact a child's ability in the classroom. It is so rewarding after working hard with these young learners to finally see some progress, only to come back from a break to find that the benefits of the progress are no longer evident or measurable. In some circumstances, I find that parents do not open their child's backpack to see their work or to encourage their child by talking with them about their "work." I understand in many cases time may not allow for it, yet it is usually the same parents who do not work with their child. It is so important to have parents who are actively engaged in their child's learning.

I am looking for ways that I can best encourage more cooperation with parents in my role in their child's development.

I know there are many parents who have a library of books, yet they do not read with their children. I also know young students, in our country, on their way to adulthood, have poor academic rankings. It is these observations that prompted the second question relative to effective interventions. I hope to be able to determine what part I can play in closing the achievement gap.

Literature Search Description

My research sources date back approximately 12 years. I utilized electronic databases as noted in the references at the end of this paper. Library access of papers pertinent to my research are from St. Cloud State University, St. Cloud, Minnesota; St. Mary's University Twin Cities, Minneapolis, Minnesota; Concordia College, Portland, Oregon; and Dana Suskind's (2015) book, *Thirty Million Words: How to Build a Child's Brain*.

Definitions

Achievement gap refers to a deficiency of a child's learning skills relative to what is expected at certain ages. These gaps are more prevalent in low income children (Hart & Risley, 2003).

Broca's area: the language center of the brain (Romeo et al., 2018).

Conversation turns: the child's communicative 'return' or response to an adult, extending an interaction (Romeo et al., 2018).

Intervention: an action that targets a change, effective when the targeted change is driven by the belief system that underlies the behavior (Leech, Wei, Rowe, & Haring, 2018). A tool in mitigating the effects of family poverty on early child development (Cates et al., 2016).

Language development: word talk in response to child cues which enhance a child's speech skills (Ramirez, Lytle, & Kuhl, 2020).

Parental responsiveness: a parent's response that leads to behavior changes such as improving a child's language skills as a result of using a rich language input in conversations with the child (Landry, Smith, Swank, & Guttentag, 2008).

Scaffolding: a process in which new skills are built on earlier learned skills (Yogman, Garner, Hutchinson, Hirsh-Pasek, & Golinkoff, 2018). The term is from Vygotsky's zone of proximal development, which refers to a child's ability to learn more quickly with assistance or guidance than on her own.

Universal preschool: education for all children 3 to 5 years of age (Lynch & Vaghul, 2015).

Chapter 2: Literature Review

Research has determined that language and vocabulary development are vital for any child's school readiness. Romeo's (2018) study provided the first evidence that an infant's language experience may influence brain development. In that study an MRI measured neural activation in Broca's area, the language center of the brain. The 2018 study extends the importance of conversation turns to language skills of 6-year-olds. The conversation turns provide the child with increased opportunity to practice their language and receive feedback especially from an adult; that is, a parent, teacher, or caretaker. This is the first study to find a direct relationship between conversation turns and brain function during language processing.

Most recent studies on language development indicate it is important to target parental language quality and parent-child interactions. These interventions have successfully motivated parents to read to and converse with their child. The child, in turn, has improved language and vocabulary skills (Ramirez, Lytle, Fish, & Juhl, 2018; Ramirez et al., 2020; Romeo et al., 2018). Interventions are effective because the targeted change is driven by the belief systems that underlie the behavior. For example, parents of preschoolers are motivated to have more conversations with their children because they have been made aware of the positive effect increased conversations and vocabulary can have in preparing their child for school (Leech et al., 2018). Support of interventions such as preschool that enhance skills of children are valuable because, when children enter school, they are ready to learn (Resnick, 2017, as cited in Yogman et al., 2018). Researchers hope to study interventions that incorporate conversation into children's lives, such as electronic reminders to parents to converse with their children (Romeo et al., 2018). An earlier study found extended parental responsiveness to children's language

competence. The PALS II study suggests that one approach to supporting early literacy is through a parent responsiveness intervention that targets the use of rich language input. As parents improved their responsiveness, the child's behavior changed leading to improved language skills (Landry et al., 2008).

Parents have a critical role in the development of their child from infancy and throughout life. Since a child's experiences literally build the brain, the course of the infant's life determines early childhood abilities and eventual school readiness. It is at ages 3 to 5 when children need not only to be read to, but conversed with, both parent and child utilizing conversation exchanges to build the child's language skills. Presenting words in a meaningful context while reading a book with a child exposes the child to new vocabulary. Yet, many parents, even affluent and educated parents with many books, do not read with their children daily. Intervention is one way to make sure parents follow through. Intervention has become an essential tool in mitigating the effects of family poverty on early child development by educating parents as to their role in raising a wholly developed child in language and social skills for school readiness (Fernald et al., 2013, as cited in Cates et al., 2016; Mendelsohn et al., 2018).

Inviting the child to use new words and providing feedback on their understanding of the words is helpful. Asking open-ended questions of the child encourages back and forth conversations between parent and child or teacher/caretaker and child. Each taking turns speaking and listening attentively gives the child an opportunity to learn, especially when parents or teachers scaffold children's talk about new words and ideas. Conversation with a child maintains their interest, builds their brain, improves school readiness, and life-long learning, which is more likely to lead to a career and successful life. This is not a small job. It is a great

responsibility; one that parents who are supporting their family do not have the necessary time for or educational ability, in some cases, to read to and converse with their child. Many parents turn to preschools for that learning. The availability of high-quality preschools may not exist where they live, or they may be filled. It may be that the family lives in poverty and does not have the ability to pay for high quality preschool; therefore, they send their child to a low-quality preschool program. Little can be learned in such surroundings.

American Academy of Pediatrics

The American Academy of Pediatrics (AAP) recommends that pediatricians promote early literacy development for children during wellness visits from infancy through kindergarten by encouraging parents to read aloud to their child with developmentally appropriate books, by offering such appropriate books to read, and joining other child advocates to support and promote these efforts. AAP also refers at-risk families to center-based programs, some of which come to the family's home. Legislation in 2010 provided funding for states to establish home visiting programs for at risk pregnant women and children from birth to age 5. The visits address parenting issues through counseling, modeling behaviors, motivational interviews, videotaping interactions with feedback, and provide learning materials such as toys and books (Cates et al., 2016).

As noted in the introduction, a variety of intervention programs have been established by the American Academy of Pediatrics. A program modeled after ROR, which was discussed in the introduction, is Little by Little (LBL). It begins prenatally and goes through age 5. Families receive four visits each year, with child development counseling tailored to the child's age by Women, Infants and Children staff. Families also receive printed materials about child

development and positive parenting practices, plus books and developmentally appropriate toys. LBL and ROR enhance literacy activities and school readiness (Cates et al., 2016).

The Video Interaction Project (VIP), which complements ROR, is an intervention that promotes positive parenting through reading aloud and play. It is available in two phases, birth to 3 years, and 3 to 5 years. VIP provides learning materials and promotes parent verbal responses, reading, and teaching behaviors. VIP can facilitate children through first grade who require additional cognitive and language development. This AAP project has resulted in parent-child reading aloud progress and play reduced hyperactivity at school entry with sustained impact a year and a half after completion (Mendelsohn, Valdez, & Flynn, 2007, as cited in Cates et al., 2016). Cost per child annually is \$150 to \$240, which includes 12 sessions for 30 to 45 minutes each (Peacock-Chambers, Ivy, & Bair-Merritt, 2017).

Bright Beginnings is a program for low income families who are referred to a trained community volunteer when the child is 2 or 3 years of age. This short intervention provides a picture book with written information about and verbal demonstrations of activities that promote language and social development. These visits are short but have been recognized for improving increased literacy activities in the home (*Bright by Three*, 2015, as cited in Cates et al., 2016).

A universal program that targets all parents regardless of SES is Triple P, Positive Parenting Program, which utilizes media, home, and healthcare platforms. It provides one-on-one consultations three to four times at 15 to 30 minutes each by healthcare practitioners to parents of children with identified behavior issues focusing on management of behavior and skill development issues (Triple P, Positive Parenting Program 2015, as cited in Cates et al., 2016).

Healthy Steps for Young Children (HS) combines primary and secondary prevention for adverse child developmental and behavioral issues. It involves a developmental specialist who spends time at wellness appointments from birth to 3 years providing guidance specifically related to developmental and behavior concerns linking families with community resources and support groups. HS has sites in 15 states. (Minkovitz, Strobino, & Mistry, 2007, as cited in Cates et al., 2016). Costs per child range from \$400 to \$933 for 11 visits and 2 home visits over 2½ years with a child development specialist at clinic wellness visits (Peacock-Chambers et al., 2017).

A lower intense AAP program, Building Blocks (BB), links public health entities to pediatric healthcare for primary and secondary prevention. It distributes parenting pamphlets and learning materials via mail. It also mails Ages and Stages Questionnaires to be completed by parents, which allows primary care providers to screen results and coordinate referrals for intervention services (Bricker, Squires, & Mounts, 1999; Mendelsohn, Huberman, & Berkule, 2011, as cited in Cates et al., 2016). Cost per child annually is \$75 (Peacock-Chambers et al., 2017).

Touchpoints sessions include a social worker as mentor, a parent coach, and a nurse at wellness and home visits. Modeling child interactions, videos, Ages and Stages Questionnaire activity-based system, and phone support are included. Goals of this intervention include strengthening of parent-health provider relationship, education of non-harsh parent-child interactions, and use of community resources. Touchpoints has significantly improved child expressive and receptive language development measured by the MacArthur Communicative

Development Inventories at 16 months (Farber, 2009, as cited in Peacock-Chambers et al., 2017).

The above intervention programs of the American Academy of Pediatrics (AAP) indicate there is considerable effort made to deliver preventive intervention services, especially in the first 3 years of a child's life, to families at risk for poverty related disparities in child development and school readiness during pediatric care wellness visits. It includes collaboration of health professionals, community entities, and policy-makers. These programs face many challenges including funding and successful implementation. For example, ROR has more than 5,000 sites across the United States serving approximately 4,400,000 children each year. However, ROR reaches only approximately 20-25% of zero to 5-year-old children in the United States who are living below the federal poverty level. Stable funding is required to implement programs for the greater need in our population and to provide ongoing development and refinement of strategies for maximum effort (Cates et al., 2016).

In order to support the development of young children, pediatric primary care providers need to be linked with extensive community efforts. The American Academy of Pediatrics alone cannot assist all families who require their services. When AAP is combined and coordinated with complementary strategies in early child education and family support, the programs have the potential for greater success in family outcomes (Doyle, Chavez, Cohen, & Morrison, 2019).

Community Interventions

Community Leadership Teams (CLT) are made up of individual community members and leaders who establish plans and implement changes in programs utilizing intervention. It has the responsibility to establish goals for bridging the Word Gap by arranging for training,

adopting, and implementing multilevel interventions through use of pediatrics, home visits, and childcare entities to adopt and be trained in use of conversation-based strategies to nurture children's language learning. CLT has assistance from the Community Tool Box (CTB) which was developed at the University of Kansas as an online system to build individual skills (Greenwood et al., 2017).

Using the CTB along with online progress measurement shows promise. The hope is that parents and others in the community will learn and use the conversational talk strategies so that wherever a child goes in the community, their language is promoted. Further use of intervention and research is necessary to determine the success of the community outcomes relative to the CLT program (Greenwood et al., 2017).

“Too Small to Fail” (2014) is another community-based campaign to activate communities through messengers such as pediatricians, clergy, childcare providers, and librarians to educate parents and deliver tools to them that will encourage them to have meaningful conversational interactions with their children. This was initiated by the Bill, Hillary, and Chelsea Clinton Foundation in 2014. The “Talking is Teaching: Talk, Read, Sing” continues to raise awareness by engaging the business communities and others with messages through the local media and online resources parents can use with their children.

Early Childhood Education

A primary goal of Early Childhood Education is to support all areas of child development: social-emotional, physical, cognitive, and language development (Head Start, 2016, as cited in Child Trends Data Bank, 2016). More children are attending early childhood education facilities. As a result, responsibility of the child’s development is shared by the parent

and caregiver or teacher. For example, between 1977 and 2011 childcare facility enrollment went from 13 to 26% and was as high as 30% in 1993 (Child Trends Data Bank, 2016).

While many past childcare facilities were often glorified babysitters, parents today expect more. Childcare providers, in many cases, have professional credentials, provide a theoretically-based curriculum, and work in an accredited facility. The expectation is that childcare facilities can prepare a child for academic success regardless of income demographics or home life (Sparks, 2015).

Early child education can lower inequality of wealth, power, and social privilege. The benefits of early education, however, depend on the quality of the programs (Ausikaitis, Wynne, Persand, Pitt, & Hosek, 2015, as cited in Institute of Education Sciences, 2019). James Heckman, a distinguished professor of the University of Chicago and a leading researcher of early education outcomes, determined that disadvantaged children benefit significantly from early child preschool showing improved cognitive skills and behavior traits including sociability and motivation (Heckman, 2017, as cited in Institute of Education Sciences, 2019). A meta-analysis found significant effects for children who attend a preschool program prior to entering kindergarten. Preschool was found to impact children's social skills and school progress. Specifically, gains were found in teacher-directed instruction and small group instruction (Camilli, Vargas, Ryan, & Barnett, 2010, as cited in Institute of Education Sciences, 2019).

A 2017 study of four accredited southeast Pennsylvania Keystone STAR schools, each with a staff of teachers with professional credentials, provided a curriculum beneficial to child development. The data from the small study show a correlation between language usage and the quality of the facility. The Pennsylvania research indicated that a child of low socioeconomic

status (SES) has the potential of being exposed to language comparable to middle or high SES families. Talking with children matters. This research indicated the quality and quantity of the conversation is important and should include singing, cooing, reading books, using descriptions, eye contact, body language, voice tone, and inflection. It should be positive, inclusive, engaged, and open-ended (Lauman, 2018). Talk can be an intervention to minimize the disparity of children in low income families (Suskind, 2015).

Children benefit from high quality preschool, with low-income children and English learners benefiting most (Yoshiwaka, Weiland, Brooks-Gunn, & Burchinal, 2013). Early education professional standards include building blocks of quality including a curriculum that addresses the child's academic, social-emotional and physical development. The curriculum must emphasize learning that is language rich and hands-on. It must be effectively implemented by well-prepared teachers who provide engaging interactions in a classroom that supports learning. There must be ongoing support for teachers including coaching and mentoring. Low student to teacher ratios assures better learning opportunities with ample time to learn. Parents should be encouraged to be partners in their child's school. Assessments of the child's academic, social-emotional, and physical progress should be ongoing, as should the assessments of the structural quality and classroom interactions and environment. English learners and special needs children should receive valid support. Finally, a well implemented state quality and improvement system should be in place. These are the ten building blocks that are the foundation of childhood education (Wechsler, Melnick, Maier, & Bishop, 2016).

Teachers of quality early childhood education from birth to age 8 are expected to have a bachelor's degree specializing in early childhood education. A meta-analysis of 32 studies by

Kelley and Camilli in 2007 indicated teachers with a bachelor's degree had greater positive effects on early childhood education compared to less educated teachers. Retaining qualified staff is important. Increased compensation attracts and retains high quality teachers. Teachers have increased responsibility in the classroom of students and, in addition, are required to prepare assessment data regarding each child's physical and social-emotional development as well as their literacy and math skills (Kelley & Camilli, 2007, as cited in Wechsler et al., 2016).

Parents should be included as role models while also celebrating the various cultures of the families. Establishing good communication with parents and encouraging their input and support in their child's ongoing goal setting is essential (Halgunseth & Peterson, 2009, as cited in Wechsler et al., 2016).

Full day preschool has greater effectiveness than half day especially for low income children. For example, an evaluation of Chicago Child-Parent Centers showed better results in children's progress in social-emotional development and physical health, as well as math and reading skills (Reynolds, 2014, as cited in Wechsler et al., 2016). Similarly, Head Start data of full day enrollment showed better skills in reading and math (Walters, 2015, as cited in Wechsler et al., 2016).

It should also be noted that children who attend preschool 2 or 3 years have better skills than those who attend only 1 year. This was evident in Chicago Child-Parent Centers where children who enrolled for 2 years were found less likely to need special education services and less likely to commit crimes later in life compared with those who attended one year of preschool (Arteaga, 2014, as cited in Wechsler et al., 2016).

The most successful preschool programs have small class sizes. Professional standards allow a 10:1 ratio as the largest acceptable ratio. An example is New Jersey's Abbot Preschool which allows 15 students per classroom with two teachers (U.S. Department of Health and Human Services, 2011, as cited in Wechsler et al, 2016).

Quality Rating and Improvement System (QRIS) establishes quality standards and supports continued efforts to improve. A well-implemented QRIS is a critical factor for positive outcomes. Examples are supports such as on-site coaching or consultation, financial incentives, and improvement grants or scholarships for teachers pursuing higher degrees (Holod, 2015, as cited in Wechsler et al., 2016). Quality and improvement systems are currently utilized in 40 states (Quality Rating and Improvement System [QRIS], 2015, as cited in Wechsler et al., 2016).

The Road to High-Quality

A report on four states that have built high quality early education programs provide their experiences and the most important elements leading to high quality preschools. Michigan, West Virginia, Washington, and North Carolina share a common commitment to provide engaging, age appropriate programs a reality (Wechsler et al., 2016). Each state relies on these strategies: a) establish standards for quality and systems that promote incentives, b) invest in knowledgeable and skilled teachers, c) coordinate and align early education programs, d) seek sufficient funding sources and mechanisms, and e) build broad based support (Wechsler et al., 2016).

To leverage resources and develop policies to improve and expand early learning opportunities, these states prioritize quality and continuous improvement by: a) incorporating assessments of adult-child interactions, adult-child ratios, and facility requirements;

b) developing a quality rating and improvement system to support continuous improvement, reinforce quality standards, and provide program accountability; c) linking funding to ratings; and d) developing a strong local infrastructure (Wechsler et al., 2016).

The four states emphasize improving the quality of preschool teachers by focusing on their credentials and their interactions with students. Each state provides accessible specialized training, encourages advancement and retention through scholarships and salary supplements, and provides coaching to improve program quality (Wechsler et al., 2016).

Preschool is typically housed in a building separate from kindergarten through Grade 12. Preschool is not an educational requirement in the United States, nor is universal preschool available in all states. More importantly, preschool emphasis is on social-emotional development, in addition to physical, cognitive and language development. While kindergarten through grade 12 has required guidelines of learning disciplines, specifically math, science and English. The four states of Michigan, West Virginia, Washington, and North Carolina align what is taught and how it is taught from preschool through elementary. This is accomplished by housing all children's services under one umbrella or creating a cabinet that works across all agencies, which improves coordination of programs and systems by sharing data and aligning curriculums and assessments (Wechsler et al., 2016). This is a reasonable approach since investments in elementary schools influence the strength of ongoing preschool effects. (Johnson & Jackson, 2017, as cited in Meloy, Gardner, & Darling-Hammond, 2019). One such effect is that more classroom time spent on advanced content is associated with student learning. The 3-year-old preschool and 4-year-old school readiness programs prepare young learners for school readiness to enter kindergarten. They have not only learned their A, B, C's and colors, but they

are socially and emotionally prepared for kindergarten. The scaffolding of what children have learned in preschool allows them to explore new ideas and continue to learn in kindergarten. Kindergarten must scaffold what children have learned in preschool, otherwise kindergarten students may become disinterested, which inhibits learning (Claessens, Engel, & Curran, 2014, as cited in Meloy et al., 2019).

Funding is combined from multiple sources. While they primarily depend on state funds as the main source, they also take advantage of federal and local funding. Dedicated state funds are combined with funding from Head Start and other federal programs such as Temporary Assistance for Needy Families (TANF) and Early Head Start. They also leverage short term funds and public-private partnerships (Wechsler et al., 2016).

Finally, to advance their efforts, they rely on broad based support by bringing together advocates, politicians, philanthropists, practitioners, and business leaders to work with policymakers at promoting high quality accessible education (Wechsler et al., 2016).

These four states are striving to improve preschool and understand that quality is essential to realize preschool's potential. It will take time and effort, in addition to public investment, before high quality learning of young children is fully realized (Wechsler et al., 2016).

Chicago Child-Parent Center

The Chicago Child Parent Center (CPC) program is an example of a successful high-quality preschool. The program was funded from Title I of the Elementary and Secondary Education Act of 1965. Preschoolers ages 3 and 4 and early elementary students from Chicago's poorest neighborhoods were the first to be serviced. Prekindergarten and kindergarten children

are still supported by the federal funding. CPC is the second oldest federally funded prekindergarten program in the United States with Head Start the oldest. Classrooms include a maximum of 17 students with two teachers. Preschoolers attend 3 hours per day, either morning or afternoon during the 9-month school year for a total of 540 hours. Children learn language, reading, and math skills. Importance is also placed on social, psychological, and physical development (Lynch & Vaghul, 2015).

CPC teachers are required to have a minimum of a bachelor's degree and be certified in early childhood education. Salary is commensurate with the K through 12 Chicago Public School system. Funds are also available for ongoing professional development for teachers, classroom aides, and community representatives. In addition to the teachers and classroom aides, children are monitored by parent volunteers, home visit representatives, clerks, nurses, and speech therapists (Lynch & Vaghul, 2015).

According to Arthur Reynolds and Associates (as cited in Lynch & Vaghul, 2015) at the University of Minnesota's Institute of Child Development who conducted a comprehensive evaluation of CPC, there are critical features that make CPC a success:

1. A structured and diverse set of language-based instructional activities
2. Highly qualified and well compensated teachers with bachelor's degrees and certification in early childhood education
3. Low child to teacher ratios (at most 17 to 2)
4. Parent participation and resources for parental personal development
5. Home visitations and other community outreach activities
6. Ongoing staff development

7. Health and nutrition services (screenings, speech therapy, free breakfasts and lunches)
8. Comprehensive services to families and children ages 3 through 9 in a school-based setting

In 1999 a Chicago Longitudinal Study began with 1,539 low income students born in 1980. 989 of the children, who completed the CPC prekindergarten program, were compared to a control group of 550 children who did not attend the preschool program. One hundred sixty-one of the 550 children did, however, attend CPC's kindergarten program. Data on the intervention and the control group are collected periodically by Reynolds and Associates with the recent published results of the participants at age 26 (Reynolds et al., 2006, as cited in Lynch & Vaghul, 2015).

Data of CPS prekindergarten participants at age 26 revealed they had significantly higher test scores at ages 5, 6, 9, and 14 than non-center students. Arrests at age 18 for CPC preschoolers was at 17% compared with 25% of non-participants, adult depression of CPC preschoolers was 26.4% less likely between ages 22 and 24 than for non-participants, 41.5% of CPC participants were less likely to require special education and spent an average of 0.7% fewer years in special education by age 18 as children in the control group. Participants were also retained in a grade 40.1% less often than non-participants (Lynch and Vaghul, 2015). Lower rates of special education and grade retention mean a significant and immediate cost savings for schools and society. School districts spend an average of \$13,119 per child each year (United States Department of Education, 2018, as cited in Meloy et al., 2019). This cost is doubled when a student is retained in a grade or requires special education services (Xia & Glennie, 2005, as cited in Meloy et al., 2019).

Reynolds and Associates also prepared a Benefit-Cost Analysis of CPC's prekindergarten program indicating a present value benefit of \$92,220 and a present value cost of \$8,512, or a benefit-cost ratio of 10.83:1. Benefits were identified primarily from: 1) less expense for low grade retention and lower use of special education, 2) lower cost of criminal justice system due to lower crime rates, 3) lower child welfare, and 4) higher projected earnings and higher income tax revenue from higher earnings (Reynolds et al., as cited in Lynch & Vaghul, 2015).

It is interesting to note that although the cost of retaining a student doubles, research from Harvard Graduate School of Education Professor Marten West (2017) found that repeating third grade does not reduce a student's chances of completing high school. Rather, it improves their preparedness for high school and their performance while enrolled. Approximately 10% of children in the United States are retained once between kindergarten and Grade 8. Professor West studied the causal effect of third grade retention under Florida's test-based promotion policy on student outcomes through high school. The study found retention in third grade had positive effects on reading and math achievement. Although these benefits faded over time, students who had been retained entered high school needing less remediation and they earned higher grades while enrolled. Retention had no effect on student's graduation chances.

The CPC prekindergarten program expanded to four school districts in Illinois and Minnesota in 2012. It is known as the Midwest CPC. Results of the new sites are similar to the Chicago study. Program participants in the Midwest CPC had higher scores in literacy, language, math, cognitive, and socio-emotional development, and physical health compared to non-participants (Lynch & Vaghul, 2015).

The State of Our Nation

The organization for Economic Cooperation Development is comprised of 34 developed countries who compare data of student academic achievement. American children's academic achievement is poor compared to children living in other wealthy countries. The Program for International Student Assessment (PISA) ranks countries by reading, science, and math skills of 15-year-olds. Trends in International Mathematics and Science Study, and the Progress in International Reading Literacy Study also provide academic achievement of American children compared with other countries. American children are at the middle or bottom in these study rankings (Lynch & Vaghul, 2015).

A large percentage of American children do not attend preschool. Children from low income families are less likely to attend, and if they do, they attend low quality education programs. Low quality preschools exist because the United States spends little on preschool education compared with many other industrialized countries. Head Start, the oldest and largest publicly funded federal program for low income children, is also inadequately funded, which has caused inconsistent services and access to those services in many states. For example, only 36% of Head Start teachers in New Mexico had a bachelor's degree, while in the District of Columbia 90% of teachers had a bachelor's degree or higher. In Idaho only 6% of eligible children were enrolled in Head Start, while in North Dakota nearly 100% of eligible children were enrolled in the program (Barnett & Friedman-Krauss, 2016, as cited in Institute of Education Sciences 2019).

The United States Department of Education reports that only 40% of low-income children enroll in preschool compared with 60% of their more affluent peers. An increasing

number of cities and states have invested in preschool; however, at the current rate it will take decades to provide half of the country's 4-year-olds with state funded preschool (U.S. Department of Education, 2015, as cited in Institute of Education Sciences, 2019).

We have failed to achieve our potential and now rank below other economically advanced nations. These poor rankings have consequences. U.S. children as adults will be less skilled, less productive, have less earnings, and will be less able to contribute to the growth of our economy as adults. Scholars of medicine, neurobiology, and developmental psychology, including among others: Stanford University neurobiologist Eric Knudson and Nobel Prize winning economist James Heckman of the University of Chicago, have researched and determined that:

prevention is more effective and less costly than remediation, and earlier is far better than later. . . change in the foundations of human skill development and neural circuitry is highest earlier in life and decreases over time. These findings lead to the conclusion that the most efficient strategy for strengthening the future workforce, both economically and neurobiologically, and for improving its quality of life is to invest in the environments of disadvantaged children during the early childhood years. (Knudson & Heckman, 2006, as cited in Lynch & Vaghul, 2015, p. 17)

The consensus of experts who study high quality early childhood development have determined that investing in children is an effective strategy to develop a future workforce, enhance quality of life, individual well-being, families, communities, societies, and nations. The benefits include:

- Higher verbal, mathematic, and intellectual achievement
- Greater school success, higher graduation rates, less grade retention, and less need for special education
- Better health outcomes
- Higher employment and earnings
- Greater government revenues and less expenditure
- Less welfare dependency
- Lower crime rates

Children who participate in well designed and well executed early childhood education are better prepared to enter elementary school, have greater school success, lower school dropout rates, and higher levels of school attainment. Increasing access to quality preschool programs for all children is a cost-effective investment that pays dividends for many years and will help ensure states and national future economic productivity (Lynch & Vaghul, 2015).

Nobel Laureate James Heckman concluded:

...We cannot afford to postpone investing in children until they become adults, nor can we wait until they reach school age—a time when it may be too late to intervene.

Learning is a dynamic process and is most effective when it begins at a young age and continues through adulthood. The role of the family is crucial to the formation of learning skills, and government interventions at an early age that mend the harm done by dysfunctional families have proven to be highly effective. (Heckman, 2000, as cited in Lynch & Vaghul, 2015, p. 17)

Preschool Matters

The “State of Preschool” is a national report, and a report on 62 separate state funded preschool programs across 44 states, the District of Columbia, and Guam. The reports are prepared by the National Institute for Early Education Research ([NIEER], 2019).

In 2018, 44 states provided funding for preschool, which is up from 38 states. Idaho, Indiana, New Hampshire, South Dakota, Utah, and Wyoming have no preschool programs. State spending has increased from \$2.4 billion in 2002 to \$8.1 billion in 2018. This large change is misleading if no adjustment for inflation is made. Adjusting to 2018 dollars, states spent \$3.9 billion in 2002. Therefore, real purchasing power for preschool nearly doubled rather than nearly tripling. When adjusting for inflation, total funding decreased four years in a row from 2010 to 2014. Although there was a 1-year partial recovery, recent spending growth has been weak. Preschool enrollment increased 2.25 times more than funding, from less than 700,000 children in 2002 to 1.6 million in 2018. Spending per child decreased by \$400 (adjusting for inflation) due to the slightly higher level of enrollment growth compared to total spending over the same period (NIEER, 2019).

The total of state’s enrollment for 2018-2019 was 1,629,804 with 85% being 4-year-olds. States added 43,286 3-year-olds or an increase of .9% over 2017-2018. Nationally, approximately 40% of children in families earning less than \$10,000 do not attend prekindergarten. Children, age 3, are largely not served except in a few states. State funded prekindergarten is an increasingly essential part of public education. The federal source of preschool support will not be available in 2019-2020. Some states have plans to replace federal funds with state funds to sustain or even expand enrollment (NIEER, 2019).

Enrollment of Minnesota 4-year-olds in 2018-2019 was 7,613 and 624 3-year-olds, for a total of 8,237. The number of 4-year-olds enrolled is approximately 10% of the state's 4-year-olds while enrolled 3-year-olds was only 1%. The state of Minnesota spent \$6,738 per child in 2018-2019. The national average is \$5,374. This is a \$183 per child increase over the previous year, continuing a trend of no progress in real spending. The highest per child spending is the District of Columbia with \$15,970 (NIEER, 2019).

Minnesota provided special education preschool services to 5,433 4-year-olds and 2,986 3-year-olds. When adding prekindergarten, prekindergarten special education, and Head Start the total 4-year-olds serviced was 17,512 or 24.1% of the state's 4-year-olds. The total 3-year-olds serviced was 8,491 or 11.7% of the state's total 3-year-olds (NIEER, 2019).

States are rated as to the following Quality Standards checklist of NIEER:

Early learning and development

Curriculum supports

Teacher with Bachelor's Degree

Class of 20 or less

Staff-child ratio 1:10 or less

Assistant teacher with Child Development Associate (CDA) certificate

Specialized training in prekindergarten

Staff professional development

Continuous Quality Improvement System

Vision, hearing, and health screening and referral

Minnesota's Quality Standard checklist is 5.4 out of a possible 10 (NIEER, 2019).

Minnesota's Voluntary Prekindergarten (VPK) funding was established in 2016-2017 and funded through general education funds as a new grade level. The state legislature funded a School Readiness Program (SRP), a variation of VPK in 2017-2018. Districts could apply to be VPK or SRP. Funding for SRP will end after the 2020-2021 school year. Across VPK and SRP more than 7,613 children were enrolled in 124 districts at 193 public sites and 21 charter sites. The program operates a minimum of 350 hours per year (NIEER, 2019).

Benefits and Costs of High-Quality Preschool

Research shows that education achievement and attainment are key to overall economic growth and individual earnings. Investment in voluntary, high quality prekindergarten education for all 3- and 4-year-old-children in the United States leads to greater education achievement, improved economic growth rates, a raise in the standard of living, strengthening of the economy, and an ease of social, fiscal, and health problems. As educated children enter the labor force, their incomes are higher, and their taxes will pay back society (Lynch & Vaghul, 2015).

A 2015 study revealed it would take less than 8 years for annual benefits of a publicly funded universal preschool to exceed the cost. By 2050, society and the government would gain \$8.90 in benefits for every dollar invested. Early childhood education prepares children to learn as they enter first grade, be more successful in school, graduate from high school and college, and have a career with higher income (Lynch & Vaghul, 2015).

The study indicated that a high-quality preschool program would cost \$5,832 per child. With an expected enrollment of slightly under 7 million children when it is fully phased in 2017. The additional total taxpayer cost in 2017 would be \$26 billion. The returns per state tax dollar in 2050 would vary by state from a low of 94 cents in South Carolina, to a high of approximately

\$7 in Vermont and the District of Columbia. The amount realized by Vermont and the District of Columbia is from additional benefits above what the preschools already generate in these two states. By 2050 the federal government would have a budget surplus of \$34.8 billion from preschool investment. This would be a nationwide commitment that would cost an estimate of \$26 billion per year when it is fully phased in; however, over time government budget benefits would outweigh the costs of high-quality preschool investment. Good programs produce \$3 or more in present value for each dollar invested (all dollars are based on 2014 values). It is a sound public investment with long term results. The benefits are for children, their families, taxpayers, and society. In addition, high quality preschool has the ability to impact many of our nation's socioeconomic development goals and influence economic progress (Lynch & Vaghul, 2015). “Society pays in many ways for failing to take full advantage of the learning potential of all of its children, from lost economic productivity and tax revenues to higher crime rates to diminished participation in the civic and cultural life of the nation” (Committee for Economic Development, 2002).

Public funded, voluntary prekindergarten programs for 3 and 4-year-olds exist in 11 countries: Belgium, Denmark, France, Germany, Iceland, Italy, Netherlands, Norway, Spain, Sweden, and the United Kingdom. Enrollment rates for 4-year-olds in 2013 were above 94%. For 3-year-olds enrollment rates were between 86 and 98%. These programs have been in existence longer than the universal programs in the United States (Organization for Economic Cooperation and Development, 2014, as cited in Lynch & Vaghul, 2015).

Investment in preschool education has positive effects on the U.S. economy by increasing economic growth, improving workforce skills, strengthening our country's position in global

competition, and reducing poverty. In addition, it can reduce the gap between the poor and wealthy which leads to greater income equality, therefore, promoting equitable growth (Lynch & Vaghul, 2015).

There are currently five states that offer public funded, universal voluntary prekindergarten programs to all 4-year-olds: Florida, Georgia, Oklahoma, Vermont, and West Virginia. The District of Columbia has a universal prekindergarten program open to 3- and 4-year-olds. It is interesting to note that the District of Columbia and Vermont have particularly high ratios of total annual benefits to program costs with each at more than \$35 per child; whereas, Florida and Georgia are below \$10, and Oklahoma is at \$11. The high benefit to cost ratio of the District of Columbia and Vermont may be due to the fact that they already have high levels of prekindergarten enrollment in state funded programs and they invest heavily in them. It would require considerably less to invest in these two programs and both Vermont and the District of Columbia would benefit significantly from sharing costs with the federal government as proposed (Lynch & Vaghul, 2015).

Figure 1 (Appendix A) indicates anticipated state costs and benefits of the proposed universal prekindergarten program for 3- and 4-year-olds. Figure 2 (Appendix B) provides a state by state government effect of costs and benefits.

Requiring programs to use universal minimum standards for learning, as those recommended by the National Institute for Early Education Research (NIEER) is one way to improve early education in the United States. Preschool programs are evaluated by NIEER utilizing the following standards:

1. Early learning standards across multiple domains
2. A well-implemented curriculum that supports learning and development
3. A bachelor's degree for lead teachers
4. Specialized preparation for lead teachers on learning, development, and pedagogy at the preschool level
5. A Child Development Associate (CDA) credential or equivalent preparation for assistant teachers
6. Teacher participation in a substantial number of hours of professional development
7. Class size maximum of 20 children
8. Staff to child ratio of 1:10 or less
9. Screening and support services for hearing, vision, dental, and other health areas
10. Continuous monitoring to ensure improvement in practice

These standards support learning that leads to educational and life achievement (Friedman-Krauss et al., 2017, as cited in Institute of Education Sciences, 2019). Unfortunately, in 2015 NIEER found that only seven states complied with the ten standards. Shortage of qualified teachers is one of the major problems. While one requirement is for a bachelor's degree, only 60% of the programs require it. Also, only 40% of teacher assistants have the Child Development Associate (CDA) credential. CDA standards have six goals:

1. Create a safe and healthy learning environment
2. Promote intellectual and physical competence
3. Provide positive guidance and support emotional and social development
4. Form productive and positive relationships with families

5. Make sure participants experience a purposeful program responsive to their needs
6. Sustain commitment to professionalism (Washington, 2017, as cited in Institute of Education Sciences, 2019)

A second strategy necessary for quality early childhood education is adequate funding. In 2013 the *New York Times* compared U.S. spending on early childhood education with other countries. Nearly 30 countries were spending more. The United States spent less than half on 3- to 5-year-olds than was spent on kindergarten through Grade 12. The U.S. ranks 21st in total investment in early education relative to country wealth (Herman, Post, & O'Halloren, 2013, as cited in Institute of Education Sciences, 2019).

Salaries and classroom conditions also need to be addressed. The American Public Health Association reported that the median salary of preschool teachers is \$23,320, which is half of the median salary of kindergarten teachers. This leads to high turnover. Low quality preschools also have fewer resources and high student to teacher ratios, which leads to stress and discipline problems (American Public Health Association, 2017, as cited in Institute of Education Sciences, 2019).

With the present early childhood education system, many children are likely to begin kindergarten with limited and varied differences in academic and social development, which contributes to the achievement gap. The gap becomes more difficult to close and more costly after the preschool years. Implementing high quality universal preschool in the U.S. would bring greater educational achievements for young children and greater productivity as adults leading to successful careers. The country would also realize a growth in economy, a reduction in poverty, and a strengthening of U.S. global competition. As previously indicated, many industrial

countries allow more opportunities for their citizens to send their children to quality preschools. (American Public Health Association, 2017 as cited in Institute of Education Sciences, 2019).

The costs of not providing high quality preschool education are high. According to Julia Isaacs of the Urban Institute in Washington more than half of poor 5-year-olds lack skills needed to start school. It is very difficult to remedy such a deficiency later in life (Porter, 2013, as cited in Institute of Education Sciences, 2019).

Some critics say that universal preschool is not necessary if it is made available for low SES children. Not only would this lead to segregated schools, but low income children learn when they interact with their peers from diverse backgrounds, and when children play together they develop better language and vocabulary skills when interacting with peers who have stronger language skills (Reid, Kagan, Hilton, & Potter, 2015, as cited in Institute of Education Sciences, 2019).

There are benefits to both a targeted and universal prekindergarten program. If public funds are limited and a greater priority is on narrowing the achievement gap between lower and upper SES families than on economic growth, then the target program may be the likely choice. If there is greater emphasis on generating greater future economic growth, while providing high quality prekindergarten to all 3- and 4-year-olds, then the universal program is a likely choice. With the universal program, children who are not eligible for a targeted program can benefit from high quality prekindergarten. Therefore, the universal program may have greater positive effects for lower SES children as well as benefiting middle- and upper income children (Lynch & Vaghul, 2015).

Greater investment in early childhood education will strengthen economic and social conditions of our youth and provide economic security for all generations. The current generation of children will benefit from higher incomes, a higher standard of living, and better quality of life. Future generations will be less likely to grow up in poverty. Earlier generations who are now working or in retirement, will be supported by higher earning workers who will financially sustain public benefits such as Medicaid, Medicare, and Social Security (Lynch & Vaghul, 2015).

Investing in early childhood education has a direct benefit on the well-being of our children, and it can help us achieve many socioeconomic goals. An effective way to promote faster, more widely shared economic growth is to raise academic achievement and narrow achievement gaps. High quality universal preschool investment does both. Raising academic achievement will improve well-being now and for generations, and it will encourage economic growth. By narrowing the socioeconomic achievements gaps, high quality universal preschool will promote faster growth and reduce income inequality (Lynch & Vaghul, 2015).

Chapter 3: Summary/Conclusions

A question I posed at the beginning of my research was: How do we motivate parents to have conversations with their child? Recent studies on language development indicate interventions that target parent-child language interactions have been successful in motivating parents to read to and converse with their child, which has improved the child's language and vocabulary skills. These interventions are effective because the parents are made aware of the positive effect increased conversations and vocabulary have in preparing their child for school. This has been consistently indicated by various researchers including Ramirez et al. (2018; 2020), Romeo et al. (2018); Mendelsohn et al. (2018); and Cates et al. (2016). The problem, however, is that we need to reach more parents.

The second question posed in beginning my research was: What effective interventions are available to enhance quality early childhood education for all? Research, as cited in this paper, indicates that high quality preschool programs have yielded significant benefits for children extending through adolescence and into adulthood. Early, intensive language and literacy instruction in a language-rich environment has improved child outcomes. Conclusions as to the significant benefits of high-quality early childhood education have been in the findings of several researchers including James Heckman, a distinguished professor of the University of Chicago and a leading early education researcher, as well as Wechsler et al. (2016) and Meloy et al. (2019). Early childhood education assists children to enter school prepared to learn. However, there are few high-quality preschools in the United States, and many do not meet standards required to educate young children. Unfortunately, the need for high quality preschool is far greater than the availability.

As illustrated by the poor achievement rankings of our young people, the United States has failed to reach its potential. We can improve our position in the world by investing in our children. Early childhood education is an investment in our children and our country's future. High-quality preschool will provide all children, whatever their family SES status, with opportunities for a better education, a career, and well-being. Society also benefits in many ways including positive effects on the economy, improving the workforce, and reducing poverty, which reduces income inequality. The state of our nation will improve as a result of raised achievement rankings. As Heckman (2017) stated: “We cannot afford to postpone investing in children until they become adults, nor can we wait until they reach school age—a time when it may be too late to intervene. Learning is a dynamic process and is most effective when it begins at a young age and continues through adulthood” (p. 17).

Conclusions

I believe we can learn from the shared experiences of the four states that have built high-quality early education programs. By housing all children’s services, including preschool and kindergarten through Grade 12, under one umbrella or cabinet, there is greater coordination of programs and systems by sharing of data and aligning curriculum and assessments. In this way kindergarten scaffolds what children have learned in preschool and allows them to explore new ideas. Also, their reliance on broad based support is valid. Bringing together advocates, practitioners, business leaders, and politicians to work with policymakers encourages support and promotes high quality education access. Perhaps the importance of high-quality preschool for all needs to be addressed with some of our more influential people in this country. We need more people like Princess Kate of the United Kingdom who recently came forward to support the

BBC's "Tiny Happy People" initiative for parents and caretakers in developing language and communication skills in children. When meeting with British families, she said, "It's information like that I wish I had had as a first-time mum" (People Magazine, 2020). Changes are required to address the achievement gap. I believe that making high quality preschool education available for all 3- to 5-year-olds is an answer. This is made obvious by the years of research provided in this paper.

Implication for Practice

A suggestion of a future study by Romeo to utilize electronic reminders to parents for them to converse with their children is a valid intervention. I believe this reminder can be an effective text message I can make to parents of preschool children I teach. This is a beneficial way to remind and motivate parents to read to and converse with their child.

To encourage more support and input from parents, I plan to welcome each parent to share a story or custom of their family's heritage. It would be interesting to learn more about each child's background and for each child to learn from each other. Perhaps the parent could share a picture of the story or a favorite recipe they prepare for a holiday celebration they observe. I think this could open the door for parents to become more involved in their child's education. Of course, this will be more viable when we are no longer faced with the pandemic.

Chapter 4: Position

The average quality of preschool is less than good in the United States. The National Institute for Early Education Research (NIEER) has established 10 minimum standards for states to follow; however, only six states and the District of Columbia offer public funded high-quality preschool to 4-year-olds. The District of Columbia also offers it to 3-year-olds. Most of the 44 states that have preschools do not meet all ten minimum standards. One route to high quality preschool education is to support NIEER on the standards already in place. However, part of the problem in meeting some of the standards has to do with funding. For example, requiring a bachelor's degree means paying a higher salary, which is important because it encourages better qualified teachers.

Our country has a great need to educate young learners. American children at age 15 rank at the middle or bottom study rankings compared with 33 other developed wealthy countries. As this paper indicates, these poor rankings have consequences. These 15-year-olds will be less skilled adults with less earnings and, of course, this affects economic growth. Costs of not providing quality preschool education are high. The time to educate our children begins very young, since the achievement gap is more difficult to remedy as young people approach adulthood.

Although there are some very good preschools in our country, they are too few, and the United States does not promote the concept of high-quality preschool nor does it provide realistic funding for it. Until that attitude changes, there will continue to be an achievement gap and our young people will continue to rank in the middle or below academically. Our country does not

compare well with other developed industrial countries. We need to do better for the future of our children, and for the future of the United States.

References

- Bricker, D., Squires, J., & Mounts, L. et al., (1999). *Ages and stages questionnaires: A parent-completed child monitoring system*. Baltimore, MD: Paul H. Brookes.
- Burchinal, M. R., Pace, A., Alper, R., Hirsh-Pasek, K., & Golinkoff, R. M. (2016). *Early language outshines other predictors of academic and social trajectories in elementary school*. Presented at Assoc. Child. Fam. Conf. (ACF), Washington, DC.
- Cates, C. B., Weisleder, A., & Mendelsohn, A. L. (2016). Mitigating the effects of family poverty on early child development through parenting interventions in primary care. *Academic Pediatrics, 16*(3).
- Child Trends Data Bank. (2016). *Child-care: Indicators on children and youth*. Retrieved from: <https://www.childtrends.org>.
- Committee for Economic Development (2002). *The economics and politics of globalization: A global perspective from the international network of private business organizations*. Retrieved from www.ced.org>archive.
- Doyle, S., Chavez, S., Cohen, S., & Morrison, S. (2019). *Fostering social and emotional health through pediatric primary care: Common threads to transform practice and systems*. Center for the Study of Social Policy. Retrieved from: <https://cssp.org/resource/psp-program-analysis-report/>.
- First Five Years Fund. (2017). *National poll of the electorate*. Retrieved from www.ffyf.org.
- Greenwood, C. R., Carta, J. J., Walker, D., Watson-Thompson, J., Gilkerson, J., Larson, A. L. & Schnitz, A. (2017). Conceptualizing public health prevention intervention for bridging the 30-million-word gap. *Clinical Child Psychology Rev, 20*, 3-24.

- Hart, B., & Risley, T. R. (2003). The early catastrophe. *Education Review, 17*, 110-118.
- Heckman, J. (2017). *There's more to gain by taking a comprehensive approach to early childhood development*. Retrieved from: https://heckmanequation.org/assets/2017/01/F_Heckman_CBAOnePager_120516.
- Hirsh-Pasek, K., Adamson, L. B., Bakeman, R., Owen, M. T., Golinkoff, S. M., Pace, A., & . . . Suma, K. (2015). The contribution of early quality communication to low income children's language success. *Psychological Science, 26*, 1071-1083.
- Institute of Education Sciences. (2019). U.S. Department of Education. Retrieved from <http://ies.ed.gov/2019>.
- Kelley, P., & Camilli, G. (2007). *The impact of teacher education on outcomes in center-based early childhood education programs: A meta-analysis*. New Brunswick, NJ: NIEER.
- Landry, S. H., Smith, K. E., Swank, P. R., & Guttentag, C. (2008). A responsive parenting intervention: The optimal timing across early childhood for impacting maternal behavior and child outcomes. *Developmental Psychology, 44*, 1335-1353.
- Lauman, F. (2018). *Bridging the thirty-million-word gap: The impact of Keystone STARS accreditation on infant language exposure in Pennsylvania early childhood facilities*. Doctoral Dissertation. Upper Gwynedd, PA.: Gwynedd Mercy University.
- Leech, K., Wei, R., Rowe, M. L., & Haring, J. R. (2018). A brief parent focused intervention to improve preschoolers' conversational skills and school readiness. *Developmental Psychology, 54*(1), 15-18.

- Luo, R., Pace, A., Masek, L. R., Hirsh-Pasek, K., & Golinkoff, R. M. (2016). The family's role in the relation between socioeconomic status and early language development. *Journal of Family Medicine*, 3(6), 1073.
- Lynch, R., & Vaghul, K. (2015). *The benefits and costs of investing in early childhood education: The fiscal, economic, and societal gains of a universal prekindergarten program in the United States, 2016-2050*. Washington Center for Equitable Growth.
- Meloy, B., Gardner, M., & Darling-Hammond, L. (2019). *Untangling the evidence on preschool effectiveness: Insights for policymakers*. Washington, DC: Learning Policy Institute.
- Mendelsohn, A. L., Cates, C. B., Weilleder, A., Johnson, S. B., Seery, A. M., Canfield, C. F., &... Dreyer, B. P. (2018). Reading aloud, play, and social-emotional development. *Pediatrics*, 141(5), e20173393.
- National Institute for Early Education Research [NIEER]. (2019). *The state of our nation*. New Brunswick, NJ.
- Neuman, S. (2009). The impact of professional development and coaching on early language and literacy instructional practices, *American Educational Research Journal*, 46(2), 532-566.
- Peacock-Chambers, E., Ivy, K., & Bair-Merritt, M. (2017). Primary care intervention for early childhood development: A systematic review. *Pediatrics*, 140(6), e20171661.
- People Magazine. (2020 July 27). *Kate's latest cause*, 94(4), 6.
- Ramirez, N. F., Lytle, S. R., Fish, M., & Juhl, P. K. (2018). Parent coaching at 6 and 10 months improves language outcomes at 14 months. A randomized controlled trial. *Developmental Science*. Retrieved from <https://doi.org/10.1111/desc.12762>.

- Ramirez, N. F., Lytle, S. R., & Kuhl, P. K. (2020). Parent coaching increases conversational turns and advances infant language development. *National Academy of Sciences*, *117*(7), 3484-3491.
- Romeo, R. R., Leonard, J. A., Robinson, S. T., West, M. R., Mackey, A. P., Rowe, M. L., & Gabrieli, J. D. E. (2018). Beyond the 30-million-word gap: Children's conversational exposure is associated with language related brain function. *Psychological Science*, *29*(5), 700-710.
- Sparks, S. (2015). Keys to vocabulary is quality of conversation, not dearth of words. *American Educator*, *34*(28), 1-11.
- Suskind, D. (2015). *Thirty million words: How to build a child's brain*. Dutton.
- Too small to fail*. (2014). Clinton Foundation. Retrieved from: <http://www.clintonfoundation.org>.
- Wechsler, M., Melnick, H., Maier, A., & Bishop, J. (2016). *The building blocks of high-quality early childhood education programs*. Learning Policy Institute. Retrieved from: www.learningpolicyinstitute.org.
- West, M. (2017). Retrieved from www.gse.harvard.edu/news/whenkidsareheldback2017.
- Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., & Golinkoff, R. M. (2018). The power of play: A pediatric role in enhancing development in young children. *American Academy of Pediatrics*, *142*(3), e20182058.

Yoshiwaka, H., Weiland, C., Brooks-Gunn., Burchinal, M. (2013). *Investing in our future: The evidence base on preschool education. Foundation for child development*. Retrieved from: <http://www.sred.org/policy-media/policy-updates/meetings-briefings/investing-our-future-evidence-base-preschool>.

Appendix A

**The State-by-State Costs and Benefits
of a Universal Prekindergarten Program**

FIGURE 7

The State-By-State Costs and Benefits of a Universal Prekindergarten Program

In 2050, we can estimate the following benefits from a universal prekindergarten program. All monetary values are in millions of 2014 dollars.

State	Government benefits (\$)	Increased compensation (\$)	Savings to individuals (\$)	Total benefits (\$)	Ratio of total annual benefits to program costs
NATIONAL	81,589	108,400	114,732	304,722	8.9
Alabama	1,068	1,384	1,501	3,953	7.1
Alaska	279	372	509	1,160	10.4
Arizona	2,098	2,764	3,116	7,977	8.9
Arkansas	676	799	1,015	2,490	10
California	11,480	15,887	18,957	46,324	8
Colorado	1,541	2,338	2,120	5,999	9.8
Connecticut	932	1,256	988	3,176	10.4
Delaware	242	340	418	1,000	9.4
District of Columbia	145	134	200	479	36.5
Florida	4,360	6,045	6,416	16,821	8.7
Georgia	2,710	3,507	3,881	10,098	7
Hawaii	376	526	449	1,351	7.3
Idaho	444	692	667	1,804	7.2
Illinois	3,053	4,243	3,573	10,868	9.9
Indiana	1,611	2,254	1,886	5,751	7.5
Iowa	666	933	845	2,443	9.3
Kansas	769	1,056	895	2,720	9.8
Kentucky	1,003	1,187	1,257	3,447	11.5
Louisiana	1,089	1,217	1,868	4,174	9.5
Maine	223	310	284	817	15.2
Maryland	1,621	2,278	2,023	5,922	8.8
Massachusetts	1,438	2,238	1,435	5,111	7.8
Michigan	2,066	2,817	3,246	8,129	9.7
Minnesota	1,458	2,142	1,667	5,267	8.5
Mississippi	684	865	1,061	2,609	9.1
Missouri	1,435	2,041	1,675	5,151	8.2
Montana	230	293	398	921	9.6
Nebraska	501	655	617	1,773	9.5

Nevada	847	1,178	1,500	3,525	7.4
New Hampshire	268	488	257	1,013	11.2
New Jersey	2,116	3,022	2,364	7,501	9.5
New Mexico	568	646	1,063	2,277	10.8
New York	5,699	5,634	8,145	19,478	12.8
North Carolina	2,369	3,091	3,252	8,712	7.2
North Dakota	169	236	257	663	10.6
Ohio	2,651	3,280	3,753	9,684	8.5
Oklahoma	818	1,118	1,295	3,231	11.1
Oregon	1,030	1,437	1,543	4,010	12.4
Pennsylvania	3,147	3,727	4,031	10,905	10.4
Rhode Island	245	310	254	809	10.6
South Carolina	991	1,467	1,355	3,814	6.7
South Dakota	217	325	308	850	11.9
Tennessee	1,570	1,985	2,273	5,827	7.9
Texas	7,694	11,627	10,987	30,308	8.2
Utah	1,029	1,767	1,591	4,387	7.8
Vermont	135	166	139	439	35.6
Virginia	2,225	3,615	2,350	8,189	9.1
Washington	1,933	2,880	2,320	7,133	7.8
West Virginia	333	374	439	1,145	16.4
Wisconsin	1,445	1,778	2,246	5,468	17.9
Wyoming	161	221	293	675	8.1

Notes: All monetary values are in millions of 2014 dollars.

Source: Author's analysis.

©2015 Washington Center for Equitable Growth

Appendix B

Government Budget Effects of a Universal Prekindergarten by State

FIGURE 10

Government Budget Effects of a Universal Prekindergarten by State

For a program that costs \$26 billion, a universal prekindergarten will generate net budget benefits in only 16 years. All monetary values in are millions of 2014 dollars.

State	Additional taxpayer costs in 2017 (\$)	Years before annual government benefits exceed costs	Government surplus in 2050 (\$)	Ratio of government benefits to costs in 2050
NATIONAL	25,983	16	47,172	2.37
Alabama	440	19	515	1.93
Alaska	67	14	167	2.50
Arizona	605	16	1,203	2.34
Arkansas	184	15	427	2.72
California	4,074	18	5,722	1.99
Colorado	428	16	931	2.53
Connecticut	242	14	627	3.06
Delaware	78	15	135	2.27
District of Columbia	9	2	132	11.05
Florida	1,301	17	2,419	2.25
Georgia	939	19	1,259	1.87
Hawaii	133	18	191	2.03
Idaho	176	20	194	1.77
Illinois	886	15	1,956	2.78
Indiana	629	18	841	2.09
Iowa	244	15	403	2.53
Kansas	224	14	492	2.77
Kentucky	232	14	704	3.35
Louisiana	389	15	651	2.49
Maine	42	11	169	4.14
Maryland	502	16	949	2.41
Massachusetts	571	17	787	2.21
Michigan	758	16	1,230	2.47
Minnesota	508	16	836	2.34
Mississippi	226	17	397	2.39
Missouri	534	17	809	2.29
Montana	77	14	134	2.39
Nebraska	149	14	314	2.68

Nevada	285	20	368	1.77
New Hampshire	77	15	178	2.96
New Jersey	615	15	1,323	2.67
New Mexico	145	15	358	2.70
New York	1,254	11	4,183	3.76
North Carolina	779	19	1,154	1.95
North Dakota	55	14	106	2.69
Ohio	1,041	16	1,508	2.32
Oklahoma	214	15	527	2.81
Oregon	239	13	707	3.19
Pennsylvania	965	14	2,098	3.00
Rhode Island	68	13	169	3.21
South Carolina	421	21	425	1.75
South Dakota	59	14	146	3.04
Tennessee	538	17	834	2.13
Texas	2,365	18	4,004	2.09
Utah	390	20	468	1.83
Vermont	7	2	122	10.93
Virginia	669	17	1,322	2.47
Washington	632	18	1,020	2.12
West Virginia	60	9	263	4.78
Wisconsin	234	10	1,140	4.73
Wyoming	65	17	78	1.94

Notes: All monetary values are in millions of 2014 dollars.

Source: Authors' analysis.

©2015 Washington Center for Equitable Growth