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Teachers' Response to Infants' Nonverbal Communication and Use of Response to Facilitate a Dialogue

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by

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ABSTRACT

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Beginning with birth, typically developing children use strategies to communicate, and the functions of their language change with maturation and interaction. Since communication cannot exist if both parties do not participate, it is important to not only study the ability of the child, but also the behavior of the adult. Numerous studies have examined the behavior of the parent or other domestic adult, but few have included the study of teacher behaviors.

This study investigated teachers' response to four types of nonverbal communication attempts made by infants. The gestures included: deictic, affect signaling, object-related, and conventional. The type of response was also documented as facilitating dialogue or discouraging dialogue. Thirty infant teachers and/or teacher assistants from 11 centers in Northeast Tennessee were videotaped for 30 minutes. Videos were coded to determine which of the defined functions teachers were most likely to respond to and if the response facilitated or discouraged dialogue. The results showed that overall, teachers responded to 25% of nonverbal attempts; 75% of the infants' nonverbal attempts teacher offered a non-facilitative response or missed the gesture. Pearson correlations determined that there were relationships between children's attempt to communicate and teachers' response in all four types of nonverbal communication, including deictic, r (30) = .659, p = .001; affect signaling, r (30) = .917, p = .001; object-related, r (30) =.848, p = .001; and conventional, r (30) = .794, p = .001. There were several relationships

between the number of nonverbal attempts by children and teachers offering a facilitative responses including affect signaling, r (30) = .776, p = .001; object-related, r (30) = .635, p = .001; and conventional, r (30) = .514, p = .004, but not with deictic attempts. There were relationships between the number of nonverbal attempts by children and teachers offering discouraging responses in all 4 types of nonverbal language, including deictic, r (30) = .706, p = .001; affect signaling, r (30) = .630, p = .001; object-related, r (30) = .582, p = .001; and conventional, r (30) = .439, p = .015.

DEDICATION

This dissertation is dedicated to my family who supported me during this process; without them, none of this would have been possible. To my husband, Preston, your physical and emotional support is the foundation of our marriage. To my children: Rylee, Kynlee, Dakota, and Jaycee, from research car rides to family "homework days", your love and dedication was the driving force...Always remember our family motto "Always Support Each Other". Family support is irreplaceable!

My family and friends who willingly stepped in to "do whatever was needed" can't be overlooked. The statement "It takes a village" has never held such value. When I needed help pushing through, you were there....and when I needed help taking breaks, you were there.

This research is also dedicated to my peers and the families at the Child Study Center, where I first observed the endless possibilities while working with infants. The work that you do every day is exceptional. I am so fortunate to continue to be influenced by remarkable people.

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CHAPTER 1

INTRODUCTION

The inspiration for this study emerged as a result of nine years of experience working in an infant-toddler classroom and serving as an early childhood administrator for an additional three years. I have more than 13,000 hours of experience working with infants and toddlers and have had countless opportunities to intentionally communicate with infants using nonverbal and verbal language. The program in which I taught embraced looping, which meant that one caregiver would remain with the group of children for multiple years. Looping within the program has given me the opportunity to observe the many abilities of infants and how those can impact their abilities as toddlers.

While serving in administration at a university laboratory school, one role I held was master teacher, sometimes referred to as a curriculum specialist, for the infant and toddler program. The teachers in this program are required to have advanced education with specialized training in early childhood development; therefore, all teachers in the infant-toddler program have an associate's, bachelor's, or master's degree. Transitioning into a leadership role gave me the opportunity to work with qualified teachers, many of whom have never taken a course on nonverbal language development. It was my responsibility to observe classroom teachers and collaborate with them while creating an inquiry-based curriculum. As a mentor to the teachers, I wanted an infant program that recognized the value of nonverbal language abilities. It was a goal of mine to assist classroom teachers in understanding how to build a curriculum based on a child's interest, even when the children were too young to verbalize their thinking. I found that many teachers, as well as parents, did not have a solid understanding of the onset of intentional

communication. There was a common misconception that children begin to communicate at the onset of the first spoken word.

Upon researching the onset age of nonverbal communication, I was impressed with the quantity of research that was available to describe the communicative abilities of nonverbal children, yet left wondering why this area of development is not taught more in depth to university students in early childhood education programs. Before children are verbal, many utilize gestures to communicate needs and wants. Most children, including those who may be deaf, those with parents who are deaf, and those who are typically hearing children, use gestures during infancy. Infants can acquire gestures by interacting with adults. For example, if a child is shown the sign for *more*, over time he/she may begin using this gesture with the adult. However, a child may create his/her own gesture (a particular shaking of hands or facial expression) to communicate with adults and with peers. Gesture creations require the child to problem solve, whereas learning American Sign Language requires a child to imitate another human's actions.

Creating professional development opportunities was part of my responsibility as an administrator. I videotaped teacher-child interactions and observed how teachers responded to infant language. The teachers and I had weekly meetings about infant communications. After several conversations with the infant teachers concerning the nonverbal language research, it was apparent that with professional development, teachers could begin to more purposefully respond to this form of language with infants. It also made me consider which of the types of communication the teachers were most likely to respond to with infants. All of the teachers in this department hold an associate's degree or bachelor's degree with specialized training in early childhood development. If this group of early childhood teachers had difficulty recognizing

intentional nonverbal behaviors, what type of language interactions are occurring in other child care settings?

Background

Over the years, several different theorists and researchers have focused on various components of language development. In the sixties and seventies, the works of both Jean Piaget and Lev Vygotsky and their theories on language development influenced professionals. Piaget (1968) stated the following:

> Knowledge is not a copy of reality. To know an object, to know an event, is not to simply look at it and make a mental copy or image of it. To know an object is to act on it. To know an object is to modify, to transform the object, and to understand the process of this transformation, and as a consequence to understand the way the object is constructed. (p. 176)

Within language development, Piaget believed that a child's development and understanding of the physical world was a precursor to his ability to understand language and then be able to use that language. Vygotsky espoused that young children learn through interactions and communications with others. He observed how social environments influence the learning process. He placed a strong emphasis on how children develop inner speech as they interact with their environment and how this inner speech is what helps children navigate between thought and intentional expressions with others. Vygotsky (1962) believed that during the process of language learning, there was a need for give and take during social interactions.

Dr. Elizabeth Bates, an influential cognitive science researcher, published several studies around the neurological basis of language learning. She reinforced the idea that we need to have

a stronger understanding of language acquisition and cognitive mechanisms. Bates, Thal, Whitesell, Fenson and Oakes (1989) researched language and sensorimotor functions:

> A host of correlational studies appeared across the 1970s and 1980s, examining associations and dissociations between early language and other sensorimotor domains . . . . In general, these studies provided evidence against a global, cross-domain stage shift from sensorimotor to symbolic functioning. We have been trying to improve our understanding of the cognitive mechanisms shared by word comprehension, word production, and symbolic gesture in the second year of life. (pp. 1-2)

Work in the nineties focused on word-object relationships and word learning. Woodward, Markman, and Fitzsimmons stated "children as young as 13 months can readily learn the association between new words and objects if they are taught the words in a contextually rich, interactive setting" (as cited in Werker, Cohen, Lloyd, Casasola, & Stager, 1998, p. 1290).

At the beginning of the 21st century new areas came into focus. These areas influenced the language development research agenda. There was a new influence of gesturing. This included children on the autism spectrum, a look at the stages of gestures, a new look at assessments used to report child language acquisition skills (including immediate and retrospective parent reporting), and the influence of the relationship with a primary caregiver (mostly parents) (Morrow, 2011).

As can be seen over the last six decades, gestures have been identified as an important component of language acquisition. Findings from recent studies on language acquisition confirm that infants indeed have the ability to intentionally communicate needs and wants by pointing, reaching, using eye gaze, emotions and conventional object-associated actions (Bates, Thal, Finlay, & Clancy, 2002; Daum, Ulber, & Gredeback, 2013; Esteve-Gibert & Preito, 2014;

Goldin-Meadow, 2007; Winder, Wozniak, & Parlade', 2013). Özçaliskan, Levine, Goldin-Meadow, Bavin, and Naigles (2013) also found that gestures are a precursor to vocabulary comprehension even after they begin to produce their first words. Typically developing children do not stop producing gestures at the onset of speech production. They frequently combine their gestures with words to support and extend their linguistic capacities. Beginning uses or functions of gestures convey the same information as spoken words (e.g. points at cookie = *cookie*). The next phase is to produce gesture-speech combinations which actually convey sentence-like combinations. Evidence suggests that the age at which a child begins to produce gesture-speech combinations can predict the age at which he or she begins to produce two-word sentences. "Thus, in typically developing children, gesture and speech begin to form a semantically integrated system at an early age, and children rely on this system to take their initial steps into sentence production" (Özçaliskan et al., 2013, p.71).

The use of gestures is the infants' attempt to intentionally communicate and begin a dialogue with an adult; therefore the response that is offered is crucial to the child's understanding of language. Dialogue is an important component to communication. Holding dialogue or a conversation with another person requires reciprocity or an exchange of ideas. Verbal or nonverbal language can be used to effectively communicate. As young infants attempt to communicate, there is a developmental need for a matching response to this communication.

Even though there is ample research on nonverbal communication, this information is not being consistently conveyed to early childhood classroom teachers. Often those working in the early childhood field do not have the training to assess the onset or development of nonverbal communications initiated by infants. Professional training in early childhood education is not a requirement to work with young children in child care settings in the United States. According to

Child Care Aware of America's (CCAoA) State Facts Report in 2014, there are over eight million dual-working families with children under the age of 6. In the state of Tennessee, there are over 55,000 have children under the age of one year (CCAoA, 2014, page 94). Furthermore, over half of the states do not require any education beyond high school to work in child care, and 31 states require only a high school diploma to be a lead teacher.

Many mothers and fathers return to work before their child is one year old. When considering the amount of time children are spending in a child care setting, it is vital to determine what this population of teachers understand about intentionally responding to nonverbal communication. A responsive dialogue occurs when the adult not only replies to the infant's communicative gesture but also matches it with a facilitative response. "However, when the caregiver ignores and defensively excludes elements of the infant's experience, the dyadic interaction is experienced by the infant as contradictory because there is no match between the caregiver's communication and the infant's state" (Appelman, 2000, p. 193).

It is also important to determine which functions of language teachers are most likely to respond to when interacting with young children. Since joint attention is a critical component of communication, it is necessary for providers to actively respond to a child's attempt to communicate.

Tomasello's (1986) study found the following:

> If adults use language primarily to refer to and categorize the world (e.g., naming novel objects), the child will infer that this is its primary function and the acquisition of object labels will be very important. Conversely, if adults are constantly using language for social-regulative purposes (e.g., to greet, thank,

> exhort, prohibit), the child will infer that this is its primary function and the acquisition of object labels will be less important. (p. 1455)

When pre-linguistic children have the ability to communicate with adults, yet adults may not be appropriately respond, what does this interaction (or lack of) convey to infants?

Statement of Problem

Early childhood teachers in Tennessee, specifically those who work with infants and toddlers, are not required to receive training in typical language development. For decades, researchers have conducted studies supporting the ability of infants and toddlers to intentionally communicate using affect and actions. There is a gap in research on what is known about the onset of nonverbal behaviors and how teachers are using that information in the classroom with infants and toddlers. Children can spend around 50 hours a week in child care. It is necessary to provide research-based information on child development to the teachers and teaching assistants. Researchers have documented that infants are capable of intentionally communicating needs and wants through nonverbal gestures; however, this evidence is not being consistently communicated to the practitioners. The information gained from this research study will help support necessary high-quality training for early childhood teachers. Because of the importance of responding to these nonverbal communications, this research study is needed to gather the data to help determine if teachers are responding to these gestures and if responses facilitate dialogue. Before high-quality professional development can be designed and offered to teachers, reality of the issue or concerns must be addressed.

Theoretical Framework

The theoretical framework for this study is based on Vygotsky's sociocultural theory. Lev Vygotsky, a Russian psychologist, stated that young children learn through interactions and communications with others. He observed how social environments influence the learning process (Vygotsky, 1962). The work of Vygotsky is often misunderstood as a theory that represents a group of children. Rather, his theory described the complex relationship between the individual learner and the social context in which the learner is involved. When a child is able to construct his/her own understanding of a concept and then have an opportunity to construct the knowledge within a social setting, deeper meanings can be made.

Lantolf (2000) states that:

> Gestures are an indispensable part of our communicative activities...In other words, much of what we mean is only partially constructed through linguistic means. It is also partially constructed through gesture. Thus, when we interact with others we read not only their verbal signals but their gestural signals as well and in some cases the gestural signals may even override our verbal expressed intentions. (p. 16)

The sociocultural theory includes the impact of a child's interaction with adults in the learning process. Even though he believed that language and thought develop independently from one another, Vygotsky (1962) noted that they eventually unite. He believed language development is at the core of cognitive and social development. Vygotsky's theory on how young children learn is nonlinear, meaning there are not developmental stages or sequences. This sociocultural theory is based on the concept that the interactions are vital to the learning process, and "social experiences shape the way of thinking and interpreting the world" (Jaramilo, 1996, p. 133). Based on Vygotsky's work, I considered what must occur mentally for a child to develop

strategies to communicate before verbal skills are acquired. I also considered how a child begins to understand the purpose of language based on the interactions with the primary caregiver. In the following sections, I discuss Vygotsky's work.

Zone of Proximal Development

Vygotsky not only wanted to study learning, but also dialogue. He was interested in a child's inner speech in relation to thought and language development and how language precedes the learning of concepts. He also wanted to know more about the role of the adult as he/she had conversations and facilitated dialogue with questions, explanations and negotiations of meanings. He stated that there was a "distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86).

According to Vygotsky (1978), the support from an adult is essential to the child's learning experience. The zone of proximal development (ZPD) is the distance between a child's individual ability (actual development) and the level of potential development. Teachers collect baseline data on a child's understanding and develop individual goals that allow the child to be successful, yet challenged. When an adult acknowledges a child's ability to intentionally communicate using a variety of nonverbal gestures, he/she can provide value to the child's thoughts and encourage reciprocal dialogue. This ongoing interaction gives a purpose to a child's intent to communicate and intentionality to a teacher's response. Each time a teacher responds to nonverbal communication, he/she is creating a mediation tool for the child to understand the functions of communication. "The zone of proximal development defines those functions that

have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in the embryonic state" (Vygotsky, 1978, p. 83).

Research supports that developing infants and toddlers have the ability to use a variety of functions that facilitate nonverbal communication. Findings from recent studies on language acquisition confirm that infants indeed have the ability to intentionally communicate needs and wants by pointing, reaching, using eye gaze, emotions and conventional object-associated actions (Bates et al., 2002; Daum et al., 2013; Esteve-Gibert & Preito, 2014; Goldin-Meadow, 2007; Winder et al., 2013). These functions can lead to a dialogue between the teacher and the child only if the teacher recognizes these as intentional communicative gestures. The role of the teacher is to observe the behavior (intentional communication attempt) and then offer a response that signals a sign of understanding back to the child. The teacher then scaffolds his/her response so that the child understands yet is challenged to continue the dialogue.

Significance of Study

Typically developing children use strategies to communicate beginning at birth, and the functions of their language change with maturation and interaction. Since communication cannot exist if both parties do not participate, it is important to not only study what the ability of the child is but also the behavior of the adult. Many studies have examined the language interactions between the child and that of the parent or other adult guardian, but few have included the teacher only. With so many infants/toddlers in child care, it is critical to know more about teachers' responses to the infants' gestures. Even more concerning is the fact that few adults who work with infants are trained in gestures as part of language development. Speech and language pathologists are trained to assess children's nonverbal language abilities and the functions of those behaviors using a variety of scales and screens. These assessments include gestures,

imitations, actions, and emotions. However, this type of training does not appear to be offered to child care teachers. Before a training can be developed for this population of caregivers, it is vital to determine which of the nonverbal behaviors teachers tend to respond to and how this interaction facilitates communication between the participants.

Purpose of Study

The aim of this study was to determine to which of the defined infant nonverbal skills teachers are most likely to respond.

Research Question

1. To which of the defined functions of infants' nonverbal communication are infant teachers responding?
    a. Did the teachers' response facilitate dialogue?
    b. Did the teachers' response discourage dialogue?

Definition of Key Terms

Infant teacher: Infant teachers are defined as caregivers who work in classrooms with children between the ages of 0-18 months (National Association for the Education of Young Children, 2017).

Language: According to Goldin-Meadow (2007), language is "a combinatorial system of symbols with structure at more than one level (sentence, word, and morpheme) used to make things happen but also to share thoughts" (p. 22).

Speech: According to Webster-Merriam Online (2017), speech is described as "the communication or expression of thoughts in spoken words" and both of these differ from the term communication.

Communication: According to Webster-Merriam Online (2017), communication is defined as "the act or process of using words, sounds, signs, or behaviors to express or exchange information or to express your ideas, thoughts, feelings, etc., to someone."

Gesture: According to Webster-Merriam Online (2014), gesture is a form of communication, and the dictionary defines it as "A movement or position of the hand, arm, body, head or face that is expressive of an idea, opinion, or emotion"

Function of communication: There are four functions as follows: deictic, affect signaling, conventional and object-related. These four functions are separated from American Sign Language (ASL).

Deictic gestures: They are related to the child's physical environment. They assist a child to give or gain information within his/her immediate world. Esteve-Gilbert and Preito (2014) describe deictic gestures as pointing and reaching. Several researchers have confirmed the original findings of Bates et al. (1979) that deictic gestures can be further classified as declarative (giving information) or imperative (asking information). For example, when an adult asks a child where her blanket is, the infant may point toward the blanket to tell the location. However, if the child's cup is out of reach and the child is thirsty, she may point to the cup with the intention of asking for the cup.

Affect signaling: Greenspan and Shanker (2007) describe affect signaling as the ability to perceive emotions of others and use emotions of self to intentionally communicate with another person. Esteve-Gilbert and Preito (2014) describe emotions as emotive gestures that can be defined as a child's expression of an emotional state. This can occur with the face and/or the entire body. For example, an infant as young as 2 months old begins to recognize a caregiver's facial expressions and discriminate emotions (Greenspan & Shanker, 2007). As early as 4

months old a child will begin to smile during positive interactions to convey that she likes what is happening or turn away to convey a decrease in interest.

Conventional gestures: These are culturally ritual gestures. For example, children may wave bye-bye out the window or shake their head no when they do not like what is happening. As early as 9 months old, children use conventional gestures to communicate requests and offerings of information (Messinger & Fogel, 1998).

Object-related gestures: These include gestures in which an object is used to facilitate communication. Bates et al. (1989) correlate object-related gestures with symbolic play. For some object-related gestures, the onset age is around one, prior to the increase of naming objects. For example, a child may pretend to drink from a cup when asked if she is thirsty.

American Sign Language: These involve actions that are taught to an infant through mimicking. These universal gestures can be recognized by many people within the United States. These actions are taught by the adult, so the adult has a preconceived meaning of the action.

CHAPTER 2

LITERATURE REVIEW

Typically developing children use strategies to communicate with others beginning at birth, and strategies change with maturation and interaction. Both verbal and nonverbal language become communication during social interactions. Since communication cannot exist if both parties do not participate, it is important to not only study the ability of the child but also the behavior of the adult. Children develop strategies to symbolically communicate with an adult, and the adult must understand the intent of nonverbal language in order to perceive meaning and offer a response. "Studies examining the pragmatic aspect of infants' gesture production – namely, how infants use gestures to achieve a particular communicative function- have established that, with their early gestures, infants accomplish different communicative functions depending on their intentions" (Dimitrova, Moro & Mohr, 2015, p. 99). Early intentional communication, such as joint attention and social use of gestures, together with symbolic skills (reference and meaning) are shown to predict later social communicative competence (Chiat & Roy, 2008). Research supports that a child's language ability at 3 years can be predicted based on gesturing at one year of age (Kenneally, 2007). Chapter 2 presents the literature that supports the importance of infant gestures in language development. It begins with theories of language acquisition and then presents research findings on the role of infant gestures in language and communication.

Theories on Language Development

There are several theories on language development. In the fifties, Noam Chomsky described one theory. He suggested that children have an innate ability to acquire language. This implies that children are preprogrammed to learn language. This nativist viewpoint includes the

connection between biology and linguistics. In addition, nativists believe humans are hardwired for language and that language will develop naturally. It is believed that children have a language acquisition device that is built in their brain. This theory does not credit the role of the caregiver in the environment around the learner as a vital part of the process. It is said that "they view the environment's role in language acquisition as largely a function of activating the innate, physiologically based system" (Vukelich, Christie, Enz, & Roskos, 2016, p. 21). This theory would support the idea of simply exposing a child to language to activate what he/she is already hardwired to do, however it would not support the role of the reciprocal interactions between the caregiver and adult. Around their first birthday most children begin to point. An argument could be made that they have an innate understanding of this pointing gesture. However, a child who is looking toward an adult when pointing may have an understanding that joint attention is needed to carry out the communication. One could also argue that this understanding was strengthened from social experiences in his/her own environment and interactions with others.

Another theory on language development comes from the behaviorist viewpoint. This theory suggests that the environment in which children spends their time places the strongest influence on development, suggesting that children need to spend time with strong language models in order to learn language. Operant conditioning is a type of learning based on behaviorism, suggesting that a caregiver can use rewards by reinforcing the child when a word is correct. Once a child can say the new words, he/she can use them to communicate. "According to Skinner children learn to say words with the help of appropriate reinforcing contingencies" (Stemmer, 1990, p. 307). However, this theory does not support the nonverbal initiation from the child as the beginning of the reciprocal dialogue.

The works of Jean Piaget and Lev Vygotsky have been utilized within educational psychology for decades. Jean Piaget believed that cognitive development had the greatest influence on language. His main argument was that children construct their own knowledge individually. Individual learning occurs when the child is given an opportunity to actively engage with problems and through exploration and manipulation, construct his/her own knowledge about a concept. Duckworth (1964) called this process of constructing new concepts the *having of wonderful ideas*. It is at the beginning, middle and expansion of constructing knowledge that 'wonderful ideas' are the guidance for curriculum and knowledge. Sharing ideas is the essence of conversations. Developing a gesture to communicate is only one component in the process of nonverbal conversations. The understanding of joint attention and interactions within the environment cannot be separated from a child's use of nonverbal language.

Vygotsky's theory supports the role of social interactions as a means to develop new knowledge and understanding. He states that when humans use language, they are interpreting their thought into symbolic words. He also stressed the important role of the adult in a child's language development. Vygotsky viewed the development of language as a complex interaction between the child and the environment, which is influenced by both social and cognitive development (Close, 2002). If it is accepted that gestures are indeed a component of language development, then this theory can be supported. When considering this theoretical framework in respect to gestures, one can interpret that gestures are created by infants to communicate more effectively with adults and peers.

Language, Speech, and Communication

It must be acknowledged that language is not the same as speech. There are many layers of language that precede speech. According to Goldin-Meadow (2007), language is "a

combinatorial system of symbols with structure at more than one level (sentence, word, and morpheme) used to make things happen but also to share thoughts" (p. 100). This is different from word speech. According to Webster-Merriam Online (2014), speech is described as "the communication or expression of thoughts in spoken words" (retrieved November 2014). The definitions for language and speech both differ from the definition of communication. Again, according to Webster-Merriam Online (2014), communication is defined as "the act or process of using words, sounds, signs, or behaviors to express or exchange information or to express your ideas, thoughts, feelings, etc., to someone" (retrieved November 2014). A gesture is a form of communication and the dictionary defines it as "a movement or position of the hand, arm, body, head or face that is expressive of an idea, opinion, or emotion" (Merriam-Webster, retrieved November, 2014).

For the last 40 years, researchers have confirmed findings that infants indeed have the ability to intentionally communicate needs and wants by pointing, reaching, using eye gaze, emotions, conventional, and object-associated actions (Bates et al., 2002; Daum et al., 2013; Esteve-Gibert & Preito, 2014; Goldin-Meadow, 2007; Winder et al., 2013). Studies on individual types of nonverbal communication will be discussed in later sections. In the next section, I will discuss the functions of nonverbal language.

Types of Nonverbal Language

There are multiple types of nonverbal language. It is necessary to describe the four types: deictic (with sublevels, declarative and imperative), affect signaling, conventional and object-related. These four functions are separated from American Sign Language.

Deictic gestures are related to the child's physical environment. They assist a child to give or gain information within his/her immediate world. Esteve-Gilbert and Preito (2014)

described deictic gestures as pointing and reaching. Several researchers have confirmed the original findings of Bates et al. (1979) that deictic gestures can be further classified as declarative (giving information) or imperative (asking information). For example, when an adult asks a child where her blanket is, the infant may point toward the blanket to tell the location. However, if the child's cup is out of reach and the child is thirsty, she may point to the cup with the intention of asking for the cup.

Esteve-Gilbert and Preito (2014) describe emotions as emotive gestures that can be defined as a child's expression of an emotional state. This can occur with the face and/or the entire body. Esteve-Gilbert and Preito (2014) developed a study that explored the patterns of gesture and speech combinations from the babbling period to the one-word stage and the temporal alignment between the two modalities. Two questions formed the aim for the study. First, how do children combine gesture with speech across ages? Second, how do they temporally align with the modalities across the age groups?

Children and caregivers were videotaped either weekly or biweekly for 30 and 45 minutes in a natural environment for a total of 24 hours of home recordings. Speech and gestures were coded. Speech was annotated and coded as a vocalization or a word (coding was used to assess lexical development). All speech involving simultaneous acts was annotated to determine the limits of the vocalization or word (starting and ending points) and the limits of prosodic prominence (starting and ending points of accented syllable). If it was not clearly identified, it was excluded (Esteve-Gilbert & Preito, 2014).

Gestures were coded as pointing gesture (child extends arm and the index finger), reaching gesture (child extends arm and opens hand to direct attention), conventional gesture (ritual actions, nodding/shaking head, bye-bye, clapping, shh), emotive gesture (expression of an

emotional state, shaking arms, shaking legs), and other gestures (proto-beat gesture, object-related action). Next, the two deictic gestures (pointing and reaching) were annotated regarding motivation or intentionality (imperative /asks caregiver to retrieve something or declarative/inform something). Finally, gesture-speech combinations were annotated in terms of a 4-gesture phase (preparation-stroke-apex-retraction) (Esteve-Gilbert & Preito, 2014).

Findings from the study indicate that once a child begins using single-word speech, gestures start being produced mainly in combination with speech rather than as a gesture-only act. In the early gesture-speech combinations most gestures are deictic (pointing and reaching gestures) with a declarative communicative purpose. Findings suggest that during the transition between the babbling stage and the single-word period infants start combining deictic gestures and speech, and when combined, the modalities are temporally coordinated. Gesture-only and gesture-speech combinations are significantly different at 11 months; 1 year, 3 months; and 1 year, 7 months, but not at 1 year, 1 month. Results from this study indicate that children at 11 months produce most of their gestures without speech (Esteve-Gilbert & Preito, 2014).

Affect signaling is another type of nonverbal language. Greenspan and Shanker (2007) describe affect signaling as the ability to perceive emotions of others and use emotions of self to intentionally communicate with another person. For example, an infant as young as 2 months old begins to recognize caregiver's facial expressions and discriminate emotions (Greenspan & Shanker, 2007). As early as 4 months old a child will begin to smile during positive interactions to convey that she likes what is happening or turn away to convey a decrease in interest.

In 2007, Greenspan and Shanker designed a study to determine correlations between the development of affective signaling and pattern recognition, joint attention, and intention reading. Pattern recognition is described as patterns in affect interactions and motor responses. "When

children go beyond individual utterances to find meaning, they begin to find patterns within interactions" (Tomasello, 2003, p. 69). Joint attention occurs when 2 individuals establish common ground for their interactions (Daum et al., 2012). Intention reading is described as children using culturally understood conventions to discern intentions of mature speakers (Tomasello, 2003). A child's ability to communicate effectively using affect signaling occurs through affect transformation. Affect transformation occurs as a child progresses from one stage of affect signaling to the next, each time providing a foundation for the next stage. There are six stages within this transformation.

The participants in the Greenspan and Shanker (2007) study included 1,640 children across the United States between birth and 42 months of age grouped into eight age classifications. Data on children were collected on the following age groups, 0-3 months, 4-5 months, 6-9 months, 10-14 months, 15-18 months, 19-24 months, 25-30 months, and 31-42 months. Researchers collected data using the Greenspan Social Emotional Growth Chart (SEGC), in which parents or primary caregivers completed a questionnaire asking for information about emotional functioning. This tool is a screen for social-emotional milestones. Results of this preliminary research point to expected correlations between the development of affective signaling and pattern recognition, joint attention, and intention reading.

During the first stage (0-3 months), a child begins to create sensory-affect-motor connections. This would look like a child turning her head from an unpleasant stimuli. In the second stage (2-5 months), as the child becomes more coordinated with these movements, the interactions become more purposeful. The child begins to use the affective interactions and recognize emotional significance of facial expressions. Purposeful affect signaling is stronger in the third stage. In order for the third stage (4-10 months) to be successful, the caregiver must

"read and respond to the baby's emotional signals and challenge the baby to read and respond to theirs" (Greenspan & Shanker, 2007, p. 132.). Each of the first three stages are critical for the foundation of the fourth stage. This stage (9-18 months) is when a child "learns to sustain a continuous flow of back-and- forth affective communication in order to collaborate with a caregiver in solving affective, meaningful problems" (Greenspan & Shanker, 2007, p. 132). The role of the caregiver to respond appropriately to these back-and–forth communications allows a child to begin to recognize social-affective-communication patterns. Each kind of response communicates to the child an intention of that affect, such as love, anger, respect, or shame. The fifth and sixth stages of affect transformation co-exist with the onset of some speech in order to communicate clearly the emotion involved with a word.

As early as the first stage, a caregiver's behavior can influence how a child perceives the interaction based upon how the caregiver responds to the child's actions. "Should a caregiver fail to recognize the child's negative reactions or respond appropriately to a child's overtures, the child may become subdued or withdrawn…..The caregiver must engage in a variety of subtle behaviors" (Greenspan & Shanker, 2007, p. 131). Should a child not master one of the stages, he/she cannot develop a strong foundation for the development of language.

Using a correlational test, the researchers determined that a child's score on any stage is a strong predictor for the child's score on the next stage. This indicates that a child can build a strong foundation within each stage if he/she receives responsive and reciprocal interactions with an adult (Greenspan & Shanker, 2007).

Conventional gestures are culturally ritual gestures. For example, children may wave bye-bye out the window or shake their head *no* when they do not like what is happening. As

early as 9 months old, children use conventional gestures to communicate requests and offerings of information (Messinger & Fogel, 1998).

Object-related gestures include those which become object-related or iconic. Bates et al. (1989) correlate object-related gestures with symbolic play. For some object-related gestures, the onset age is around one, prior to the increase of naming. For example, a child may pretend to drink from a cup when asked if she is thirsty.

Bates et al. (1989) developed a study to examine the relationship between word comprehension, word production and enactive gestural naming. This quantitative study was developed in two parts. Researchers asked parents to complete a survey questionnaire during the first part of the study. The parents were able to take the validated checklist-style survey home over the course of several days. This system proved to be more reliable compared to retrospective reporting. Ninety-five children between the ages of 12 and 16 months were assessed in this part of the study.

Part two of study was experimental in a laboratory and included of 41 children between the age of 13 and 15 months. Parents first completed the same questionnaire as in part one. Then they attended a videotaped session of spontaneous play with realistic versions of object concepts. This was to resemble conditions of symbolic play. The second piece of this session included an experiment in which children were required to reproduce familiar gestures using a colored block as a placeholder for the referent object. This was to resemble how children have the ability to name objects without support from the referent object (Bates et al., 1989).

Results from this study indicated that children performed an average of 37 gestures which were mostly object-oriented and that spontaneous production of the 12 object-associated gestures tends to increase as a function of language comprehension level. Adult speech can act as an aid

when a child is reproducing modeled gestures. Children who had expressive vocabularies of 10 words or less had a reported gestural score of 31.3, which is slightly less than average. As adults are using adult speech as an aid for children to reproduce gestures, it acts as a comprehension mediation. Therefore, as adults support comprehension, it may support the spontaneous production of gestures (Bates et al., 1989).

Finally, *American Sign Language* involves actions that are taught to an infant through mimicking. These universal gestures can be recognized by many people within the United States. These actions are taught by the adult, so the adult has a preconceived meaning of the action.

Intentional Nonverbal Language Development

Language development begins at birth with the first cry, but when does intentional communication begin? Several researchers have examined the capabilities of young infants to determine various components of communication. For decades, researchers have been studying the impact of the onset of pointing as an intentional way to communicate wants and needs (Daum et al., 2013), relationship between word comprehension and word production (Bates et al., 1989; Houston-Price, Plunkett, & Duffy, 2006; Villiers-Radar & Zukow-Goldring, 2012), the importance of social cues, and functions of language and the connections to later reported difficulties (Briganti & Cohen, 2011; Määttä, Laakso, Tolvanen, & Aro, 2012). The adults involved in the reciprocal communication have been examined as well, highlighting the importance of social cues as a vital component of understanding language.

Briganti and Cohen (2001) developed a study to confirm findings of previous research which examined different functions of social cues to see if the attention-directing aspect of cues might be separate from the word-learning aspect and to examine developmental changes in the

significance of these different functions. A preferential looking procedure was employed to test infants under two conditions in a between-subjects design.

The first condition consisted of infants viewing 11-second videos of an adult female pointing and nodding three separate times while a voice from a speaker consistently labeled the object with a made-up word, "Look, Neem!" The second condition utilized similar conditions, but the objects were labeled inconsistently. Infants' looking times were recorded. T-tests were used to determine whether the amount of looking time toward the object to which the adult pointed during the videos differed significantly from chance and to determine whether infants' looking time to the target object was significantly different from chance (Briganti & Cohen, 2001).

Part one of the analysis measured looking times when an adult pointed. The 14-month-olds looked significantly longer at the objects when the adult pointed than when she didn't point. Also, during the first condition, the 18-month-olds' looking time approached significance, and during the second condition, the 18-month-olds looked significantly longer toward the pointed object (Briganti & Cohen, 2001).

Overall looking times resulted in significance for some children. During the first condition, 14-month-olds' overall looking time to the object was not significantly different from chance which suggests infants were not able to attach the labels to objects, and 18-month-olds' overall looking time was significantly different from chance. During the second condition, researchers found the overall looking time was not significantly different from chance within both age groups. However, it was found that 14-month-olds were sensitive to social cues. Infants and young toddlers are building an understanding of social cues in communication. This is vital for the purposes of reciprocal conversation (Briganti & Cohen, 2001).

In 2012, Villiers-Radar and Zukow-Goldring observed the parents' role in infant attention (a key component in communication) based on the length of time spent looking when an adult turned his/her head toward an object. Villiers-Rader and Zukow-Goldring (2012) created a study to test the effect of gestures on infant attention and word learning. This study assessed 32 children whose primary language was English. The infants were between the ages of 9 and 14 months of age.

Villiers-Rader and Zukow-Goldring (2012) first observed the infants to determine if they would look at a favorite toy or to mom/dad when asked. Before arrival at the lab, researchers assigned the child to either a comparison of a static (held gesture) vs. a synchronous dynamic gesture (synchronous with speech) or a comparison of synchronous dynamic gesture vs. asynchronous dynamic gesture (not synchronous with speech). The researchers used a head tracking device. Infants looked more at the object and displayed better word learning in the dynamic synchronous condition compared with other static-gesture conditions (Villiers-Rader & Zukow-Goldring, 2012).

Daum et al. (2013) conducted a study to investigate the interplay of verbal and nonverbal communication with respect to infants' perception of pointing gestures. This took place in a two-part experimental study. Experiment one had a total of 96 twelve-month-olds, but 23 infants were not included in the final sample. All infants were born full term and of normal birth weight. Experiment two had a total of twenty-four 10-month-olds, but 3 were not included in the final sample.

The study posed three questions. First, can infants infer the directionality from an observed pointing gesture per se, or was referential communicative context necessary to perceive a pointing gesture? Second, to what extent does the acoustic stimulus become sufficient for

infants to focus attention toward pointing gestures and perceive its directionality. Third, because most researchers presented findings that support the onset of pointing at 12 months of age, what is the development of the perception of pointing gestures? (Daum et al., 2013).

While in a car safety seat, infants were presented a visual stimuli, and gaze was measured. Then, images of closed fists followed by pointing hands in combination with an acoustic stimulus were presented. The last image shown was the original stimuli. Using eye tracking technology, researchers tracked SRT (saccadic reaction time) from the cue to the peripheral target (located at corner of screen) (Daum et al., 2013).

Significant cueing effect (effects from pointing) was present in a condition with additional communicative and referential speech (conveying information about communicative intent). As there were more human and communicative acoustic stimuli, the size of the cueing effect increased. This indicated the important role of verbal communication in facilitating social understanding across domains. At 12 months, infants shift covert attention in the direction of an observed pointing gesture, and this was less apparent, even absent, when the acoustic stimulus was less human or not present (Daum et al., 2013).

In 2013, Miller and Gros-Louis, studied how different styles of caregiver responses influenced infant attention to communicative behavior in social interactions. The sample included a total of 22 children between the ages of 13 and 16 months old. They used an ABA design: A—Baseline 1, caregivers were instructed to play as they would normally; B—Social response, caregivers were instructed to respond sensitively to infants' behavior on one visit and redirectively (redirect their infant's attention about every 30 seconds); and A—Baseline 2, caregivers were instructed to play as they would normally again.

Child-caregiver pairs were videotaped in a playroom that contained a variety of toys. Infants wore overalls with a microphone, and caregivers wore a microphone. Caregiver and infant behavior were coded using ELAN software. The infant behaviors that were assessed included visual attention (frequency and duration of each shift), vocal behavior (coded as object-directed, caregiver-directed, or undirected), and gestures (the frequency of deictic and conventional gestures). Caregiver behaviors included responses to infant attention: frequency of sensitive and redirective behaviors of caregivers coded at each session (Miller & Gros-Louis, 2013).

When caregivers behaved redirectively, infants shifted their attention more frequently and decreased the duration of their visual attention. Caregiver responses also resulted in changes in vocal and gesture production. Infants decreased their production of caregiver-directed vocalizations, gestures, and gesture-vocal combinations during redirective condition (Miller & Gros-Louis, 2013).

Studying language development requires looking at several components together as a system such as cognitive processes (speech, sound perception and production), object recognition and categorization, imitation, joint reference, and intentionality (Bates et al., 2002). A meta-analysis of studies investigating mothers using symbolic language (sign language) with their infants left many questions unanswered because of the chosen research designs, sample sizes and lack of generalizability (Kirk, Howlett, Pine & Fletcher, 2013). However, the term gesture is often used interchangeably in studies to represent symbolic language which is taught (American Sign Language) and child created non-verbal language. American Sign Language requires a child to imitate another human's actions whereas gesture creations require the child to use problem-solving strategies to communicate a want or need. The commonality for both is that

infants who are exposed to a rich nonverbal environment show benefits with their speech development.

Findings related to the abilities of infants are consistent. Pointing is typically the first gesture recognized by adults, but other intentional communication skills can appear much earlier than pointing. Messinger and Fogel (1998) found the following:

> The period between 9 and 15 months of age involves increases in several sets of communicative actions. There is an increase in the proportion of infants who offer, request, and point and the proportion of infants who comprehend such conventional gestures. (p. 567)

According to the research on signaling affect, perceptions of social cues and performance of social cues happens in stages. Each stage is dependent on the previous stage, and each is also dependent on the interactions between both participants (Greenspan & Shanker, 2007). The stages are referred to as affect transformation, and they lead to high levels of language and symbolic thinking. The researchers further explain that the earliest stage can begin at birth if the child is in a positive interaction environment (Greenspan & Shanker, 2007). This stage is based on the emotional interactions that the caregiver provides. Intentionally using objects to facilitate a dialogue can be seen in infants as young as nine months. "Object use is typically a convention shared within members of a given culture and young children learn about such conventions from their caregivers" (Dimitrova et al., 2015, p. 99). Between 12 and 16 months, children perform an average of 37 gestures, and most of these are object-oriented (Bates et al., 1989).

Correlation Between Gestural Production and Word Comprehension

Word comprehension and gestural production are highly correlated. Cadime, Silva, Santos, Riberio, and Viana, (2017) found the following:

> In the early stages of development, gestures are a means to communicate information that the children are not yet able to express verbally. However, even after the onset of the first words, the gesture production still accompanies the word production. (p. 88)

The onset of gestures has a significant relationship to the production of verbal language and vocabulary (Dereu, Warreyn, & Meirsschaut, 2012). In 1981, Kagen proposed that imitation is most likely when the model lies just outside of the child's current level of competence, that is when it is neither too easy nor too hard (Bates et al., 1989). This indicates that children can produce an imitation gesture without comprehension of the meaning. This suggestion supports acknowledging the difference between self-initiated functions of nonverbal language and use of American Sign Language.

Messinger and Fogel (1998) developed a study to distinguish instrumental social approach functions of nonverbal conventional communication. The researchers found that when infants initiated a request to the mother, infants were more likely to gaze at the mother. In addition, results suggest that child gazing actions used by the infants were likely to initiate positive social contact with the mother, most likely because the infant tended to be smiling at the mother during these gazing gestures. However, neither gazing at mother nor smiling was associated with infant vocalizing. The results suggest an empirical distinction between infant requests used instrumentally to obtain objects and infant offers used to initiate (positive) social contact. Through interactions, adults can read and respond to the functions of the nonverbal language in young infants.

Houston-Price et al. (2006) explored young infants' ability to learn new words in situations providing tightly-controlled social (eye gaze) and salience (handling or moving image) cues to their reference. Thirty-six infants between the ages of 14 and 16 months were originally

included in the sample, but a total of 27 were included in the final sample. Infants and mothers were placed in a child-friendly room, and the infants sat on mothers' laps. Mothers wore headphones and keep eyes closed.

Houston-Price et al. (2006) used a red light to draw attention to the screen and used it as redirection if needed. The infants were shown six images and heard the word *look*. The six images included two novel photographs for which labels were not expected to be known (windmill/periscope), and four images that were likely known (airplane/book and dog/rabbit). Shoofy and Gopper were nonsense names given to the novel objects. These images were randomly selected so that each participant viewed one novel object and one set of familiar objects.

First, the images were shown in a test phase (the first 4000 milliseconds). Researchers used a set of the likely familiar images as wake up stimuli. Each image was shown in full color in a right/left viewing mode for 8 seconds. Researchers assessed comprehension by recording the length of time an infant looked toward the image (Houston-Price at al., 2006).

Next, the images were shown in a training phase (the second 4000 milliseconds). Houston-Price et al. (2006) used the four likely known images as wake-up stimuli. Each image was shown in full color in a right/left viewing mode for 8 seconds, and at 4 seconds a face appeared on the screen first looking at the infant and then toward an image on the left or the right. Left and right head turns were recorded when a female actor turned to the side as if it attracted her attention. The image that the actor on the screen turned toward was referred to as the target image. During this phase, labels of images were given twice, along with the video of the woman's face appearing.

One-sample t-test confirmed that infants looked significantly longer at the gazed-on image than would be expected by chance. The infants' behavior in the salience condition and in the experiments that followed suggest that, rather than basing their judgments of the words' reference on the mere presence or absence of the referent's motion, infants were strongly biased to attend to the consistency with which potential referents moved when a word was heard. Twenty-four of the 27 infants looked longer in the direction of the head turn (Houston-Price et al., 2006).

Other findings support the correlation between the use of gestures and word comprehension. In 2017, Cadime et al., stated:

> "In 2010, study conducted by Sansavini et al. found the number of gestures produced was significantly correlated with the number of words comprehended at 10 months; 11 months; and 1 year, 5 months and correlated with the number of words produced at 1 year, 2 months and 1 year, months" (p. 89)

In 2008, the work of Brooks and Melzoff found that vocabulary growth at age two could be predicted by the infants' spontaneous pointing at 10 and 11 months of age (Cadime et al., 2017).

Caregiver's Role

Most studies to date have been about mother and child, including the following study in which the researchers aimed to answer the following questions: "Which partner is more likely to request objects and which to offer? How do infants and mothers respond to each other's requests and offers? Do maternal requests impact specific infant communicative behaviors such as gazing at mother?" (Messinger & Fogel, 1998, p. 556). In a study with 11 infants between the ages of 9 and 15 months, researchers used the results to "help distinguish between instrumental and social

approach functions of nonverbal conventional communication" (Messinger & Fogel, 1998, p. 556). Manual gestures were observed while children were playing with their mothers. Researchers collected data several times a month. Findings also include that infants were more likely than their mothers to request objects and less likely to respond to requests for objects, suggesting a relatively acquisitive style of interaction. "Infant gazing at mother was most likely during offers that infants initiated without a preceding maternal request" (Messinger, & Fogel, 1998, p. 556).

One study examined how caregivers must make interpretations about an infant's gesture based on shared knowledge of the object (Dimitrova et al., 2015). Most of the nonverbal communication studies to date involve the parent as the primary caregiver, particularly mothers. Recent studies support the vital role that the caregiver plays in the intentional communication between an infant and the adult. "Fourteen month olds look significantly longer at objects when the adult pointed than when she didn't point" (Briganti & Cohen, 2011, p. 213). Also, the caregiver's response resulted in changes in vocal and gestural production made by infants (Miller & Gros-Louis, 2013). Caregivers play the important role of assessing a child's language abilities to determine if there is a delay and the need for referral to early intervention services.

In another study, five-minute videotapes were recorded in a laboratory of 13 infants and their mothers during face-to-face interactions. Children were between the ages of 4 and 24 weeks. Using Bloom's coding classification (syllabic sounds, vocalizations, utterances with greater oral resonance, speech-like sounds), infants' non-distress vocalizations were coded. The researchers used multilevel analysis "to examine the relationship between the quantity and quality of infant vocalization and infant gazing and smiling across time….Findings include when

infants gazed more at their mothers' face, they vocalized longer, more frequently, and with more speech-like quality" (Messinger & Fogel, 1998, p. 471).

Määttä et al. (2012) developed a study to identify developmental trajectories of prelinguistic communication skills and their connections to later parent-reported language difficulties. Määttä et.al. (2012) reported that "possible risk status was recognizable as early as 12-15 months of age" (p.1092). The role of gender was also examined at the end. Families with children between 6 and 24 months of age were recruited through child health care clinics and data was collected at 12 months, 15 months, 18 months, and 21 months. Then, it was compared at 4 years, 7 months of age. Families (N = 473) were contacted, and of those, 296 originally participated, 271 children were reported at the specific ages, and 187 children had follow-up data along with reports at the specific ages. Määttä et al. (2012) asked families to complete a new questionnaire every 3 months until the child was 24 months of age.

The first part of the assessment measured prelinguistic skills longitudinally, using parent ratings of children 12 through 21 months of age using the Finnish version of the Infant-Toddler Checklist (ITC) of the Communication and Symbolic Behavior Scale-Developmental Profile (CSBS-DP). Part two of the assessment used a screening questionnaire, Five to Fifteen (FTC) typically used for symptoms of attention deficit hyperactivity disorder (ADHD). This is comprised of 181 statements relating to behavioral or developmental problems. Six prelinguistic communication groups were identified and showed connections to later parent-reported concerns of language. There was a possible risk status of some groups recognizable as early as 12 to 15 months of age. Low level of early expressive language indicated a risk for later language difficulties. Almost 80% of children whose parents reported some concerns of language

development when their child reached 4 years, 7 months could have been identified as early as the second year of life (Määttä et al., 2012).

Summary

The nonverbal communication abilities of young children have been studied and analyzed for decades. Typically developing infants have the ability to perceive gestures and perform gestures with an intentional function of language. Parents are a reliable tool when assessing language development. Since there are so many children spending their days in child care instead of home, it is important to understand what child care teachers know about infant language development and what their expressive language behaviors are in the classroom. The gap in literature lies in the behavior of the adult. Professionals such as speech and language pathologists are trained to assess children at young ages using a variety of scales and screens. These assessments include gestures, imitations, actions and emotions. However, infant teachers have limited training in nonverbal language development. There is a need to create a training model to both increase awareness of nonverbal communication skills and to increase the rate at which a teacher responds to a child's nonverbal language. Many previous studies have examined the behavior of the parent and the child, but few have included the teacher. The purpose of this study is to determine to which of the defined nonverbal skills infant teachers are most likely to respond.

CHAPTER 3

METHODOLOGY

The purpose of this study was to determine which of the defined nonverbal functions teachers of infants in Northeast Tennessee are most likely to respond to and if that response facilitates or discourages dialogue. The question that guided this research was:

1. To which of the defined functions of infants' nonverbal communication are infant teachers responding?
    a. Did the teachers' response facilitate dialogue?
    b. Did the teachers' response discourage dialogue?

Research Design

This quantitative study used a correlational design to determine any relationships between children's attempts to communicate using nonverbal language and teachers' behavior. The demographic data from the teachers was also reported,

Observational data was used to determine relationships between the identified variables. According to Creswell (2009), this correlational design is nonexperimental and measures the associations between variables. The independent variables in this study were the four types of children's nonverbal language attempts, including, deictic, affected signaling, object-related, and conventional. The dependent variable was teacher response to nonverbal communication functions. A survey to gather demographic variables and information about teachers' knowledge of non-verbal language development was given to teachers at the conclusion of the observation. Field notes were taken to support what was happening at the time of the videotaped observations.

Collecting observational video allowed me to review what the most current practice was for teachers responding to gestures. I collected video so I could review the data and analyze

gestures and teacher response. Field notes captured the environment and other observations that may have influenced the teacher response or child's gestures. Field notes were collected during the observations to document what could not be videotaped (such as group size, substitute teacher, a child who was not feeling well, and a new child entering the classroom).

Site Selection

The researcher randomly selected sites within a tri-county region in Northeast Tennessee. Tennessee's government website (www.tn.gov) includes information on all licensed child care centers in the state and separates the programs by zip code. The names of centers, the ages of children who can be enrolled, and addresses are included on all centers on the website. The subjects in the study were a sample of all teachers of infants within three counties in East Tennessee (Washington, Greene, and Sullivan). The three counties have similar percentages in race, high school graduates, persons per household, median income level and percent of children under 5 years of age in comparison to the state averages. At the time of collection, there were 69 centers in the three counties that enroll children under 12 months of age.

Using random sampling, the researcher acquired a sample of the population so that every 3-star center in the tri-county area had the same probability of being called to participate. The state of Tennessee implements a 3-star rating system for licensed programs who exceed the minimum requirements for child care. A center receives zero stars if they only meet minimum Department of Human Service requirements and one, two, or three stars with higher standards of quality (www.tn.gov). I printed a list of each center's name and then separated the names into two piles: 3-star rated programs and less than 3-star rated programs. I randomly selected names one at a time to create a numbered list of all the licensed centers. A call was placed to each center on the list, beginning with number one, to ask the director for participation. During that

call, I gained information on the number of teachers and assistant teachers in infant classrooms employed at that program. Requirements for participants included holding a current lead or assistant position in an infant classroom and having the ability to read English. When the researcher compiled a list of 30 agreed participants, the researcher terminated the phone call process.

Subjects

The subjects in this study included teachers and teacher assistants in the classroom. I observed children to determine when a nonverbal communication was initiated and observed the teacher to determine if a response was given to that initiation. "The person-oriented approach emphasizes the uniqueness and individuality of development but states that there is lawfulness in development that can be described by patterns of the involved factors" (Määtä et al., 2012, p.1084). The involved factors of this study were the teachers and the children. Teachers play a significant role in language development, therefore they were the focus of this study. Adult subjects were offered a chance to enter a drawing for an RCA tablet. Once the research was completed, a third-party drew a participant's name, and the winner was contacted and received that tablet.

All children within the selected classrooms were also included in the study. There were approximately 60 children enrolled within the 11 classrooms. Some of the children were not captured during the observation. All parents were given permission forms and asked to sign if they did not want their child to participate.

Permission Forms

After the director verbally agreed to participate, I hand delivered permission forms to each center including both teacher permission forms and passive parent permission forms. There

was a one-two week waiting period between the drop off and the scheduled pick-up of the form. I arranged for 30-minute observations for each teacher and teaching assistant during an unstructured portion of the day after permission forms were collected.

Data Collection

I collected video footage of the child-teacher interactions and collected field notes. The field notes documented class ratio, group size, quantity of teachers present, and any unique classroom factors, including if there was a substitute teacher, illness of a child, and/or a newly enrolled child. Field notes are commonly used to document factors within the field that may impact the setting. “Taking field notes raises fundamental questions regarding what the researcher chooses to observe and write” (Hellesø, Melby, & Hauge, 2015, p.190). In order to gather consistent data between centers, I identified these unique classroom factors prior to the first set of data collection. I would have stopped any observation in which a substitute would have been present or new children would have been enrolled which caused the classroom teacher to feel that this was not an accurate view of a typical day.

Observations

Thirty-minute observations occurred in the classroom during routine care and free play when the children are awake and alert. I set up a camera on a side of the room that was least intrusive. A mobile tripod on the camera allowed me to move around if needed in order to follow the teacher. I also collected field notes during the observation. When there were multiple teachers the room, they were observed during separate times with individual sets of video and field notes, therefore some classrooms were observed for longer than 30 minutes or on more than one day. Previous studies with infant-caregiver dyads have found success in videotaped

observations because they can review the video in order to calculate any visually missed interaction.

Demographics of Teachers

A demographic questionnaire was distributed to teachers at the end of each observation (Appendix A). Demographic questions included 1) teachers' years of experience working with infants, 2) teachers' education level, and 3) teachers' age. Other factors on the questionnaire included length of time working with current group of children and how many workshops or courses teachers took on language development.

Coding

A pilot study was conducted on two local teachers during routine professional development. The teachers were videotaped interacting with infants during a 30-minute play period. I met with a team in order to train them on the types of nonverbal communication and view the videos to determine if the described types of nonverbal language could be easily identified. After the team determined that all defined types of nonverbal language could be identified, each member of the team used the code sheet (Appendix B) to determine which of the types of communication the child was initiating. The team then determined if the teacher's response facilitated dialogue or stopped the conversation. This pilot study helped me verify that this coding sheet was useful to document the required information.

Thirty-minute observations were collected on each teacher. However, only 15 minutes of the video was used for coding purposes. During the 30-minute time frame, I introduced the camera and let the children get used to it. Once the children returned to play after the camera was introduced, 15-minute observations were used for coding. After the video was collected, I used a computer to watch the video and code the gestures and communicative interactions. I used a

code sheet (Appendix B) for each observation and indicated the quantity of functions of nonverbal communications (deictic, affect signaling, object-related, and conventional), and American Sign Language initiated by the child, and if there was a response by the teacher. In addition, the type of response (facilitative or discouraging) for each communicative interaction was noted. When a child initiated a communication with the teacher using one of the four nonverbal communications or ASL, a yes/no was documented depending if the teacher provided a response. In addition, a yes/no was documented if the teacher used that communicative initiation to facilitate a responsive dialogue with the child. A comments box was used to document how the child utilized each type of communication. For example, if a child used affect signaling, the researcher documented if the child used a frown, a smile, or another form of affect to engage with the teacher.

Data Analysis

The researcher reviewed the video to determine when a child initiated communication with a teacher and how that teacher responded. The unit of analysis was the teacher-child interaction. Once a teacher responded to the child's attempt at nonverbal communication, it was determined whether or not the response facilitated a dialogue with children. Data analysis for this study examined the frequency of teachers' response to children's functions of nonverbal language and if that response offers an opportunity for a dialogue. Pearson correlations were used to answer the following questions for this study:

Research Question 1

To which of the defined functions of infants' nonverbal communication are infant teachers responding?

A Pearson correlation was used to determine which of the four nonverbal functions the teachers are most likely to respond.

Question a

Did the teachers' response facilitate dialogue?

A Pearson correlation was to examine the frequency to which the teacher's response facilitated dialogue.

Question b

Did the teachers' response discourage dialogue?

A Pearson correlation was to examine the frequency to which the teacher's response discouraged dialogue.

CHAPTER 4

RESULTS

The purpose of this study was to observe how infant teachers responded to a child's attempt to communicate using nonverbal language. In addition, background variables on teachers including age, education level, and experience in the infant classroom were gathered. Previous studies have shown that infants have the ability to intentionally communicate with an adult using a variety of nonverbal functions, including: deictic, affect signaling, object-related, and conventional (Bates et al., 1989; Dimitrova et al., 2015; Greenspan & Shanker, 2007; Messiger & Fogel, 1998). However, most of these studies focus on the mother-child dyad, not the teacher-child dyad. It is necessary to determine which of the functions teachers are most likely to respond to and if these responses facilitate discussion or discourage further opportunities for dialogue.

The goal of this study was to add to the body of research related to teachers in a child care setting. In the current study, teachers in high quality classrooms, as defined by the Tennessee 3-star rating, were observed when children were awake and participating in routine care or free-play time. The results presented in this chapter describe if and how teachers responded when a child between the ages of 6 and 18 months initiated communication in a group setting. The discussion of the results is organized around the research question:

1. To which of the defined functions of infants' nonverbal communication are infant teachers responding?
    a. Did the teachers' response facilitate dialogue?
    b. Did the teachers' response discourage dialogue?

Data Analysis

Statistical Package for the Social Sciences (SPSS) software was used to run descriptive statistics and Pearson correlations. Thirty-minute observations of teacher-child interactions were collected using video recordings. Once the children returned to play after the camera was introduced, 15-minute observations were coded and scored for the following:

1. Quantity of deictic, affect signaling, object-related, and conventional attempts made by children
2. Whether or not the teacher responded to those attempts (yes/no)
3. Whether or not that response facilitated or discouraged dialogue

Demographics of Subjects

Demographic information was also collected and analyzed to determine if there were any effects on the type of response offered. Level of education included a high school diploma, some college, Child Development Associate Credential (CDA), associate's degree, bachelor's degree, or master's degree. Years of experience working in an infant classroom ranged from less than 1 year to 30 years, with a mean of 9.45 years. Age of the teachers ranged from 18 years to 66 years, with a mean age of 39.81 years. These groups were collapsed in order to stabilize the frequencies. Table 1 reports the frequency and percentage of participants' education level, years of experience in an infant classroom, and current age for those participants that responded to the question.

Table 1

Demographics of Groups of Teachers Who Participated

Characteristics	Frequency	Percent
Education		
High School	10	33.33
Some College, CDA, Associate's Degree	14	46.66
Bachelor's or Master's Degree	6	20
Years of experience		
1 or less	7	23.33
2-9 years	9	30
10-16 years	10	33.33
17-30 years	4	13.33
Age		
18-24	6	20
25-35	6	20
36-45	6	20
46-60	6	20
60-70	3	10

Note. n =30

Data Analysis for Research Question

1. To which of the defined functions of infants' nonverbal communication are infant teachers responding?
    a. Did the teachers' response facilitate dialogue?
    b. Did the teachers' response discourage dialogue?

There were 92 deictic attempts made by children with a M = 3.07, SD = 3.67 and 109 affect signaling attempts made by children with a M = 3.63, SD = 2.59. There were 55 object-related attempts made by children with a M = 1.83, SD = 1.53 and 64 conventional attempts made by children with a M = 2.13, SD = 1.99. Table 2 reflects the descriptive statistics for attempts made by children and responses from teachers within each of the four types of child nonverbal language.

Table 2

Descriptive Statistics for Child Nonverbal Attempts and Teacher Response

Attempts and Responses by Nonverbal Type	***N***	**Mean**	**SD**
Deictic Gestures			
Child attempts to communicate	92	3.07	3.67
Teacher responds to child's attempt	39	1.30	1.48
Teacher responds and facilitates dialogue	15	.50	.86
Teacher responds and discourages dialogue	24	.80	1.03
Affect Signaling			
Child attempts to communicate	109	3.63	2.59
Teacher responds to child's attempt	72	2.40	2.28
Teacher responds and facilitates dialogue	30	1.00	1.58
Teacher responds and discourages dialogue	42	1.40	1.38
Object-Related			
Child attempts to communicate	55	1.83	1.53
Teacher responds to child's attempt	43	1.43	1.30
Teacher responds and facilitates dialogue	26	.87	1.07
Teacher responds and discourages dialogue	17	.57	.73
Conventional			
Child attempts to communicate	64	2.13	1.99
Teacher responds to child's attempt	32	1.50	1.48
Teacher responds and facilitates dialogue	16	.53	.94
Teacher responds and discourages dialogue	16	.53	.86

Note. N = Number of child attempts or teacher responses

Data analysis using multiple Pearson correlations was conducted to determine if there was a significant relationship between the number of attempts to communicate by the children and the number of teacher responses to the children's attempts. These correlations were run independently for the four functions: deictic, affect signaling, object-related, and conventional (*n* = 30). There were relationships between the number of nonverbal attempts by children and teachers offering a response to those attempts in all four types of nonverbal language, suggesting that the increase of children attempts may contribute to the likelihood that teachers respond to nonverbal attempts by children.

Pearson correlations were calculated to determine if there were significant correlations between attempts to nonverbally communicate by children and teacher responses that offered a facilitative response. There were relationships between the number of nonverbal attempts by children and teachers offering responses to those attempts in 3 types of nonverbal language.

Pearson correlations were calculated to determine if there were significant correlations between attempts to nonverbally communicate by children and teacher responses that offered a discouraging response. There were relationships between object-related attempts made by children and discouraging teacher responses to those attempts. There was also a relationship between conventional attempts made by children and discouraging teacher responses to those attempts.

Table 3 represents correlations between deictic attempts made by children and teacher responses to that type communication. Correlations between the types of responses (facilitative or discouraging) are also presented. There was a significant correlation between the number of deictic attempts made by children and the number of responses to those attempts by the teachers, r (30) = .659, p = .001. There was also a correlation between the number of deictic attempts

made by children and the number of teacher responses to those attempts that discouraged dialogue, r (30) = .706, p = .001.

Table 3

Correlations Between Deictic Attempts Made by Children and Teacher Response

Type of Communication	**Deictic Attempts Made by Children**	**Teacher Response to Deictic Attempts**	**Teacher Responds to Deictic Attempt and Facilitates Dialogue**	**Teacher Responds to Deictic Attempt and Discourages Dialogue**
Deictic attempts made by children	--	.659*	.295	.706*
Teacher response to deictic attempts		--	.740*	.827*
Teacher responds to deictic attempt and facilitates dialogue			--	.233
Teacher responds to deictic attempt and discourages dialogue				--

Note. *p = 0.001

Table 4 shows correlations between affect signaling attempts made by children and teachers' response to this type communication. There were significant correlations between number of affect signaling attempts made by children and the number of responses to those attempts by the teachers, r (30) = .917, p = .001. The number of affect signaling attempts made by children was correlated to the number of facilitative responses to those attempts by the teachers, r (30) = .776, p = .001 and to the number of discouraging responses to those attempts by the teachers, r (30) = .630, p = .001.

Table 4

Correlations Between Affect Signaling Attempts Made by Children and Teacher Response

Type of Communication	**Affect Signaling Attempts Made by Children**	**Teacher Response to Affect Signaling Attempts**	**Teacher Responds to Affect Signaling Attempt and Facilitates Dialogue**	**Teacher Responds to Affect Signaling Attempt and Discourages Dialogue**
Affect signaling attempts made by children	--	.917*	.776*	.630*
Teacher response to affect signaling attempts		--	.805*	.736*
Teacher responds to affect signaling attempt and facilitates dialogue			--	.190
Teacher responds to affect signaling attempt and discourages dialogue				--

Note. *p = 0.001

Table 5 shows correlations between object-related attempts made by children and teachers' response to that type communication. There were significant correlations between number of object-related attempts made by children and the number of responses to those attempts by the teachers, r (30) =.848, p = .001. The number of object-related attempts made by children was correlated to the number of facilitative responses to those attempts by the teachers, r (30) = .635, p = .001 and to the number of discouraging responses to those attempts by the teachers, r (30) = .582, p = .001.

Table 5

Correlations Between Object-Related Attempts Made by Children and Teacher Response

Type of Communication	**Object-Related Attempts Made by Children**	**Teacher Response to Object-Related Attempts**	**Teacher Responds to Object-Related Attempt and Facilitates Dialogue**	**Teacher Responds to Object-Related Attempt and Discourages Dialogue**
Object-related attempts made by children	--	.848*	.635*	.582*
Teacher response to object-related attempts		--	.830*	.568*
Teacher responds to object-related attempt and facilitates dialogue			--	.012
Teacher responds to object-related attempt and discourages dialogue				--

Note. *p = 0.001

Table 6 shows correlations between conventional attempts made by children and teachers' response to this type communication. There was a correlation between number of conventional attempts made by children and the number of responses to those attempts by the teachers, r (30) = .794, p = .001. The number of conventional attempts made by children was correlated to the number of facilitative responses to those attempts by the teachers, r (30) = .514, p = .004 and to the number of discouraging responses to those attempts by the teachers, r (30) = .439, p = .015, indicating that when teachers responded they were just as likely to offer a facilitative response as they were to offer a discouraging response.

Table 6

Correlations Between Conventional Attempts Made by Children and Teacher Response

Type of Communication	**Conventional Attempts Made by Children**	**Teacher Response to Conventional Attempts**	**Teacher Responds to Conventional Attempt and Facilitates Dialogue**	**Teacher Responds to Conventional Attempt and Discourages Dialogue**
Conventional attempts made by children	--	.794***	.514***	.439**
Teacher response to conventional attempts		--	.497***	.460*
Teacher responds to conventional attempt and facilitates dialogue			--	-.279
Teacher responds to conventional attempt and discourages dialogue				--

Notes. *p = 0.010, **p = 0.015, ***p < .004

Summary

Pearson correlations were used to determine whether there were correlations between children's attempts and teachers' responses in each of the four functions, indicating that teachers are indeed responding to the types of attempts of children's nonverbal communication. The correlation between affect signaling attempts by children and response from teachers was the most significant suggesting that teachers are most likely to respond to children's affect signaling attempts. Once a teacher made a response, there could only be two types of responses: either a facilitative or a discouraging. These results also showed relationships between children's attempt to nonverbally communicate in three of the types of communication (affect signaling, object-

related, and conventional) and teachers offering a facilitative responses. There were also relationships between children's attempts to nonverbally communicate in all four types of communication (deictic, affect signaling, object-related, and conventional) and teachers offering a discouraging responses.

These results give us a beginning view of teachers' response to children's attempts to nonverbally communicate. Teachers are more likely to respond to affect signaling attempts made by children. Results also show that teachers are least likely to offer a facilitative response to deictic attempts made by children. This data can be used to help improve teacher responses to children's nonverbal communication.

CHAPTER 5

DISCUSSION

Summary of Study

The purpose of this study was to determine which of the defined nonverbal skills infant teachers are most likely to respond to and how their age, education level, and years of experience relate to the responding behavior. Beginning at birth, typically developing children use strategies to communicate, and the functions of their language change with maturation and interaction. Thirty teachers from 11 child care centers in Northeast Tennessee were observed through videotaping. Four research questions guided the study, and data was analyzed using SPSS software.

A review of literature revealed that there are four main functions of nonverbal language. These include deictic, affect signaling, object-related, and conventional. The use of American Sign Language was also observed to determine if teachers responded more frequently when they had a preconceived understanding of the gesture being used. Previous studies provided evidence of the importance of joint attention and interaction during nonverbal communication between the adult and the child (Greenspan & Shanker, 2007).

Language development has been the center of research for decades. Studies have concluded that children have the ability to intentionally communicate using nonverbal gestures before the onset of speech (Bates et al., 2002; Daum et al., 2013; Esteve-Gibert & Preito, 2014; Goldin-Meadow, 2007; Winder et al., 2013). Many of these studies have been designed to observe mother-child dyads. Many infants spend 8-12 hours a day in a child care setting. It is important to determine if the child care teachers are responding to these cues and if they are responding in order to facilitate a dialogue.

Summary of Results

Data was gathered from 11 child care centers in Northeast Tennessee. A total of 30 teachers and/or teacher assistants were observed and videotaped during a 30-minute period of the day; 15 minutes of this video was used for data analysis. All centers were considered high quality based on Tennessee's 3-star rating program. Teachers worked with children, in infant rooms, ranging from 6-18 months of age.

Research Question

1. To which of the defined functions of infants' nonverbal communication are infant teachers responding?
    a. Did the teachers' response facilitate dialogue?
    b. Did the teachers' response discourage dialogue?

There were statistically significant correlations between individual types of nonverbal attempts made by a child and responses from teachers. For example, statistical significance was found between a child who initiated communication using conventional nonverbal language and a teacher's response to that initiation. The correlation between affect signaling attempts by children and response from teacher was the strongest suggesting that teachers are most likely to respond to this type of communication. Results also showed correlations between the attempts made by children and facilitative and discouraging responses. Once a teacher made a response, there could only be two types of response, either a facilitative or a discouraging. These results demonstrate that in 3 out of 4 of the types of communication, a teacher is just as likely to offer a facilitative response as a discouraging response. The only function in which the child's attempt to communicate with teachers and teachers offering a facilitative response did not show

significance was with deictic nonverbal language. The significance was only found in a response which discouraged dialogue.

Implications for Practice

Related to the teachers' response to nonverbal communication, the data point to the following conclusions. Percentages were calculated, and results suggest that teachers are more likely to respond to and facilitate a responsive dialogue to object-related nonverbal communication attempts (35.6 %); however, nearly half of all attempts were missed or overlooked by the teacher. Teachers responded with a facilitative response to only 16% of all deictic attempts and only 14.7 % of affect signaling attempts made by children. Twenty-five percent of all conventional attempts resulted in facilitative responses. Overall, teachers responded to 25% of all nonverbal attempts made by children. This means that 75% of all nonverbal attempts made by children to the teacher did not facilitate a dialogue or were missed completely.

There have been numerous studies supporting the need for responsive relationships, nurturing environments, small group sizes, teacher trainings, and reciprocal conversations. The Center on the Developing Child (2017) stated:

> "When an infant or young child babbles, gestures, or cries, and an adult responds appropriately with eye contact, words, or a hug, neural connections are built and strengthened in the child's brain that support the development of communication and social skills" (para. 1).

Research on developing brains has shown that these early reciprocal conversations can have a positive impact on how the child perceives communication. The importance of reciprocity with verbal language has been heavily discussed. Conversations which have greater reciprocity can

promote language outcomes and may even be more influential than the quantity of words (Zimmerman, 2009). Young children begin to initiate conversations before the onset of speech. The data collected during this study can help to promote the significance of reciprocity during nonverbal communications.

The findings from this study have implications on future teacher training focusing on nonverbal language. Each of the centers in this study were labeled as "high quality", yet only one-fourth of all child-initiated nonverbal communication attempts were responded to with an opportunity to continue the conversation.

It was not surprising to discover that in classrooms where teachers responded more to a child's attempt to communicate nonverbally, children were more likely to initiate gestures. Findings from this study have relevance for determining how early a child stops initiating nonverbal communication when the response is negative or nonexistent. Further studies need to be conducted to determine how this lack of response influences children's perception of communication.

Quality guidelines in Tennessee do not consider the communication interactions between a child and teacher as a criteria for measurement. The 3-star rating is primarily based on the physical environment rather than the emotional environment. Nearly 75% of all attempts did not receive a response or facilitated a negative response by the teacher. It will be important to determine how this influences a child's ability to form a secure attachment during these early years. Many young children are spending 8-12 hours each day in child care with teachers who have very little training on nonverbal language development. This study may help support the need for better policy on developing effective teacher training, both at the university level and in annual professional development trainings for child care teachers.

Considerations for Future Research

There are several directions for future research following this study. First, replicating this study with a larger sample size will be beneficial. A larger sample size will provide more teacher-child interaction data, reduce the margin of error, and will be more representative of the general population. Second, as noted in Chapter 1, the impact of demographic data, other than education level, on teachers' interactions are rarely examined in the research about teachers in child care. There are limited studies around the topic of teacher behavior in relation to infant nonverbal communication, and I hoped to explore the impact of demographic variables of teachers' education, age, and years of experience with infants in the classroom. However, due to the limited teacher responses to infant nonverbal communication, inferential statistics were not likely to produce significant results.

In future studies, it is important that demographic data from the teacher should be considered when looking at teacher behavior. For example, does the teachers' age, education level, or years of experience working with infants have an effect on how they respond to infants' communication? Are there any effects between those variables? For example, does a teacher's age and education level have a stronger effect on the teacher's response or type of response to children's nonverbal language? A larger sample size in future studies will be able to answer some of these questions related to teacher demographics. Third a larger sample size including subjects from across the country should considered. It would be interesting to determine if there is a difference amongst regions in the United States. For example, do teachers in Southern Appalachia respond differently than teachers in the Northwest areas of the United States?

Personally, I plan to continue a research agenda around teacher behavior, particularly teachers who work with infants and toddlers. Studies which focus on supporting change in

classroom practices may have a direct impact on the early childhood profession. Previous studies have examined the behavior of the parent or other domestic adult, but few have included the teacher. Before a training can be developed for this population of caregivers, it was vital to determine which of the nonverbal behaviors teachers tend to respond to and how this interaction facilitates communication between the participants. Studies with an experimental design can be used to determine if an intervention can increase the frequency with which teachers respond to nonverbal communication with an intention to facilitate dialogue. Therefore, future studies can include teacher training interventions related to nonverbal communication and ongoing coaching opportunities. Studies which include demographic data can support the development of trainings for teachers entering the field, as well as those teachers who have more classroom experience. In addition, it is vital to determine teachers' knowledge of nonverbal language and if knowledge translates to practice.

Summary

Nonverbal language has a direct effect on verbal language acquisition. Child care teachers in Northeast Tennessee are not required to have specific training in language development. Teachers may not be receiving the information needed in order to effectively support nonverbal communication attempts made by infants. There is a gap in the research on teachers' behavior in child care classrooms. Therefore, the purpose of this study was to determine which of the defined nonverbal functions infant teachers in Northeast Tennessee are most likely to respond and if that response facilitates or discourages dialogue.

Before an effective intervention can be designed, knowledge of current behaviors was needed. The quantitative nonexperimental design can be used as a source of information for later use in developing future studies on this topic and to begin to prepare professional development.

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APPENDICES

APPENDIX A

Teacher Questionnaire

Age	
Years of Experience	
Highest level of Education	
How many hours of training or courses have you taken in language development?	
How long have you been working with this group of children?	

APPENDIX B

Data Tally Sheet

Imperative Deictic Gestures		**Declarative Deictic Gesture**		**Affect Signaling**		**Object-Related**		**Conventional**		**American Sign Language**	
Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?
Comments	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**
Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?
Comments	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**	**Comments**
Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?	Teacher respond?	Facilitate response?
Comments	Comments	Comments	Comments	Comments	Comments	Comments	Comments	Comments	Comments	Comments	Comments

APPENDIX C

Teacher Consent Form

PRINCIPAL INVESTIGATORS: Stephanie Stephens
TITLE OF PROJECT: Teachers' Response to Infants Initiation of Nonverbal Language

April 1, 2016

Dear Infant Teacher:

You have been selected to participate in a research study conducted by Stephanie Stephens, an ETSU Early Childhood PhD Candidate. The purpose of this study is to observe interactions in an infant classroom.

Timeline		Program Activities
2016	May	Recruitment and selection of participants
	Step 1 End of May-Mid June	Classroom visits by primary researcher to complete 30-minute observations in the classroom
	Step 2 End of May-Mid June	*Teacher Completes Questionnaire*

The evaluation procedures consist of the following:

- Researcher will video tape a 30-minute observation during free-play
- Teacher will complete an infant development questionnaire

Risks
This study poses minimal risk to you as a participant. There may be some discomfort associated with having people in your classroom The project staff will work with you to provide support and ensure that you are comfortable with all activities. There are no financial costs to you for this project.

Benefits
For completing these activities you will be placed in a drawing to win a tablet. To be considered for the drawing, you must complete all activities.

Information obtained during this study that could identify you will be kept strictly confidential. The summarized findings may be published in an academic journal, presented at professional conferences, or shared with university classes. All research records (video, photos, questionnaires and field notes) will be stored in Stephanie Stephens' office on ETSU campus in a locked file cabinet for 5 years after the project ends. Although your rights and privacy will be maintained, ETSU IRB and personnel particular to this research have access to your data. Your data will be kept confidential according to current legal requirements. It will not be revealed unless required by law or persons noted above.

Your participation in the research component of this project is completely voluntary. **Your decision whether or not to participate will have no impact on your status in your program.** You are free to withdraw from participation at any time or to choose not to participate at all and by doing so, you will not be penalized or lose any current benefits you receive otherwise. If you wish to withdraw from the research at any time, contact Stephanie Stephens (see contact information in next paragraph).

If you have questions about this study or desire information in the future regarding your participation, you may contact Stephanie Stephens at 423-439-4888 or by email at: stephesn@etsu.edu. You may also contact the Chairman of the Institutional Review Board at 423-439-6054 for any questions you may have about the rights of research participants. If you have any questions or concerns about the research and you want to

Ver. 2/25/16 ____ Subject Initials

PRINCIPAL INVESTIGATORS: Stephanie Stephens
TITLE OF PROJECT: Teachers' Response to Infants Initiation of Nonverbal Language

talk to someone independent of the research team, you can contact an IRB coordinator at 423-439-6055 or 423-439-6002.

Please initial the bottom of each page indicating that have read or had this document read to you. Please sign the attached form indicating your consent to participate or indicating your choice not to participate. Keep one copy of this letter. Place the second copy with the signatures in the enclosed envelope. Seal the envelope, put your name on the outside, and return the sealed envelope to the project staff. You will be given a signed copy of this informed consent within three weeks of receipt of your envelope.

Principal Investigator: Stephanie Stephens
Title of research study: Teachers' Response to Infants Initiation of Nonverbal Language

I am fully aware of the nature and extent of my participation in this research study as stated in the attached letter and the possible risks arising from it. I hereby agree to participate in this research study. I also agree to allow images (photographs and/or videos) of myself to be shown in workshops and professional presentations obtained form this research study.

_____ _____
(Signature of SEE participant) **(Date)**

_____ _____
(Signature of investigator) **(Date)**

USE THIS PORTION ONLY IF YOU DO NOT AGREE TO PARTICIPATE

I do not wish to participate in this project.

_____ _____
(Signature of SEE participant) **(Date)**

_____ _____
(Signature of investigator) **(Date)**

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APPENDIX D

Parent Consent Form

PRINCIPAL INVESTIGATORS: Stephanie Stephens
TITLE OF PROJECT: Teachers' Response to Infants Initiation of Nonverbal Language

East Tennessee State University
Informed Consent Document (ICD)

This informed Consent will explain about being a participant in a research study. It is important that you read this material carefully and then decide if you wish to be a volunteer.

PURPOSE:

The purpose(s) of this research study is/are as follow:

The objective of this study is to add to the body of knowledge regarding infant teacher/child interactions in the classroom.

DURATION:

Your child may be observed for 30-60 minutes during free play. The anticipated entire duration of the study is approximately 3 weeks.

PROCEDURES:

The procedures include:

The primary investigator will schedule a thirty-minute observation for each participating teacher. During these observations, the researcher will primarily video-tape the teachers/teacher assistants and take notes about the environment. The children may be in the video; however the primary focus during the observation will be on the teachers. Your child's image may be shown at conferences or in classes.

Individual data is not collected on children. Your child will not be asked to do anything different from the regular expectations during free play.

ALTERNATIVE PROCEDURES/TREATMENTS:

Participation is completely voluntary. If you elect not to have your child participate, he/she will still receive the same level of care with the rest of the class but will not be observed for teacher/child interactions.

Risks

The possible risks and/or discomforts of participation include slight discomfort associated with having and observer in the classroom.

Benefits

Information obtained during this study that could identify your child will be kept strictly confidential. The summarized findings may be published in an academic journal, presented at professional conferences, or shared with university classes. All research records (video, photos, questionnaires and field notes) will be stored on ETSU campus in a locked file cabinet for 5 years after the project ends. Although your rights and privacy will be maintained, ETSU IRB and personnel particular to this research have access to your data.

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Your data will be kept confidential according to current legal requirements. It will not be revealed unless required by law or persons noted above.

FINANCIAL COSTS:

There are no financial costs to you for this project.

COMPENSATION IN THE FORM OF PAYMENTS TO RESEARCH PARTICIPANTS:

Your child will not receive any compensation for participation.

VOLUNTARY PARTICIPATION:

Participation in this research experiment is voluntary. You may elect not to have your child participate. If you choose to have your child participate or withdraw approval at any time. If you withdraw or elect not to participate, the benefits or treatment to which you are otherwise entitled will not be affected. You may withdraw by calling the primary researcher, Stephanie Stephens, whose phone number is 423-439-4888. You will be told immediately if any of the results of the study should be reasonably be expected to make you change your mind about permitting your child in the study.

CONTACT FOR QUESTIONS:

If you have questions about this study or desire information in the future regarding your participation, you may contact Stephanie Stephens at 423-439-4888 or by email at: stephesn@etsu.edu. You may also contact the Chairman of the Institutional Review Board at 423-439-6054 for any questions you may have about the rights of research participants. If you have any questions or concerns about the research and you want to talk to someone independent of the research team, you can contact an IRB coordinator at 423-439-6055 or 423-439-6002.

CONFIDENTIALITY:

Every attempt will be made to see that study results are kept confidential. Coded pseudonyms will be used to replace identifying information of the teacher and the school, but it is important to note that identifying information for your child is not be collected. A copy of the records from this study will be stored in Stephanie Stephens' office in a locked filing cabinet for at least 5 years after the end of this research. The results of this study may be published and/or presented at meetings without naming your child as a subject. Although your child's rights and privacy will be maintained, personnel particular to this research have access to the study records. Data may be used for professional presentations, but every attempt will be made to maintain confidentiality.

Ver. 2/25/16 ____ Subject Initials

PRINCIPAL INVESTIGATORS: Stephanie Stephens
TITLE OF PROJECT: Teachers' Response to Infants Initiation of Nonverbal Language

If you **DO NOT** want your child to participate in this study, please print your child's name, sign your name, and return this document in a sealed envelope to your child's teacher [insert date that is within two weeks of initial contact].

☐ I **DO NOT** want my child to participate in this study.

Principal Investigator: Stephanie Stephens
Title of research study: Teachers' Response to Infants Initiation of Nonverbal Language

_____ _____
(PRINTED NAME OF PARTICIPANT CHILD) **(Date)**

_____ _____
(SIGNATURE OF PARENT OR GUARDIAN) **(Date)**

Ver. 2/25/16 ____ Subject Initials

VITA

STEPHANIE STEPHENS

Education:	BS 2005, Early Childhood Education, PreK-4, East Tennessee State University, Johnson City, TN MEd 2008, Early Childhood Development, East Tennessee State University, Johnson City, TN PhD May 2018, Early Childhood Education, East Tennessee State University, Johnson City, TN
Professional Experience:	Teacher, East Tennessee State University, Child Study Center, Infant Toddler Program, Johnson City, TN, 2005-2012 Adjunct Instructor, Department of Behavioral Sciences, Early Childhood Department, Northeast State Community College, Blountville, TN, 2012- Present Master Teacher, Curriculum Specialist, Child Study Center, East Tennessee State University, Johnson City, TN 2013-Present Adjunct Instructor, College of Education, Early Childhood Education, East Tennessee State University, Johnson City, TN 2013-Present
Honors and Awards:	Exchange Magazine's Emerging Leader in the field of Early Care and Education, May 2015