THE NATURE OF VERBAL

INTERACTIONS WITH TODDLERS

IN CHILD CARE CENTERS

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DEDICATION

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

At no other time in the history of our country has the education of our children been under such intense scrutiny. The 2001 Elementary and Secondary Education Act, also known as No Child Left Behind (No Child Left Behind [NCLB], 2002), established a challenge for the United States in regard to educating our school-age children. The main directive was to "close the achievement gap" by ensuring success for all students. Since the advent of NCLB, much attention has been directed toward accountability for children reaching age/grade level expectations with educators receiving the brunt of this scrutiny. This increased interest in young children seems to come from several factors (Gallagher, Clifford & Maxwell, 2004). One factor is the sharp increase in mothers of young children joining the workforce (Kamerman & Gatenio, 2003). A second factor is increased understanding of the importance and connection of early brain development and stimulation to later development (Shonkoff & Phillips, 2000). A third factor is increasing evidence that large numbers of children enter public schools unready and un-prepared to take full advantage of their school experience (Kagan & Cohen, 1997; McMillen & Kaufman, 2006; Zill & West, 2001). A fourth factor is increasing pressure to improve achievement of school children who are at-risk for social or academic failure (Clifford, Early, & Hills, 1999; Neuman, 2003). As a result of these factors, a body of research is emerging that indicates even our very youngest learners, toddlers and

preschoolers, may be in danger of being "left behind" in what could be epidemic proportions relative to school readiness (Bardige, 2005). Over the last decade, approximately one-third of children entering kindergarten have been viewed by their kindergarten teachers as not ready for the level of work typically required in kindergarten (Carnegie Task Force On Meeting The Needs Of Young Children, 1994).

Researchers (Bardige, 2005; Hart & Risley, 1995; Wertheimer & Croan, 2003) have reported the occurrence of limited language competence in today's preschool age children. Working parents and poor quality child care/preschool programs have been suggested as possibly contributing to this finding. Also noted were differences in language competence related to family and child, as well as the strong link between language competence and school readiness/success.

If America's educational system is to rise to the challenge of the federal mandates issued in NCLB, researchers, educators, administrators, and parents must seriously consider the growing body of evidence that indicates the existence of problems even before children enter into formal education (Shonkoff & Phillips, 2000; Wertheimer & Croan, 2003). Researchers are investigating why our nation's children are starting school with less than optimal skills and thus being "left behind" before they cross the threshold into kindergarten or first grade. The rationale for this study summarizes some of their findings.

Rationale for the Study

Educators have begun to focus attention on young learners as they look for answers to NCLB mandates. It stands to reason that starting school with the expected

concepts and skills has potential to impact educational success for our nation's children. Researchers report that during these early formative years, a rapid period of brain growth and development is occurring that relies on the provision of appropriate experiences by significant others to assure optimum outcomes (Shonkoff & Phillips, 2000; Shore, 1997). Neural connections are being formed based upon experiences which in turn result in rapid processing of information and new learning (Shore, 1997).

According to researchers in the field of neurobiology, genes and experiences interact to form the structural design of the developing brain. An active and necessary aspect of this interaction is the "serve and return" nature of a child's engagement in relationships with significant others which include parents, caregivers, extended family, (National Scientific Council on the Developing Child, 2007). Others contend early experiences determine if the structural design of a child's developing brain will provide a strong or weak foundation for all future learning (Center on the Developing Child at Harvard University, 2007).

In a 2006 Indiana Bureau of Child Care annual report published by the Indiana Family and Social Services Administration, it was reported that birth to age two is the most important time for human brain growth. By age three, "children have already developed most of their capacity to acquire vocabulary" (p.7). In addition, the report indicated a child's capacity to learn is determined by age five. Furthermore, the report indicated this early brain growth is accomplished by response to experiences in which neurological networks are built. The report stated that "a quality early care and learning environment is critical to this development and to school readiness skills" (p.7).

Of importance to school readiness is a strong foundation in language acquisition, knowledge, and use. Within this critical developmental period, children should progress from understanding and using a small vocabulary of single words, primarily nouns, to understanding and using adult-like sentence structures (Apel & Masterson, 2001). How children progress in the area of language development, knowledge and use is vastly determined by the quality of experiences and people available to them (Apel & Masterson, 2001).

Differences among young children at the time of school entry have been reported. Hart and Risley's (1995) research makes a strong argument for looking at our youngest learners for answers as to why our children are starting their school years "behind." They followed the language experiences and vocabulary development/size of forty-two children in three groups. The groups included, children whose mothers received public assistance, children from working families with low to moderate incomes, and children from professional families. Differences in the size of the children's vocabularies were statistically significant at eighteen months of age with differences continuing to increase until thirty-six months of age. Children from the highest income families were found to have vocabularies twice as large as those from the lowest income families. By age four, it was projected the children in professional families would have heard an average of fifty million words, while those in working class families would have heard an average of thirty million vocabulary words that decreased to fifteen million for children from families receiving public assistance. Hart and Risley (1995) reported significant differences, both quantitatively and qualitatively, in the language environments in children's homes linked to socioeconomic status. Further, they reported that IQ and

future academic success were associated with the number of adult words heard by a child developing language.

Other studies have supported Hart and Risley's classic work (1995). These researchers have reported maternal input in greater quantities as an explanation for why children from higher socioeconomic (SES) homes have more advanced language skills than same age peers in lower SES homes (Hoff, 2003; Temas-LeMonda, Bornstein, & Baumwell, 2001). In addition, Hart and Risley reported that children from lower SES homes have been found to receive more prohibitions and fewer affirmations in their interactions with significant others in comparison to like-age peers in higher SES homes, thus resulting in lower language achievement. Other studies (e.g. Murray & Hornbaker, 1997; Rocissano & Yatchmink, 1983) support this as well, finding that children receiving a directive style of interaction dominated by commands and following of adult agendas present with inhibited language development. This directive style of interaction makes it difficult for young children to attach meaning to the words they hear because it lacks sensitivity and elaboration (Murray & Hornbaker, 1997; Rocissano & Yatchmink, 1983). Wittmer and Honig (1991) studied question types used with three-year-old children from low-income families in child care. They found that providers overwhelmingly used convergent type questions despite the fact that children of this age are equally capable of answering a divergent question that would also enhance language and cognitive skill development. They identified a need for teacher training on verbal interactions important for developing toddlers.

Over the course of the last thirty years, a period of rapid social change has occurred resulting in more diverse employment opportunities for women as well as an increase in

the cost of raising a family. Progressively more mothers have entered the workforce when their children are young. In addition, longer work weeks and increases in divorce and single parent families have combined to intensify the use of child care for the nation's youngest children. Children are spending less time with their parents, forcing parents to become increasingly more reliant upon others to provide enriching experiences during the critical language learning years (Bardige, 2005).

An increasing number of families today are utilizing child care services for their young children. Estimates indicate in 2005, 60% of all preschool children (age birth to five years) in the United States attended some form of child care compared to 52% in 1991. Of children one to three years of age, 43% of America's children spend at least some time in child care (National Center for Education Statistics, 2005). In addition, an increasing number of children with developmental disabilities are enrolled in child care settings (Stahmer & Carter, 2005).

The statistical evidence translates into a shift in responsibility for building the necessary foundation for early school readiness/success. In decades past, children spent much of their early years at home in the care of a parent or close family member. School readiness was primarily the responsibility of a parent/family member who potentially could devote individualized or family friendly attention to the nurturing and fostering of developmental skills important for school success. This shift in responsibility has led researchers to begin to critically investigate whether proper and necessary school readiness is being addressed by those now responsible for the care and nurturing of our youngest learners, especially those young learners identified as developmentally at risk (Burchinal et al., 2000; Fontaine, Torre, & Grafwallner, 2006; Peisner-Feinberg et al.,

1999). Attention is being directed to quality of child care in the United States and how quality affects early development and learning for children enrolled in care outside of the family home.

Traditionally, early education has been viewed largely as the responsibility of parents with minimal public supports. Child care can be expensive for parents, with high quality child care coming at a high financial cost to parents. In addition, early child care providers and educators are "increasingly underpaid, underprepared and undersupported in their jobs" (Bardige, 2005, p. 102). These issues result in limited availability of quality child care for most young children in our nation. Lack of quality child care translates into lack of essential exposure and opportunity for language growth and development, thus resulting in children not ready to begin formal education (Bardige, 2005).

A study conducted by the National Institute of Child Health and Human Development (1998) on early child care, reported that children whose mothers exhibited warmth and encouragement during structured teaching tasks exhibited more advanced learning development. In addition, children age three who had been in a high quality child-care setting with teachers who provided appropriate language stimulation, tended to score higher on tests of both receptive and expressive language than those children receiving lower quality care. This study further highlighted that what was of most significance was the quality of the interaction occurring between child and caregiver. This study found that the quality of children's child-care experiences could "mitigate" or "exacerbate" the influence of a less optimal parenting style.

Huttenlocher (1998) reported an extensive relation between naturally occurring variations in children's language environments and their language skills. She indicated the language development of children is related to the speech heard both at home and at child-care/school. Multiple researchers support the claim that language input plays a major causal role in the language development of children (Burchinal et al., 2000; Hoff, 2003; Murray, Fees, Crowe, Murphy & Henriksen, 2006).

Not much is known in regard to the "language exposure of young children in center-based child care programs" (Murray et al., 2006, p. 234) and particularly that of children developing atypically. Growing agreement regarding the importance of including infants and toddlers with developmental delays and disabilities in settings with peers developing typically has resulted in larger numbers of early care settings becoming inclusive (Odom & Diamond, 1998). This study proposes to investigate one component of quality child care, the verbal communication interactions of child care providers with toddlers, particularly those children exhibiting atypical development. As indicated previously, quality interactions and experiences during the first five years of life are vital for adequate language development preparing our youngest learners for successful entry into formal academic learning. Language development underlies academic success. It would stand to reason that this is of more critical importance for those identified as exhibiting atypical development, especially in the area of communication.

Description of the Proposed Study

The researcher utilized four child care centers for access to participants. Child care providers working in classrooms for children in the age range of 16-36 months along with

the children in these classrooms were included. Atypically developing toddlers were identified as those receiving First Steps/Early Intervention or services provided by public school three to five programs.   Observational data of adult to child verbal interactions within the scope of daily routines and activities were compiled.   Observations were 20-45 minutes in length depending on the activity/routine being observed.

Total number of toddlers included was 26, with 10 toddlers developing atypically. The toddlers developing atypically primarily presented with a delay in the domain of communication. The total number of providers included was 23.

Observational data collected during natural routines and activities were coded. Adult utterances were coded using measures similar to those previously identified by Hart and Risley (1995) and subsequently utilized in other studies and by other researchers (Girolametto, Hoaken, Weitzman, & Van Leishout, 2000a; Girolametto & Weitzman, 2002; Girolametto, Weitzman, Van Leishout & Duff, 2000b).   Measures of quality and quantity were gathered. Inter-rater reliability was correlated using a second observer at the beginning of data collection. In addition, comparison of individual caregiver interactions with typically developing versus atypically developing children was completed.

Definition of Important Terms

Atypically developing – Exhibiting skills in developmental domains not appropriate to chronological age expectations.

Communicative intent – A toddler uses some form of communication (pointing, vocalizing, gesturing or word) to gain attention, protest, question or comment.

Child care provider/caregiver – Person(s) employed by the facility for the sole purpose of providing physical care and nurturing of the children attending the setting. Physical care/nurturing can include diapering, feeding, keeping safe from harm, holding, rocking, playing with, and providing enriching experiences.

Child care setting – Facilities that provide care for children ranging in age from six weeks through school age. Care is provided/available for varying amounts of time with most being open twelve hours per day.

Indiana First Steps Early Intervention System for Infants and Toddlers with Special Needs – a family-centered, coordinated system providing services to children age 0 to 36 months exhibiting a diagnosed medical or physical condition that has a high probability of resulting in developmental delay, and/or a 25% delay (-2 standard deviations) in one or more developmental domains including cognition, gross motor, fine motor, adaptive skills, communication and social skills, and/or a 20% delay (-1.5 standard deviations) in 2 or more of these areas (Family & Social Services Administration [FSSA], 2011).

National Association for the Education of Young Children (NAEYC) – organization developed to improve the well-being of young children with particular emphasis on the quality of educational/developmental services.

Toddler – A child in the chronological age range of 16-36 months of age.

Typically developing – Meeting developmental milestones at accepted age range.

Utterances – A "natural unit of speech bounded by breaths or pauses, or a complete unit of talk; bounded by the speaker's silence" (Murray et al., 2006, p. 235).

Verbal interaction – A caregiver directs a verbal utterance to a particular child in an attempt to convey information.

Significance of the Problem

The tenets of No Child Left Behind (NCLB) have resulted in increased pressure regarding the education of our children. Those with a vested interest in education have investigated many areas searching for ways to improve the American educational system. The importance of early environments rich in language exposure for young children has been widely explored in literature (NICHD Early Child Care Research Network, 2002; Peisner-Feinberg et al., 2001). Use of oral language by those entrusted with the care of young children has been found to be directly associated with both early and later language development as well as development of literacy skills (NICHD Early Child Care Research Network, 2005; O'Brien & Bi, 1995). In addition, the amount and type of verbal interactions used by adults caring for young children relate directly to the amount and type of language used by toddlers to express their wants and needs (Girolametto & Weitzman, 2002; Girolametto et al., 2000a).This study adds to the growing body of research helping to identify ways in which we can help our young children be ready for the rigors of academic learning and school success.   To ignore our youngest learners, especially those already identified as at risk, is to continue to set the stage for children being "left behind" in the educational system due to inadequate language skills.

Assumption of the Study

During completion of this research, one basic assumption existed:

1. The interactions observed and included in the study were assumed to be typical of the setting.

Limitations of the Study

As inherent in any research study, this study included some limitations. First, due to the sample size, results are not as robust as would be possible with a larger population of participants.

Second, the impact of this study could have been more far reaching by inclusion of additional data too cumbersome for the purpose of this dissertation. Additional data for future consideration might include such aspects as; provider interview/questionnaire to determine communicative skill set, training of providers, SES of participants, and standardized language assessment of all toddler participants.

Third, children and providers included in this study may have been influenced by the presence of the researcher. Even though the researcher was a passive observer during natural routines, participants may have changed the way in which they interacted or responded while the researcher was watching. Data gathered may reflect these changes in behavior and verbal interactions.

Lastly, this study included atypically developing toddlers. The toddlers in this study were not representative of all possible causes of developmental delay. Toddlers with diagnosed speech/language delay were primarily the atypically developing population included. Thus, results cannot be generalized to other populations of diagnosed delay.

Summary

To be successful at school entry, children must possess an existing set of skills and knowledge base. Of critical importance is that of language knowledge and use. Those in

the profession of early childhood education and related fields acknowledge that language

development relies heavily upon the environment, experiences, and significant others

available to children during the early, critical periods. Likewise, those in the profession of

early childhood, as well as related professions, acknowledge that provision of these key

elements is not occurring for many children in our nation. A review of the literature

available supported the need for further research in this area. This study investigated the

nature of verbal communication interactions available to atypically developing toddlers in

a child care setting.

CHAPTER II

LITERATURE REVIEW

Over the past several decades, changes occurring on multiple fronts in the United States have coincided to result in monumental changes in parenting and the realm of early childhood policy and practice. Improving the "nature and nurture" of our young children has received much attention by scientists, researchers, policy makers, educators, related professionals and parents (Shonkoff & Phillips, 2000). "From the time of conception to the first day of kindergarten, development proceeds at a pace exceeding that of any subsequent stage of life" (Shonkoff & Phillips, 2000, p. 4). Advances in brain research, impact of environmental factors including socioeconomic status, parenting and child care, as well as better understanding of skills needed for successful school entry, have all come together to bring to the forefront the needs of young children. The literature reviewed will investigate the area of early language development which is closely linked to the focus of this study.

Language Development/Theories

For many years a multitude of scholars, researchers, developmental psychologists, linguists, philosophers, and other disciplines have invested countless hours, even years, into studying how language is learned/developed. Several varying perspectives have

been proposed as theoretical models to understand this complex ability of young children (Machado, 2007; Otto, 2002).

B. F. Skinner is attributed with the Behaviorist theory (Machado, 2007) which focuses on learning in general but has also been applied to the understanding of how language is learned. This theory suggests that significant others (e.g. parents and main caregivers) exert substantial influence over the quantity and quality of language learning/usage as well as the attitude the child develops about communicating in general. Operant conditioning, according to behaviorism, explains the process of imitation (Otto, 2002). A child's attempt at imitating adult speech is often followed by reinforcement from a significant other. Through this on-going conditioning of responses, language develops. Behaviorists all agree that environment, or nurture, is the critical component of language acquisition, pointing out that differences occur and are explained by the widely varying environments children experience (Hulit & Howard, 2006). Using the contribution of behaviorism, current researchers have focused on exploring the more dynamic processes that take place in varying contexts that serve to support language development with children being viewed as active participants in the construction of their language skills (Otto, 2002).

In comparison, the nativist interpretation focuses on the importance of nature. Nativists emphasize innate human capacities as being responsible for language acquisition and development (Hulit & Howard, 2006, Otto, 2002).   Noam Chomsky, a linguist, is the major contributor to this theory of development. Chomsky theorizes that language is universal among humans and unique to humans due to a powerful inborn drive to communicate (Hulit & Howard, 2006).

Within the nativist perspective, children learn language by discovering the structure of their own language system, making them active participants in learning language. Nativists sometimes refer to this as "hypothesis testing", in which children actually test hypotheses of how language is articulated, used, and manipulated. Supporters of this theory argue that language development is essentially an identical experience for all human beings no matter what language they speak, where they live, or what language models they interact with (Otto, 2002) .

Another theory is that of cognitive interpretation. Within this perspective language develops in relationship to development of cognition. Development of a child's thinking determines when the child can learn to speak as well as what the child can say. Piaget's cognitive theory with its stages of cognitive development underlies much of the tenets of this theory (Hulit & Howard, 2006). Theorists from this perspective view Piaget's sensorimotor period, which extends from birth to two years of age, as critical for speech and language development. Cognitive theorists believe that language itself is not an innate characteristic but the precursors to language development are. Cognitive theorists disagree with behaviorists by believing language is not a learned behavior; rather, that language emerges as a product of cognitive development for the purpose of conceptual representation and manipulation (Hulit & Howard, 2006).

Cognitive theorists point out several correlations between language development and other cognitive behaviors. These correlations include; symbolic play and knowledge that language can represent people, places, things and ideas, problem solving with tools, and importance of imitation both physical and verbal. Theorists from this perspective

indicate that cognitive maturation explains the emergence and development of language (Hulit & Howard, 2006).

Another cognitive theorist, Vygotsky (1986) in his work *Thought and Language,* suggested meaningful social exchanges prepare children for combining thought and speech resulting in inner speech development. He further suggested this inner speech leads to oral communication and is also the basis for written language. Vygotsky believed that during the second year speech begins to support intellectual growth and thoughts are spoken resulting in a major event in which children come to the realization that everything has a name (Otto, 2002).

Unlike Piaget, Vygotsky suggested the main function of language development is to meet social needs (Otto, 2002). He described the role of adults in the child's environment as being crucial in supporting language acquisition. The adult often creates situations in which the child is an effective communicator. Vygotsky coined the term, *zone of proximal development*, to describe the occurrence in which an adult interprets or mediates a child's attempt so as to achieve success (Otto, 2002). This theory stresses the importance of both environment and context in which language is being learned, or the pragmatic aspects of language. Both home and cultural environment are important time bound contexts for language development.

To date, researchers have not been able to come to a consensus regarding a theory of language development. According to some (e.g., Hulit & Howard, 2006), there appears to be a trend towards a more middle ground belief. Researchers (e.g., Gopnik, Meltzoff, & Kuhl, 1999) face multiple challenges in defining what children know at each point and how they learn more which leaves much difficult, scientific work yet undone.

Brain Research

In 2000, The National Academy of Sciences reviewed the science of early

childhood development in *From Neurons to Neighborhoods: The Science of Early*

Childhood Development (Shonkoff & Phillips, 2000). This report indicated that what

happens during the first months and first years of a child's life sets either a strong, sturdy

stage or a weak, fragile one for what is to follow. Advances in brain research in the areas

of neurobiological, behavioral, and social sciences have resulted in greater understanding

of the factors that influence, positively or negatively, the development of young children.

Developmental neurobiologists have determined that "developmental processes of

brain growth are based on the expectation that certain experiences will occur that will

organize and structure essential behavioral systems" (Shonkoff & Phillips, 2000, p. 54). It

is estimated that at birth each neuron contained in the cerebral cortex has approximately

2,500 synapses with the number of synapses peaking at two to three years of age, when

there are about 15,000 per neuron (Machado, 2007). New experiences, particularly at the

formative ages of a few months to five years, are needed for "triggering" brain growth

and refinement of existing structures of the brain. These "experience-dependent"

developments are unique to the human brain and reflect special adaptability and plasticity

that are lifelong attributes (Nelson, 1999).

Many scientists now believe that during the first few years of childhood there are a

number of sensitive periods when the brain demands certain types of information to

create or stabilize various longer lasting connections (Nash, 1997; National Scientific

Council on the Developing Child, 2007). Some researchers suggest that if a child does

not receive the necessary amount and type of stimulation during these critical windows of

opportunity, deficits will occur (e.g., Acredolo & Goodwyn, 2000). The neurobiological

literature refers to these windows of opportunity as "critical periods" or "plastic periods"

(Shore, 1997). For young children, environment and availability of appropriate

experiences at the right developmental stage are critical elements that determine the

relative strength or weakness of the "brain's architecture" (National Scientific Council on

the Developing Child, 2007b).

Recent findings have correlated with the early, classic works of such theorists as

Piaget and Vygotsky as well as more recent contributors such as Bruner (1981, 1983) and

Brazelton and Cramer (1990). Findings have revealed that what occurs in the early years

is both powerful and vulnerable. The "first two years mark an important period of brain

development during which the density of short-range synaptic connections reaches its

peak" (National Institute of Child Health and Human Development Early Child Care

Research Network, 2000, p. 960). Connections during this critical period are created

based upon input available from the environment. Three factors explain the increased

flexibility of a developing brain (National Scientific Council on the Developing Child,

2007b). First, initially the brain develops many more "connections" than it ultimately

needs for optimal functioning. The extra, unneeded, connections are eventually "pruned"

away over time. Second, the brain's ability to form new connections and eliminate those

that are incorrect is most powerful in a maturing brain. Finally, the flexibility of the early

formed circuits allows for shaping and restructuring. Once a particular neural pattern is

firmly established, it is most difficult for new and different experiences to make a change.

These features of a developing brain indicate that early experiences have a huge impact.

This knowledge of the importance of neural plasticity and the impact of early experiences unfortunately has far reaching negative aspects as well. A developing brain is highly susceptible to adverse conditions as well as positive conditions. These adverse conditions may include a deficit in a sensory system such as vision or hearing, neglect, abuse, low quality experiences, etc., which may, if left unresolved or unassisted, result in life-long neural and developmental issues (National Scientific Council on the Developing Child, 2007b).

During the first two years of neural development, the groundwork or neural architecture is forming for one essential element of language, vocabulary development. Basic understandings occurring during the infant-toddler period underlie symbol knowledge which is the basis of later school learning and abstract thinking in later years (Bloom, 2000). Thus, verbal and cognitive stimulation and experiences by significant others, including caregivers, in the first two years of life may have pronounced impact on later development of language and cognitive competence (Society for Research in Child Development, Inc., 2000).

Amazingly, most infants come into this world primed, ready, and eager for learning. They exhibit astounding innate capabilities to learn skills in a variety of domains. Of utmost importance is their inner desire to communicate. The quality of a child's life is dependent, to a great extent, on his/her ability to communicate (Apel & Masterson, 2001). Language permeates all experiences. Communication with care-giving adults is of paramount importance at birth and beyond. This communicative relationship is essential for emotional and cognitive growth and development for any young child. This skill remains important across the lifespan.

Infants communicate on their first day with a cry that quickly develops into differentiated cries and vocalizations that caregivers can interpret and respond to accordingly, thus resulting in a reciprocal, communicative exchange (Apel & Masterson, 2001).   Around the time a child celebrates his/her first birthday a first word emerges. This first word is met with much excitement and reinforcement by significant others in the child's world thus resulting in more single words quickly following the first. By the fourth birthday, almost all children are speaking in complete, mostly adult-like sentences. This rapidly expanding language ability connects them with others in their world, helps them to control their behavior, and enables them to take in a limitless amount of information. In addition, it provides the basis for literacy skills, success in school, emotional intelligence and life success (Bardige, 2005).

Lack of Language Development

As described in the previous section, language learning is deeply embedded in the early years. Many children are fortunate and develop adult-like language competence with ease by age five. Unfortunately, many other children do not. As explained in more detail in a later section, children from lower SES situations are at risk for below age-level language skills upon school entry. In addition, children with varying medical and developmental conditions are significantly at risk for below age level language skills.

According to Indiana's Family and Social Service Administration (2008) 9,014 children were served in 2007 through First Steps, Indiana's early intervention program for children birth to three years of age. Of the total served, 49% received speech and

language intervention. Speech and language delay accounted for almost half of the children identified as in need of early intervention services.

Language impairment has been identified as the most common form of childhood disability with prevalence in preschool age children estimated to be 7.6% (Webster et al., 2006). In addition, statistics also indicate over half of the children served in mental health clinics throughout the United States have a language delay/impairment (Rescorla, Ross, & McClure, 2007). Nationally, researchers estimate that approximately one third of children entering kindergarten exhibit below age level skills in critical areas of language development (Lee & Burkham, 2002).

These statistics help to explain the enormity of language delay evident in our nation's young children. The numbers alone do not begin to describe the manner in which language delays impact other areas of development and academic readiness. Rescorla et al. (2007) have researched one area related to language delay – that of "comorbidity" of language delay and behavioral/emotional problems in both toddlers and preschoolers. Their research indicated very little "comorbidity" for toddlers but increased manifestation of emotional/behavioral problems in preschool age children. Rescorla et al. (2007) hypothesized that preschoolers who are unable to communicate effectively through language may develop negative behaviors such as withdrawal, anxiety and/or aggression. They further contend that intervention in a proactive manner at the toddler stage could prevent manifestation of negative behaviors in preschoolers.

Other researchers (Briggs-Gowan & Carter, 2002; Tervo, 2007) have supported the connection of language delay to social-emotional problems. These researchers investigated expressive language delays specifically. Results indicated that toddlers

exhibiting delays in expressive language skills were more likely to exhibit social-emotional difficulties that were manifested in depression/withdrawal, difficulty in social relatedness, and difficulty engaging in pretend play/imitation with overall less interest in play.

Societal Impact

Many societal aspects and changes have been identified as playing an integral part in the "nature and nurture" of young learners, specifically that of language development. One such aspect examined for decades is that of socioeconomic status (SES). Early childhood researchers have begun to look more closely at how SES impacts developing children by isolating those components that contribute most to early school success or failure. Of particular importance is that of SES and language competence of young learners.

Hart and Risley (1995) followed the language experiences and vocabulary development/size of forty-two children in three groups. The three groups included children whose mothers received public assistance, children from working families with low to moderate incomes, and children from professional families. Differences in the size of the children's vocabularies were statistically significant at eighteen months of age and continued to grow until thirty-six months of age. Children from the highest income families were found to have vocabularies twice as large as those from the lowest income families. By age four, the children in the professional families would have heard an average of fifty million words, while those in working class families would have heard an

average of thirty million words that decreased to fifteen million for the children from families receiving public assistance.

Hart and Risley (1999), in their subsequent book, investigated why these differences occur. They reported that in homes across the economic spectrum parents use mostly the same amount of talk directed towards completing routine tasks of family life, including behavior management. The differences were found in the amount of "optional" talk occurring when parent and children played together or conversed as they engaged in parallel tasks. In homes rich in language, parents and children were found to be "partners in play" in which parents supplemented their routine interactions with playful conversations. In these more talkative families, toddlers were hearing and practicing more varied and complex language. As the children increased in knowledge and communicative skill, parents responded with increasingly complex information-rich language, forming a "dance of communication" resulting in a rapid learning pace.

Snow (cited in Dickinson & Tabors, 2001), conducted an observational study in which she recorded the conversations of low-income toddlers and preschoolers at home and at child-care programs. She continued to collect data while the children were in school and analyzed learning outcomes. Her findings revealed that children who as preschoolers engaged with adults in more decontextualized conversations (talk that included references to past, future and imagined events) did better on reading comprehension tests through sixth grade. Results also indicated a large vocabulary at school entry is a strong indicator of later success.

Goleman (1995) provided a summary of research on the development and critical importance of social and emotional competence in children. Deeply embedded in the

development of social and emotional skills in children is the use of words. Children cannot effectively and competently gain emotional control, resolve conflicts, or use social problem-solving techniques without the words or language to do so. Children without the ability to ask for what they want or need without whining, convince a playmate to share instead of grabbing, negotiate instead of hitting, or talk themselves through challenges do not have a strong basis on which to continue to develop skills, making them vulnerable or at-risk for weak social and emotional skills negatively impacting school success.

Hoff (2003) reported family SES is "a powerful predictor of many aspects of child development" (p. 1368). The focus of current research has been to identify the "pathways" by which SES wields such a significant impact (Shonkoff & Phillips, 2000; Linver, Brooks-Gunn, & Kohen, 2002). Early language development, particularly vocabulary development, has been linked to both SES and early school success. In her investigation of SES and vocabulary development, Hoff (2003) researched "the mechanism by which SES influences children's productive vocabulary development" (p.1373). Hoff conducted observations of naturalistic interactions between high SES and mid SES mothers and their two-year-old children. Transcripts were utilized to estimate growth in productive vocabularies between two visits, ten weeks apart. Her results indicated high SES children's productive vocabularies exhibited a higher growth rate and reported that differences were due to differences in maternal speech.

Societal changes over the last few decades have resulted in more working mothers to accommodate the rising cost of raising a family. Increasingly, mothers have entered the workforce when their children are young. Working mothers have become the norm across all social classes. Even those mothers who "could afford to stay home" (Bardige,

2005, p. 103), have opted to return to the workforce due to increased opportunities. In addition, longer work weeks and higher divorce rates, single parent families, and teen parenthood have combined to increase the use of child care for our youngest children. Children are spending less time with their parents, forcing parents to become increasingly more reliant on others during the critical language learning years (Bardige, 2005).

Trends in children entering day care indicate a move towards entry into non-maternal care at a younger age – often as young as six weeks. In 1990, over half of the infants under one year of age received regular care by someone other than a parent (Burchinal et al., 2000). In 2005, 60% of children age zero – six years, about 12 million, received child care from someone other than a parent on a regular basis in the United States (Forum on Child and Family Statistics, 2007). According to a U.S. Census Bureau press release of February, 2008, 89% of children under the age of five with an employed mother were in some form of regular child care. Over 30% of these children were cared for in a center-based facility such as a day care center, nursery school or preschool (U.S. Census Bureau News, 2008). The National Institute of Child Health and Human Development Early Child Care Research Network (2000) followed 1,391 children in a ten-site representative, longitudinal sample from birth to age three and shared findings with Congress. Findings indicated most children begin child care very early in infancy for extensive hours and with multiple caregivers. Most children were found to be in child care by four months of age and averaged 33 hours of care per week during their first year.

Child Care and Center-Based Care

With the increased use of center-based child care in the United States, researchers

have looked more closely at who is actually providing this center-based care. According

to the Bureau of Labor Statistics (2008), child care is one of the fastest growing industries

in the United States. Positions in the child care industry are projected to grow about 34%

in the next few years.   Centers operate independently or as part of a national or local

company, with many centers operating for 12 hours per day and a few providing 24 hour

services. In 2006, child care services provided 807,000 wage and salary positions with

80% of centers employing fewer than 20 workers. The median age of child care

providers was 38 with about 21% of workers under age 24. On average, 42% of care

providers have a high school diploma or less which reflects required minimal training for

most jobs in the industry. In 2006, the average hourly salary for a nonsupervisory worker

in the child care industry was $10.53 with a weekly earnings of approximately $316. As

indicated in "talking points" provided by the Bureau of Labor Statistics (2008), frequent

job openings due to overall dissatisfaction with pay and benefits as well as stressful

conditions result in high turn-over.

According to the 2005 Indiana Child Care Workforce Study, more than half of

center-based providers reported little more than a high school diploma and are

responsible for caring for over 115,000 children daily across the state with the median

pay reported at $7.95/hour. Only 11% of center-based providers reported having an

associate's degree or above. Turnover rate for full-time "teachers" was reported to be at

26% annually. Statistics for Indiana match the national averages and suggest, despite

research that indicates the learning and development of our young children depend on the

educational qualifications of their care providers; our society has been slow to make positive changes in the care and nurturing or our youngest children (Indiana Child Care Work Force Study, 2005).

Quality of Child Care/Relationships to Development of Language

The societal changes in how young children are being raised in our country have resulted in major controversy among professionals regarding the impact of such early non-maternal, group care on the development of very young children (Burchinal et al. 2000). This controversy has led to research that suggests a connection between quality of child care and impact on development – particularly language and cognition important for school readiness and success.

A body of research exists linking children's language development with the quality of child-care environments. Quality of child care is directly linked to several general factors: Bardige (2005) indicated teachers' training and education, the staff/child ratio and the level of compensation the staff receives as key factors. Others refer to an "iron triangle" when considering indicators of quality related to child care programs (e.g., Vernon-Feagans, Hurley, Yount, Wambolt, & Kolak, 2007). The "iron triangle" is formed by the number of children in the classroom, the education level of the teacher, and the child-to-caregiver ratio. Vernon-Feagans and colleagues (2007) examined data from three child care sites related to the indicators of quality and found children in higher quality centers significantly outperformed peers in lower quality centers with a greater difference occurring over time particularly in the area of vocabulary. Investigators rate fewer than half of the settings for children in their formative years, ages two and three, as

characterized by "positive caregiving" or "developmentally appropriate" care (Bardige, 2005, p. 19).

One of the most important indicators of quality care is the extent to which child care providers receive training in child development, including language development (Doherty, Lero, Goelman, Tougas, & LaGrange, 2000). Those providers with specialized training are more likely to provide the responsive social contexts necessary for language learning. In contrast, those providers lacking in specialized training of this nature are more likely to be directive in their interactions with young children (Arnett, 1989; Doherty et al,, 2000). Directive interactions include those that control behavior, call attention, or issue commands. Language input that is responsive to the topics of the child's own choosing is more likely to provide the motivation necessary for children to both attend and learn from adult language models (Girolametto, et al., 2000; Rocissano & Yatchmink, 1993; Tennant, McNaughton, & Glynn, 1988).

Interactions between children and caregivers have long been acknowledged as important to both cognitive and language development (Bloom, 1991; Bronstein & Bruner, 1989). The National Institute of Child Health and Human Development Early Child Care Research Network (2000) published a report based upon children from 10 sites in the United States who were followed from birth to age three to investigate how experiences in child care relate to both cognitive and language development. This study included a variety of assessments of family and child care environments along with cognitive and language competence. Results of this large scale study indicated that quality of child care directly impacted both cognitive and language performance. Provider ratings of responsivity and sensitivity were related to cognitive and language

outcomes throughout the first three years of life. Frequency of language stimulation was found to be an especially critical element of care giving during the first two years of life. The researchers concluded that quality of child care was a consistent predictor of both language and cognitive development for children under age three.

In addition, other important features of the child-teacher dynamic that contribute to language development have been identified. Rudd, Cain, and Saxon (2008) reported joint attention to be of importance. Joint attention refers to the process of sharing one's experience of looking at or observing an object or event, by following an eye gaze or point. In their treatment group, toddlers whose care provider engaged in joint attention with more frequency and duration, acquired more language.   Levels of noise in child care centers have also been found to be an important consideration with regard to language development. Newman (2005) reported background noise levels in some centers can interfere with language development in children younger than 13 months. Very young children learn to speak by being spoken to yet have difficulty discriminating voices from even mild levels of background noise.

Research similar to the question specific to this study has been conducted. Many researchers have described teacher's child directed talk as being overly directive and unresponsive (e.g., Cicognani & Zani, 1992; Pellegrino & Scopesi, 1990; Polyzoi, 1997). Girolametto et al. (2000a) investigated three types of directives used by child care providers during two context related interactions (book sharing and play-doh activity) with toddlers and preschoolers. These three types included behavior control, response control, and conversational control. The researchers collected data on language modeling interactions as a source for comparison. Results indicated care provider input that

controls behavior and limits turn-taking is associated with restricted and less language use by the children and in contrast, conversational control resulted in the greatest amount of talk by the children as well as more diverse vocabulary and more complex language structures.

Girolametto and Weitzman (2002) investigated the language input and responsiveness of 26 child care providers working in center-based programs with toddlers and preschoolers. Results indicated providers used more labeling with toddlers and more topic extensions with preschoolers and that responsiveness of providers was highly dependent upon the context or activity. Results further indicated that with toddlers, interaction promoting strategies were positively related to toddlers' production of language. Interaction promoting responses were those that engage children in extended conversations and include questions to encourage turn-taking. Responsiveness was also studied by Honig and Wittmer (1982). They found that toddlers sought caregiver help or attention by approaching teachers and that these communication attempts were ignored or negatively responded to one-third of the time.

Lastly, Girolametto et al. (2000a) investigated language input of child care providers to children with identified developmental delay, including delay in language development, and found language input directed towards the subjects was directive in nature and not "finely tuned" to their expressive levels. These findings would suggest that even though providers have awareness of specific areas of delay, appropriate modifications in interaction to promote development of specific skills are not occurring. Research specific to verbal interactions for atypically developing children in child care is significantly lacking in the literature.

As presented in this review of literature, some aspects of the nature of communication interactions with toddlers in day care settings have been investigated. However, more research is needed to further determine the necessary experiences and nurturing all of our youngest learners require to begin school with the skills necessary for learning. The purpose of this study was to identify and analyze characteristics of verbal interactions with typical and atypically developing toddlers in child care settings to further contribute to the growing body of research striving to make a difference in the academic success of our children.

CHAPTER III

RESEARCH METHODOLOGY

Restatement of Purpose

Not all children begin school with the requisite readiness skills for learning, particularly in the area of language competence. The primary purpose of this study was to investigate the verbal interactions of toddlers and providers in a child care setting. In recent years, researchers have reported limited language competence in today's youngest learners (e.g., Bardige, 2005; Hart & Risley, 1995; Wertheimer & Croan, 2003) and have suggested less than optimal language stimulation may be occurring in child care centers (Girolametto & Weitzman, 2002; Peisner-Feinberg et al., 2001). This chapter describes the investigation and includes a description of the participants, design/procedures of the study, methods for dealing with validity and reliability, as well as data analysis in response to the research question. Of particular importance to this researcher was the following question:

Do differences exist in the verbal interactions of child care providers with typically developing toddlers vs. atypically developing toddlers?

Hypothesis # 1 – No differences in either frequency or type of interactions by child care providers will be evident between typically and atypically developing toddlers.

Recruitment of Participants

Four child care facilities offering classes for toddlers ages 16 -36 months located within a full-time, early education program with childcare services for children 16 months to five years of age in two cities in the Central Indiana area were utilized as sites for this study. All four facilities selected were fully accredited by the National Association for the Education of Young Children (NAEYC). The researcher made initial contact with each director via email. In the initial email, the researcher briefly discussed the nature of the study. When the site directors indicated a willingness to participate, the principal investigator arranged a face-to-face meeting to provide appropriate consent forms for all directors (see Appendix A), parents/children in targeted classrooms (see Appendix B), and care providers in targeted classrooms (see Appendix C). It is important to note that the care providers were given no specific direction regarding the purpose of the observations. The site directors were then responsible for distributing the consent forms to appropriate individuals. All consent forms included a brief description of the study and an explanation of the rights of children and parents as participants. The researcher gathered the completed consent forms from the site directors after allowing for an approximate two week period for completion/return.

Participants

Two groups of participants were recruited for this study from four child care centers in the greater Muncie and Indianapolis areas. For the first group, child care providers, a total of 45 consents were returned (Site C=7, Site D = 7, Site E = 15 and Site F =16). For the second group, toddlers, a total of 111 parental/child consent forms were returned (Site C = 16, Site D = 23, Site E = 28 and Site F = 44).

All 111 children with returned consent forms were included as *potential* subjects

for the study. For the purposes of this study, participating toddlers were divided into two

groups by the primary investigator –typically developing and atypically developing. Ten

children were placed into the atypical group. These ten children were designated as such

based upon a diagnosis of developmental delay in one or more of the six developmental

domains utilized by First Steps, Inc. of Indiana. These domains include; gross motor,

fine motor, adaptive, cognition, communication and social. All ten children were

receiving services from First Steps providers.   These criteria were affirmed by either the

child's care provider or the director of the center. Only 10 children were actually

included in the study despite the fact that more atypically developing children were

identified at the beginning of the study (approximately 15) due to poor attendance or

families moving.   The remaining 101 children were placed in a pool for random

selection as typically developing toddlers. For the study, 26 typically developing toddlers

were randomly selected for inclusion by use of a random number generator

(www.statrek.com/Tables/Random.aspex). This number was determined based upon

availability of children during the observation times completed by the researcher.

Child care providers who submitted consent forms and who worked directly with

the children during the observations were included if they verbally interacted with the

target child during the observation. It is important to note that the child care providers

were not appraised of the true nature of the study. They were informed in their consent

form that the researcher was interested in learning more about child language and would

be observing verbal interactions occurring naturally in the classroom. A total of 23 child

care providers were included. Several providers were not included due to the fact that

they did not interact with the targeted children at the time of observation, ceased

employment at the center, or were moved to another classroom not included in the age

range for this study. Demographic data regarding years of experience and education was

collected (Appendix G) Providers varied in years of experience ranging from one year to

16 years. In addition, they varied in education. Some had not completed a degree in any

field while others had completed associate degrees in early childhood or bachelor's

degrees in related fields. A few held advanced degrees in fields not related to early

childhood.

At child care center "C" two classrooms were utilized for recruitment of

participants. Classrooms were similar in physical arrangement in that the care space was

contained to one room arranged with floor space for play, a gross motor area and an area

with toddler size tables and chairs. Each room also contained an area for diapering and

hand washing. In room one, two teachers, four typical toddlers and two toddlers

developing atypically were included in the data collection. On average, seven children

and one "lead teacher" were in attendance each day. In room two of center "C", one

teacher, three typical toddlers and two toddlers developing atypically were included. As

with room one, seven children and one "lead teacher" were present on average.

Observation times coincided with free play, craft time and snack time.

At child care center "D", one classroom was utilized for recruitment. This

classroom was much larger in size and had an average daily attendance of 13 children

with one "lead" teacher and several assistants. The primary role of the assistants was to

assist the "lead" teacher in execution of activities, preparation of snack/lunch and for

diapering/toileting. Centers throughout the classroom included a story/music corner,

tables/chairs for crafts and snacks/meals, block tables, pretend play areas, and a diaper changing area. Observation times coincided with circle time, free play and outside/gross motor time. Two care providers, five typical toddlers and one toddler developing atypically were utilized for the study.

Child care center "E" provided four classrooms of toddlers for recruitment. Classrooms were similar in size and design to that of center "D". In the first room, two typical children and one teacher were included. In the second room, one typical toddler and one toddler developing atypically as well as two care providers were included in the data. From the third room, one toddler developing atypically and two care providers were included. In the fourth room one care provider and two typical toddlers were included. On average, 8-10 children were present each day along with at least one care provider and assistants. Assistants helped with activity set-up, diapering/toileting and snack time.

Child care center "F" provided three classrooms of potential subjects. Classrooms were smaller in size, much like center "C" and on average provided care for 8-12 children with varying numbers of teachers and assistants each day. In room one, two typical toddlers and two toddlers developing atypically along with five care providers were included. In room two, four typical toddlers, one toddler with atypical development, and three care providers were included. In room three, three typical and one toddler developing atypically were included with three care providers.

Across all four centers, the daily routine was very similar. All included the routines of free play, story/song time, outside/gross motor play, circle time, fine motor/craft time, diaper time, snack/lunch and nap. Most played music in the

background throughout the day, even when other routines were occurring. Throughout the observational time at each center the primary care providers remained relatively stable. This was not the case for the assistants which fluctuated on a daily, sometimes hourly, basis from room to room.

Role of the Researcher

Both language development and language competence were of interest to the researcher. In order to best gather information essential to the research question, the primary investigator assumed the role of limited participant observer. Twice, the researcher visited each classroom with the intent of allowing the toddlers and child care providers to become familiar with her presence. No data other than those having to do with classroom routines, setting, and casual observations were gathered during these initial visits. Due to the inquisitive nature of children, the researcher initially interacted with the children when approached and with providers on a limited, casual basis to establish acceptance/rapport, thus the role of limited participant. Care providers were informed of the researcher's interest in child language development both verbally by the researcher and in written form in the consent they were given.

Research Design/Procedures

The research design selected for this study was direct observation. The purpose of direct observation is to determine the extent to which select behaviors of interest to the researcher are present using a "systematic procedure for identifying, categorizing, and recording behavior in either a natural or a contrive situation) (Ary, Jacobs & Razavich,

2002, p. 233). Coding systems are utilized in direct observational studies to categorize and count behaviors as they occur. The coding system utilized in this study is explained further in chapter four.

Following the initial visits for establishment of rapport and understanding of classroom routine, the primary investigator, along with a second, trained observer (Licensed Speech Language Pathologist skilled in the area of child language/development) conducted four visits for the purpose of establishing inter-rater reliability. Both researchers sat off to the side of the classroom yet close enough to hear and record what the care provider said to the target child. Utterances said by the provider were transcribed live. Following the observation, utterances transcribed by both researchers were compared for accuracy of transcription. Each researcher then independently coded the utterances and interrater reliability was determined. Reliability in this case refers to the extent to which findings can be replicated by others interested in the research question. An existing system of coding verbal interactions developed and utilized by previous researchers (Girolametto et al., 2000a) was adopted which contributed to reliability; however, reliability was strengthened by inclusion of inter-rater reliability (consistency of two or more independent scorers/raters, Borg & Gall, 1983). The first two observations were utilized for training purposes. Coded observations from each observer gathered during the next two visits were compared. Reliability was determined to be 84% which, according to Borg and Gall indicates an acceptable level of inter-rater reliability where 79-80% agreement is usually considered satisfactory.

Additional means to strengthen the integrity of this study were also included. First,

the researcher utilized a similar system for coding from existing research which included

a method for coding verbal interactions in child care (Bardige, 2005; Girolametto &

Weitzman, 2002; Girolametto, et al, 2000a; Girolametto, et al, 2000b; Murray et al.,

2006) as a guide for designing further inquiry into the research question. In addition, use

of facilities accredited by the National Association for the Education of Young Children

(NAEYC) using developmentally appropriate practices further strengthened the external

validity of this study. Accredited facilities must meet and maintain a set of standards

developed by the organization as best practice. All four centers were fully accredited.

During observation, the researcher sat near the naturally occurring routine, close

enough to hear utterances directed to all children but was not included within the activity

itself. Utterances were transcribed live. Utterances used as data during observations were

assigned one code immediately following each observation. Codes were utilized for

designation of 13 recognized forms of verbal utterances (See Appendix D). This coding

system was utilized consistently throughout the data collection phase. The primary

investigator conducted observations across 26 visits to gather the data. Observations

lasted 25-45 minutes in length dependent upon the nature of the activity being observed

and the interactions available for coding (See Appendices E and F for sample of

observation data).

For purposes of identification, toddlers were assigned and identified by a number.

Child care providers were assigned and identified by a letter. Observations were

conducted at varying times during classroom routines in which children and providers

had an increased chance of verbal interactions. For example, snack time and transition to

nap time were not selected as activities that would have an increased chance of verbal

interactions. Classroom routines varied and included such activities as; free play, gross motor activities, circle time, and story/song time.

<div style="text-align:center">Statistical Analysis of the Data</div>

The data analyzed in this study included frequency counts. Statistical analyses appropriate for dependent variables (frequency counts) which are also low in number include the models of Poisson regression and negative binomial model. These analyses are appropriate for rate data where rate is a count of events occurring during a particular unit of observation. The statistical procedures and results will be presented in detail in the following chapter along with notable patterns evident.

CHAPTER IV

RESULTS

In this chapter, the data collected during direct observations as well as a description

of the analyses performed and the accompanying results will be reported. The purpose of

this study was to explore the verbal interactions of child care providers occurring with

children developing typically and those developing atypically in child care settings.

Research Question:

Do differences exist in the verbal interactions of child care providers with typically

developing toddlers vs. atypically developing toddlers?

Hypothesis:

No differences in frequency and type of responses by child care providers will be evident

between typically and atypically developing toddlers.

Data Collection and Coding Specifications

The coding system used in this study was based upon one utilized in previous

research (Girolametto et al., 2000a). Child care providers included in the study were

informed, via the consent form, that the researcher was interested in learning more about

child language and would be using codes to describe the language occurring within the

classroom.   Each utterance spoken to the targeted toddler during the observation period

was assigned one code. Codes were utilized for designation of 13 recognized forms of

verbal utterances. These 13 forms were broadly categorized into three main types

dependent upon the facilitative role attributed to the utterance. The first form was that of directives and included the utterances of behavior control, attention call, commands, yes/no directives and test questions. A sampling of each type of directive noted during data collection is included in Table 1.

Table 1

Directive Utterances - Sample

Behavior Control	(Child's name), Stop!
	Too rough – be gentle!
Attention Call	Here, (child's name)
	Hey, (child's name)
	Ready, (child's name)?
	(Child's name), let go.
Commands	Walk away, please.
	Sit down.
	Come here.
Yes/No Directive	Can you get it?
	Want to put it on the table?
	Gotta go potty?
Test Questions	What color is this?
	What color's that block?

The second form, interaction promoting, included WH questions, Yes/No conversational questions, and clarification. Table 2 provides examples of interaction promoting comments obtained during data collection.

Table 2

Interaction Promoting Utterances - Sample

WH Questions	What do you want?
	What did you bring for lunch?
	Where are you going?
Yes/No Conversational Questions	Do you like it?
	Are you going to the grocery store?
	Can you tell what I'm painting?
Clarification	Was something in your way?
	You think (child's name) did it?

The third form, language modeling, included imitation, labels, recasts, comments and other utterances (praise, reinforcement, etc.). Table 3 provides examples gathered during data collection for each.

Table 3

Language Modeling Utterances - Sample

Imitation	Only imitation of "sounds" such as laughter was observed
Labels	It is a giraffe.
	You see daisies
	Little ones.
Recasts	None observed
Comments	There you go!
	Bounce!
	You have purple.
Other-Praise/Reinforcement	Good job, (child's name)!
	Great job!
	There you go!

The data gathered at each of four child care settings were analyzed using Statistical Analysis Software 9.1 (SAS 9.1) to address the research question pertinent to this study. Data were gathered during a total of 26 visits and included 36 toddlers and 23 child care providers. Coded utterances were the primary focus of data analysis. Descriptive statistics were utilized to describe and summarize the properties inherent in the data collected.

Analysis of Data

Hypothesis:

No differences in frequency and type of interactions by child care providers will be evident between typically and atypically developing toddlers.

One statistical model of data analysis appropriate to use when the data to be analyzed involve low frequency counts and also involve a relatively small sample size, or in other words, a low frequency count or infrequently occurring events, is that of Poisson regression. One important assumption in using Poisson regression is that the population mean equals population variance. To assess model fit when using Poisson regression, deviance and Pearson Chi-square are utilized. Good model fit occurs when deviance/DF or χ^2/DF is close to 1. A larger value means that the model does not predict the frequency of occurrence well and thus represents a poor model fit. As shown in Table 4, the value of deviance/DF and χ^2/DF for all three dependent variables, directives, interaction-promoting, and language modeling, were all above 4, indicating overly dispersed data for all three dependent variables. Therefore, the results of Poisson regression, although showing significant group differences, were not reliable.

Table 4

Model Fit Statistics for Each of the Three Dependent Variables Using Poisson Regression

Dependent Variables	Deviance/DF	Pearson Chi-Square/DF
Directives	4.76	4.82
Interaction-Promoting	5.69	6.85
Language-Modeling	5.99	6.04

In the case of overly dispersed data for a small sample size, the appropriate statistical analysis to use is that of negative binomial regression. As shown in Table 5, the value of deviance/DF and χ^2/DF for all three dependent variables were around 1. This indicated a good model fit and that negative binomial regression was appropriate for data analysis for this study.

Table 5

Model Fit Statistics for Each of the Three Dependent Variables Using Negative Binomial Regression

Dependent Variables	deviance/DF	Pearson Chi-square/DF
Directives	1.10	1.02
Interaction-Promoting	1.18	1.17
Language-Modeling	1.21	0.97

Results in Table 6 below indicate results of the negative binomial regression analysis. For analysis alpha level was set at .05 and compared to *p*-values.

Table 6

Analysis of Parameter Estimates Using Negative Binomial Regression

Dependent Variables	Parameter	df	Estimate	Standard Error	Chi-Square	p-value
Directives	Group	1	0.21	0.23	0.82	0.37
Interaction-Promoting	Group	1	0.04	0.41	0.01	0.92
Language-Modeling	Group	1	0.48	0.31	2.34	0.13

The results indicated no significant group differences of interactions with care providers between typical toddlers and atypical toddlers in terms of the frequency of occurrence of directives, *p*=.37, α=.05, ns; interaction-promoting , *p*=.92, α=.05, ns; and language modeling, *p*=.13, α=.05, ns.

An additional statistical analysis was completed to further analyze the data in terms of potential differences in frequency of interactions for both groups of toddlers.   A comparison of means including standard deviation appears in Table 7. Results of this comparison indicate that atypical toddlers received more interaction from their care providers in all three dependent variables; however, there was no statistical significance

Table 7

Means and Standard Deviations

Variables	Atypical M	Atypical SD	Typical M	Typical SD
Directives	13.60	8.24	11.00	7.23
Interaction-Promoting	5.00	4.45	4.81	6.16
Language-Modeling	11.40	10.65	7.04	5.71

The results of the negative binomial regression indicated no significant group differences in the nature of verbal interactions of child care providers between toddlers developing typically and toddlers developing atypically. Results support the hypothesis made by the researcher. Results also support prior research investigating language input of child care providers with children with identified developmental delay which reported utterances that were directive and not "finely tuned" to expressive levels (Girolametto et al., 2000a). In addition, Girolametto et al., in their research with preschool age children found a pattern of increased use of directives for those with developmental/language delay.

In addition to the statistical data described, occurrence rates of interaction types used with all children are presented in Table 8.

Table 8

Occurrence Rates of Interaction Types

Type	Total	Typical	Atypical
Directives	433	297 (68.5%)	136 (31.4%)
Interaction-Promoting	178	128　(71.9%)	50 (28%)
Language-Modeling	304	190 (62.5%)	114 (37.5%)

Directives were previously identified in this analysis as the predominant form of

interaction used with all children while interaction –promoting interactions occurred least

in the natural routines observed. Totals included in Table 8 indicate that a directive form

of interaction occurred over twice as frequently as interaction-promoting interactions.

Table 9 provides a further break-down of the frequency of occurrence for each of the 13

forms of utterances that were coded throughout the study. This table includes percentage

of occurrence by type and percentage of occurrence related to total number of utterances

(915). Results of this study support the work of previous researchers (Cicognani & Zani,

1992; Girolametto et al., 2000a; Pellegrino & Scopesi, 1990; and Polyzoi, 1997) who

reported care providers speech directed to children as overly directive in nature.

Table 9

Occurrence Rates of All Interaction Types with All Children

Type	Total	% By Type	% of Total
Directive-Behavior Control	62	14.3%	6.7%
Directive-Attention Call	131	30.2%	14.3%
Directive-Command	176	40.6%	19.2%
Directive-Yes/No Directive	52	12%	5.6%
Directive-Test Question	12	2.7%	1.3%
Interaction Promoting –WH ?	71	39.8%	7.7%
Interaction Promoting-Yes/No Conversation	60	33.7%	6.5%
Interaction Promoting –Clarification	47	26.4%	5.1%
Interaction Promoting –Clarification Question	0	0%	0%
Language Modeling-Imitation	3	.09%	.03%
Language Modeling-Labels	31	10.1%	.33%
Language Modeling-Recast	4	1.3%	.04%
Language Modeling-Comment	177	58.2%	19.3%
Language Modeling-Other(praise, reinforcement)	89	29.2%	9.7%

Additional Analysis

Lastly, the researcher was interested to know more about the providers in

relationship to utterance type used – specifically related to degree type and years of

experience (Appendix G). To complete the analysis related to degree, providers were

placed into two distinct groups. Group one included all providers with a degree in Early

Childhood (EC), a Child Development Associate's degree (CDA) or a degree in a related

field that pertained to child development. (N =12). Group two included all other

providers (N =11). Some toddlers had more than one provider interacting verbally with

him/her during the observation time. In this case, the provider who interacted the most

was selected for analysis. Table 10 depicts means and standard deviations related to the

three broad types of utterances related to the two degree groups.

Table 10

Providers' Degree Means and Standard Deviations

Variables	EC/CDA	EC/CDA	OTHERS	OTHERS
	M	SD	M	SD
Directives	10.08	8.67	12.54`	6.89
Interaction-Promoting	5.25	6.08	4.67	5.59
Language-Modeling	5.50	4.01	9.63	6.45

A negative binomial regression analysis was again selected to analyze the data in regard

to degree type. First, model fit statistics for each of the three dependent variables of

directives, interaction-promoting, and language modeling and providers' degrees were determined. Table 11 provides these results indicating that a negative binomial model would be appropriate to use for analysis based upon the Chi-square values approximating the value of one.

Table 11

Model Fit Statistics for Providers' Degrees and the Three Dependent Variables

Providers Degrees	deviance/DF	Pearson Chi-square/DF
Directives	1.10	1.09
Interaction promoting	1.18	1.16
Language modeling	1.2	0.97

For the negative binomial analysis, alpha level was again set at .05. The results indicated no significant difference between degree groups for the utterance types of directives (p=.34) or interaction promoting (p=.76). However, the significance was found to be marginal for the occurrence of language modeling utterances (p=.07). This marginal significance indicates language modeling techniques were used less frequently by providers in Group one, providers with a degree in Early Childhood or a related discipline. Table 12 provides results of the negative binomial regression related to providers' degrees.

Table 12

Results of Negative Binomial Regression Analysis for Providers' Degrees

Dependent Variables	Parameter	df	Estimate	Standard Error	Chi-square	P-value
Directives	Degree	1	-0.22	0.23	0.93	0.34
Interaction promoting	Degree	1	0.12	0.39	0.09	0.76
Language modeling	Degree	1	-0.56	0.31	3.31	0.07

Similar to analyses previously described, model fit statistics were completed for the three dependent variables and providers years of experience to assure use of a negative binomial analysis (Table 13). Years of experience was treated as a continuous variable for this analysis. Results supported the use of a negative binomial regression with Chi-square values close to one.

Table 13

Model Fit Statistics for Years of Experience and the Three Dependent Variables

Providers' Years of Experience	deviance/DF	Pearson Chi-square/DF
Directives	1.10	1.04
Interaction promoting	1.18	1.33
Language modeling	1.21	1.09

The results of the negative binomial regression (Table 14) indicated no significant

relationship between providers' years of experience as a care provider and the form of

interaction used with toddlers.

Table 14

Results of Negative Binomial Regression Analysis for Providers' Years of Experience

Dependent Variables	Parameter	df	Estimate	Standard Error	Chi-Square	P-value
Directives	Experience	1	0.02	0.03	0.46	0.50
Interaction promoting	Experience	1	-0.04	0.04	0.70	0.40
Language modeling	Experience	1	0.003	0.03	0.01	0.93

Throughout the data collection process, field notes were written following each observation. These notes contained information related to patterns that emerged across observations. One predominant pattern was that of noise level within classrooms. Newman (2005) reported the background noise level in some centers was high enough to interfere with language development in children younger than 13 months. Some classrooms included playing of children's songs during free play which was often not turned off when a transition occurred to a new routine such as story time or snack. The music remained on while children participated in the next routine creating unnecessary background noise. Implications of results, including that of noise levels, will be discussed in Chapter V.

CHAPTER V

DISCUSSION AND CONCLUSIONS

This chapter provides a brief summary of the research study followed by discussion of the data and results reported in Chapter IV. Included in the discussion will be the research question, assumptions, and limitations of the study. The chapter will conclude with recommendations for further research related to the nature of language utilized in child care centers.

This study investigated the language interactions occurring with toddlers during natural routines in child care settings. Data were gathered to examine the types of verbal interactions used by child care providers with toddlers developing typically versus toddlers developing atypically. The researcher completed observations in four child care centers including a total of 23 child care providers, 26 toddlers developing typically and 10 toddlers developing atypically. During observations verbal interactions were coded. The research question addressed by the study examined whether verbal interactions directed to toddlers developing atypically were different from verbal interactions directed to toddlers developing typically. A negative binomial regression analysis was used to address the research question:

Do differences exist in the verbal interactions of child care providers with typically developing toddlers vs. atypically developing toddlers?

In addition, negative binomial regression was used to further analyze the existing data in regard to providers' degrees and providers' years of experience. A discussion of the results follows in the next section.

Discussion

In this section, data and results to address the research question, assumptions of the researcher and limitations of the study will be presented.

Codes for Verbal Interactions

All utterances spoken by providers to targeted children, both typical and atypical, were transcribed live during natural routines. Immediately following each observation each utterance was coded using an established system (see Appendix A) developed by Girolametto et al., (2000) and discussed in the review of the literature.. The system includes 13 forms of utterances divided into three broad forms – directive, interaction-promoting and language modeling, dependent upon their contribution to language development. In addition to coding of utterances, brief field notes were also written about related events occurring within the classroom.

Demographic data

Subjects were gathered from four child care centers all accredited by the National Association for the Education of Young Children (NAEYC). One center was located in the large urban area. Three centers were located in a mid-size city. Twenty-three care providers were included in the study. These providers varied widely in age, degree type and years of experience (Appendix G). Eleven of the care providers were from the urban center and 13 were from those in the mid-sized city. The median age of child care providers was in the age range of 46-55 years. The median years of experience was five

years (range one to sixteen years). All providers had a least a high school diploma and 86% of the providers included had an associate's degree or higher. These factors of age and degree differed from the data reported by the Bureau of Labor Statistics (2008) cited in the review of the literature which indicated 42% of providers with a high school diploma or less and the mean age being 38. A total of 36 toddlers ranging in age from 16 -36 months were included as subjects – 26 were developing typically and 10 were developing atypically. Of the 26 toddlers developing typically, 9 were from the urban setting and 17 were from the mid-size city settings. Of the 10 children developing atypically, 3 attended the urban center and 7 attended the mid-size city centers.

Research question

The research question set forth at the beginning of the study was:

Do differences exist in the verbal interactions of child care providers with typically developing toddlers vs. atypically developing toddlers?

Hypothesis – No differences in frequency and type of responses by child care providers will be evident between typically and atypically developing toddlers.

Findings

The results indicated no significant differences in the verbal interactions of child care providers directed toward toddlers developing typically and those developing atypically. Results indicated an important feature of the verbal interactions of care providers directed towards toddlers in that the majority of interactions were directive in nature. Specifically stated, in natural daily child care routines, the purpose of the majority of verbal interactions used with toddlers in child care settings dealt primarily with behavior management. In addition, although not statistically significant, care

providers, on average, interacted more frequently with toddlers developing atypically than they did with toddlers developing typically.

To further analyze the existing data, the researcher investigated the implications of provider degree and years of experience related to types of verbal utterances used. Results revealed no significant differences for the two types of utterances, directives and interaction-promoting, related to type of degree and a marginal degree of significance for language modeling. This marginal difference indicated that providers with degrees in early childhood or an associated degree used this form of utterance less than those with degrees in other fields. In terms of years of experience impacting utterance types used, no significant difference was found.

<div align="center">Direct Implications of the Study/Conclusions</div>

The results of this study, based upon a small sample, support concern for quality of language exposure available to all children in child care settings previously reported in the literature by others (Cicognani & Zani, 1992; Pellegrino & Scopesi, 1990; Polyzoi, 1997). The statistical analysis indicated a predominance of directive type interactions that do very little to stimulate language development. A directive type of interaction is not responsive, limits turn taking and is strongly associated with less language use by children (Girolametto et al., 2000a). In addition, interaction promoting strategies which are positively related to production of language by toddlers by prompting responses, engaging young children in extended conversations, and encouraging turn taking, occurred the least. All toddlers, but particularly those developing atypically, require responsive strategies of interaction that promote social, affective and language outcomes (Girolametto et al., 2000: Rocissano & Yatchmink, 1993; Tennant et al., 1988). Research

indicates children receiving a directive style of interaction dominated by commands and following of adult agendas present with inhibited language development (Murray & Hornbaker, 1997; Rocissano & Yatchmink, 1983).

As discussed in the review of the literature, Hart and Risley (1999) reported on the importance of "optional" talk that occurs between a parent and child when playing together or when participating in parallel tasks. Parents engaged in playful conversations with their one and two year old children which supplemented daily routines. This "dance of communication" was not apparent in the child care setting. Providers did not provide increasingly complex, information-rich language during natural routines but instead provided verbal interactions to primarily direct behavior.

Recall that the purpose of this study was to examine the nature of verbal interactions with toddlers in child care settings. Although no difference was found in regard to the verbal interactions used with toddlers developing typically versus those developing atypically, important data in regard to the nature of interactions available to all children in child care settings were evident. The results of this study indicate a potential area of concern related to the language stimulation available to toddlers in child care settings. The data and statistical analysis indicate a predominance of language used to regulate behavior rather than stimulate language development. Predominant utterance types utilized in verbal interactions in all four, high-quality (NAEYC accredited) child care settings included those related to behavior control, calling attention, yes/no directive questions, commands, and test questions.

Researchers have repeatedly published on the strong link between experiences in the early years, including those in child care, and the relation to both cognitive and

language development (Bloom, 1991; Bronstein & Bruner, 1989; National Institute of Child Health and Human Development Early Child Care Research, 2000; Rudd, Cain, & Saxon, 2008). Despite this knowledge that quality early experiences enhance both cognition and language development, approximately one-third of children enter kindergarten in the United States not ready for the level of work required – often due to limited language competence (Bardige, 2005; Carnegie Task Force on Meeting the Needs of Young Children, 1994: Hart & Risley, 1995; Shonkoff & Phillips, 2000; Wertheimer & Croan, 2003). When this fact is viewed in relation to the estimated 60% of preschool children, including children with disabilities (Stahmer & Carter, 2005), age birth to five years, spending time in child care, some as much as 33 hours per week, (National Center for Education Statistics, 2005), a potential correlation emerges.   Recall the 1995 classic study of Hart and Risley which reported children from lower SES homes received more prohibitions (directive interactions) resulting in inhibited language development. Results of this small study suggest that language experiences for toddlers in child care today may be similar to that reported in lower SES homes well over a decade ago.

Another area of concern identified in the small sample of children included with developmental delay is the seeming lack of accommodations and/or modifications made by providers in the verbal interactions provided to children developing atypically. Providers who are aware of developmental delays, particularly in cognition and language domains, should, in best practice, provide enriching and stimulating experiences and interactions to encourage catch-up. The results of this study would suggest this is not occurring in natural, daily routines in child care settings and would support the work of Girolametto et al., (2000a) who reported that care providers do not "finely tune" their

utterances to accommodate children with development delay. Extensive training in child

development, including language development, has been highlighted as one of the most

important indicators of quality of care (Doherty et al., 2000). Those providers with

specialized training have been found to be more likely to provide responsive interactions

necessary for language learning. Arnett (1989) reported that those providers lacking in

specialized training related to responsive, verbal interactions are more likely to be

directive in what they say to children. Appropriate, specialized training regarding verbal

appears to be lacking.

Girolametto, Weitzman, and Greenburg, (2003), conducted an exploratory study

with sixteen, randomly selected child care providers in which in-service training for

facilitative language strategies was provided. Caregivers learned how to be more

responsive to children, how to engage children in verbal interactions, how to model

appropriate language and how to foster peer interactions. Results indicated positive

changes in both provider skills and increased verbal productions of targeted children

which supports the success of provider training.

One hypothesis for the decreased language competence and lack of school

readiness at kindergarten entry for many children, especially those already identified as

at-risk due to developmental delay, may be due, at least in part, to the nature of verbal

interactions occurring or not occurring in child care. Researchers have reported a strong

relationship between a directive style of interaction dominated by commands and

following of adult agendas as contributing to inhibited language development (Murray &

Hornbaker, 1997; Rocissano & Yatchmink, 1983). For all toddlers, but particularly those

who are developmentally delayed who spend many of their waking, interactive hours in child care, results of this study added to prior research, support reason for concern.

As explained in Chapter 4, additional analysis of the existing data was completed in regard to both providers' degree and providers' years of experience related to utterance types used. This additional analysis indicated no differences related to either of these provider aspects. In other words, despite having a degree in early childhood or related field and regardless of years of experience, providers persisted in use of utterances that were directive in nature providing little in the way of language stimulation to encourage language development.

One last finding, which became apparent in field notes, was that of the presence of unnecessary background noise in some classrooms. Playing of children's songs/music was a common theme in all centers during free play. This music was never directly referred to by the teachers. Music was turned on at the start of free play and often not turned off when free play was concluded. Care providers were not questioned regarding this practice. The result was continued background noise in the form of music while other, more directive activities such as story time or table time, occurred. Music created a form of background noise in which toddlers were forced to discriminate speech from noise to participate in activities appropriately. Newman (2005) reported the presence of background noise in child care centers at such levels as to cause interference with language development. Newman also stressed that young children have difficulty discriminating voices from even mild levels of background noise.

Summary of Results of the Research

The results addressing the main research question suggest that when child care providers interact verbally with the toddlers in their care, the predominant form of utterance used is directive in nature with the intent being to control or manage behavior. Providers do not appear to adjust their verbal interactions with regard for level of development or developmental delay. These findings agree with prior published research. No statistically significant differences were found with regard to utterances used in relation to typically versus atypically developing toddlers.

Additional supplemental analysis suggested that the predominant use of directive utterances did not change when type of degree held by the care provider or when years of experience were considered.   All providers, regardless of training and years of experience, used predominantly a directive style of interaction.

Review of field notes kept throughout the observation phase of the research revealed the consistent use of background noise in the form of music in most classrooms. This background noise provided a difficult environment for toddlers in which to listen to and discriminate speech.

These findings, when considered in conjunction with existing research related to limited language competence in today's preschool children and in children beginning kindergarten (Bardige, 2005; Hart & Risley, 1995; Wertheimer & Croan, 2003), the increase in the number of families utilizing child care for young children (Burchinal et al., 2000; Fontaine et al., 2006; National Center for Education Statistics, 2005; Peisner-Feinberg et al., 1999; Stahmer & Carter, 2005), advances in neurobiology indicating children need high quality interactions for proper brain development (Acredolo &

Goodwyn, 2000; Center on the Developing Child at Harvard University, 2007a; National Scientific Council on the Developing Child, 2007; Nelson, 1999) and what theorists believe about language development correlated with social interaction, create reason for concern and support need for further research on this topic.

Recommendations for Future Practice

1.   What is the knowledge base of child care providers in regard to language development? Research may indicate that providers are not adequately prepared in the use of consistent responsive strategies embedded within natural, daily routines to provide adequate language stimulation and foster language development in all toddlers. In addition, a curriculum heavily focused on the development of critical language skills may assist child care providers.   Understanding both language development and techniques on how to embed language stimulation into naturally occurring routines, increases the likelihood of facilitating adequate language development.

2.   Despite the fact that care providers were aware toddlers in their care presented with developmental delays, particularly in communication, they made few obvious attempts to provide additional language stimulation for these children. Why? Granted, providers cannot be expected to have specific expertise in working with children with developmental delay but some accommodation or modification would be expected. Further research, perhaps in the form of interview or questionnaire, might provide insight into this aspect highlighting gaps in training or skill. It would be interesting to further explore the beliefs about developmental delay and the role of the care provider.

3.   Child care providers included within this study varied in age, years of experience and type of degree held (if any). Additional investigation related to these characteristics in conjunction with the nature of verbal interactions used, might indicate specific populations of providers that would benefit most from additional training. In addition, further inquiry into the SES of care providers and verbal interactions might prove informative.

4.   If this study had included a larger sample size of toddlers developing atypically, would the results continue to show that care providers show no significant difference in the nature of their verbal interactions? A larger number of participants may increase the likelihood that the results obtained would be different and/or generalized to a larger population. In addition, inclusion/analysis of information regarding the SES of families in the program might prove insightful.

5. Further inquiry and investigation into the frequent presence of background noise (music) is warranted. What is the rationale for playing music during some natural routines? How frequently do providers neglect to turn it off when language-rich routines such as story-time occur?

5. Statistical analyses indicated an unexplained variance in the data that precluded the use of a Poission regression model of data analysis. Further investigation as to the cause of this variance of overly dispersed data is warranted. Potential reasons for this variance in data include, but are not limited to, the small sample size and/or independent variable of age of toddlers and specific special needs of the toddlers developing atypically, and/or the training/education/years of experience of the care providers.

Limitations of the Study

As inherent with any study, there are limitations noted with this research. These limitations will be discussed in accordance to potential influence on generalization of results.

First, due to the small number of both toddlers and child care providers who participated in this study, caution should be utilized when attempting to generalize reported results to the larger population of toddlers developing typically, toddlers developing atypically, as well as to all child care providers. In addition, child care centers, providers and toddlers were located in a relatively small geographic area. This would also suggest precaution when attempting to generalize results to other geographic regions/larger populations.

A second possible limitation to this study is the impact the presence of the researcher in the classroom may have had on the results. Although the researcher remained a passive observer and participants were not fully aware of the purpose of the study, interactions might not be representative of "typical", naturally occurring routines. Care providers may have interacted differently because the researcher was in the room thus impacting the results.

A third possible limitation to this study is the criteria utilized to differentiate typically developing toddlers from those developing atypically, It is possible that some "atypically" developing toddlers were not yet identified by the criteria used at the time of data collection and therefore included as part of the "typical" population.

Finally, although general data were collected in regard to provider age, years of experience and degree, it was beyond the scope of this dissertation to investigate these

variables in detail. Perhaps patterns would emerge related to one or all of these dependent variables if investigated further in relation to the hypothesis originally established.

<div align="center">Recommendations for Future Research</div>

While the results of this study did not find a significant difference in the type or frequency of verbal interactions of child care providers used with toddlers developing typically versus toddlers developing atypically, it is important to consider the small sample size that cannot be reliably generalized to other populations. Continuing to investigate the nature of verbal interactions occurring in child care settings for the critical toddler years can help impact, shape, and strengthen provider skills and early childhood curriculum/programs. Viewing verbal interactions for toddlers in child care as having equal importance to maternal interactions would help foster a positive change. It would also be interesting to investigate the verbal interactions occurring with children who are of preschool age, 4-5 years.

Understanding more about the long range impact of the experiences of toddlers in child care in relation to later school readiness and success can increase the likelihood of facilitating the development of positive change. Early childhood educators/providers, as well as pre-service teachers, may benefit from advanced or additional training in regard to language stimulation and techniques to embed language facilitating opportunities into the natural routines of child care. Continuing to investigate the training needs of current and future child care providers is recommended.

Greenwood (2011) has replicated part of the original Hart and Risley study of 1995 using automatic speech recognition technology. This technology was used to record

natural language environments of 30 typically developing toddlers, age 12-20 months, and their families.   Recordings were made for 12 hours per day, one to three times per week across ten months. Families included in this replication were from middle and upper socio-economic status (SES). Both the age range of this study and the SES of the families participating were narrower than that included by Hart and Risley. Results were similar to the original reported in 1995 in regard to differences related to SES. A new finding was also reported. These included a "circadian rhythm" in daily talk. Greenwood reported that talk shifted significantly on an hourly basis with most occurring at the start of the day and around dinner time in the evening. Based upon this new information, additional research is warranted in regard to the rhythm of talk identified in family environments and if similar rhythm exists, or should exist, in child care. In addition, the use of automatic speech recognition technology to complete further investigation would help to decrease, or perhaps, eliminate the limitations imposed by the presence of a researcher in natural settings/routines as well as allow for a variety of other analyses of the verbal utterances.

Conclusion

In summary, the results of this study provide additional practical and educational information regarding the nature of verbal interactions with toddlers in child care. The study included a small number of participants and no statistically significant differences were noted in verbal interactions with toddlers developing atypically in comparison to toddlers developing typically. The predominant form of interaction used with all children was directive in nature used to control behavior. The directive form of interaction limits

turn-taking, is associated with less language use by children, and does very little to contribute to language development. Interaction-promoting techniques that are positively related to language production in toddlers occurred the least. Results of this study will add to data currently available to researchers and early childhood educators to potentially impact change in policy and practice and to better prepare young learners for school readiness and academic success.

The implications for toddlers with developmental delay suggest need for further investigation in the area of provider knowledge base regarding how best to include these all children in naturally occurring routines in a manner that will encourage development in cognitive and language skills. Children exhibiting developmental delay as toddlers are most at risk for not having the necessary skills to be ready to learn at school entry. If these children spend many waking hours in daily child care, it makes sense that providing quality care that promotes language development is the responsibility of child care providers. Changing the predominant type of verbal interactions occurring in natural, daily routines in child care settings to interaction-promoting techniques supplemented by language modeling techniques may result in significant changes in language/cognition skills for all children, but particularly for those children developing atypically.

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Appendix A: Consent for Center Director

Dear Child Care Center Director,

Your center has been chosen to participate in a research project. The purpose of the project is to understand more about child language. Over the course of the next few months, the researcher will visit a classroom at your facility approximately 5 times. During these visits the researcher will observe the children and care providers during their everyday, natural routines. During observations written codes will be used to categorize the language occurring. This written information will be stored in a locked file cabinet in the researcher's office. The identity of the center, the care providers, and that of the children will be protected because the data will be coded so that they remain confidential.

There are no foreseeable risks or discomforts from participating in this study. Providers and children may feel initially anxious about having an unknown adult in the classroom. The researcher will interact only minimally with the providers and children and only if approached by them.

Thank you for allowing me to observe within your facility. I will be contacting you via phone in early August to arrange specific dates and times, to distribute parental and provider informed consents, gather demographic and developmental information, and to answer any questions you may have.

For one's rights as a research subject, contact the Director of Research Compliance at the Sponsored Programs Office, Ball State University, Muncie, IN 47306, (765)285-5070.

_____   _____

Director Signature   Date

Investigator

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Special Education

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Muncie, IN 47306

Telephone: (765)285-5703

Email: nyssel@bsu.edu

Appendix B: Parent Consent

Informed Consent for Parents/Guardians

Dear Parent/Guardian,

Your child's classroom has been chosen to participate in a research project. The purpose of the project is to understand more about language development in children. Over the course of the next few months, the researcher will visit your child's classroom approximately 5 times. During these visits the researcher will observe the children during their everyday, natural routines. During observations written codes will be used to categorize the language interactions occurring. This written information will be stored in a locked file cabinet in the researcher's office. Your child's identity will be protected because the data will be coded so that they remain confidential.

There are no foreseeable risks from participating in this study. Children may feel initially anxious about having an unknown adult in their classroom. The researcher will interact only minimally with your child and only if approached by your child. Your child's teacher/s will be present at all times.

In signing this consent, you are also giving permission to the facility director to release demographic and developmental information pertaining to your child to the researcher.

This study will help early childhood teachers and related professionals know more about how children develop language.

Your child's participation in this study is completely voluntary. You are free to withdraw participation of your child at any time without penalty. Your child's care at the center will not be affected by your withdrawal. Your child's daily routine will not be interrupted in any way. Please feel free to contact the researcher to ask any questions

before signing the Parental Permission form or at any time the researcher is visiting your child's center.

For one's rights as a research subject, contact the Director of Research Compliance at the Sponsored Programs Office, Ball State University, Muncie, IN 47306, (765)285-5070.

I, _____(print your name), give informed consent for my child, _____(print your child's first and last name), to participate in this research project entitled "Child Language". I have read the description of this project and give permission for my child to be included. I understand I will receive a copy of this consent form for future reference.

_____   _____

Parent Signature   Date

Investigator   Faculty Supervisor

Jeanne K. McMillan, Graduate Student   Dr. Nina Yssel

Special Education   Special Education

Ball State University   Ball State University

Muncie, IN 47306   Muncie, IN 47306

Telephone: (765)285-8176   Telephone: (765)285-5703

Email: jmcmillan@bsu.edu   Email:nyssel@bsu.edu

Please return this completed form to your child's teacher no later than Monday, October 26th if you consent to the above. Thank you!!

Appendix C: Provider Consent

Dear Child Care Provider,

    Your classroom has been chosen to participate in a research project. The purpose of the project is to understand more about child language. Over the course of the next few months, the researcher will visit your classroom approximately 5 times. During these visits the researcher will observe the children during their everyday, natural routines. During observations written codes will be used to categorize the language occurring. This written information will be stored in a locked file cabinet in the researcher's office. Your identity and that of the children will be protected because the data will be coded so that they remain confidential.

There are no foreseeable risks from participating in this study. You may feel initially anxious about having an unknown adult in your classroom. The researcher will interact only minimally with you and with the children and only if approached.

In signing this consent, you are also giving permission to the facility director to release your demographic information.

This study will help early childhood teachers and related professionals know more about how children develop language.

Your participation in this study is completely voluntary. You may withdraw participation at any time without penalty. Your daily routine will not be interrupted in any way. Please feel free to contact the researcher to ask any questions before signing this informed consent form.

For one's rights as a research subject, contact the Sponsored Programs Office, Ball State University, Muncie, IN 47306, (765)285-5070.

I, _____(print your name), would like to participate in this research project entitled "Child Language". I have read the description of this project and give permission to be included. I understand that I will receive a copy of this Informed Consent form to keep for future reference.

_____ _____   _____

Provider Signature   Date

Investigator   Faculty Supervisor

Jeanne K. McMillan, Graduate Student   Dr. Nina Yssel

Special Education   Special Education

Ball State University   Ball State University

Muncie, IN 47306   Muncie, IN 47306

Telephone: (765)285-8176   Telephone: (765)285-5703

Email: jmcmillan@bsu.edu   Email: nyssel@bsu.edu

Appendix D: Adult-Child Coding System

Girolametto, L., Hoaken, L., Weitzman E., & Van Lieshout, R. (2000a). Patterns of

adult-child linguistic interaction in integrated day care groups. *Language, Speech*, *and*

Hearing in Schools, 31, 155-168.

Directives	Interaction-Promoting Questions	Language-Modeling Utterances
BC- Behavior Control	**WH** – WH Question	**IM** – Imitation
AC- Attention Call	**YN-C** Conversational Yes-No Questions	**LA** – Labels
CO-Command	**CL**- Clarification	**RE**-Recast
YN- Directive Yes-No Question	**OQ** – Other Questions	**CM**- Comments
TQ-Test Question		**OU** – Other Utterance

        Refer to original article for a more detailed description of each code indicated

above.

Appendix E – Sample observation/data – Typical Toddler (25 minutes)

Child 28Ft   Teachers J, K & L   Site D

Teacher	Utterance	Code
J	A*, What are you doing?	AC**
L	Let's see that.	CM
L	We don't need that.	CM
L	Put L. night-night.	CM
K	A., bodies don't go there	AC
K	Thank you, A – You did it!	OU
J	What, A?	WH
J	What did you do?	WH
J	You sit down on couch!	CM
J	You are!	CM
J	Like a big girl!	CM
J	A, that's not safe	AC
J	You may not climb on this stuff	BC
J	A…	AC

* "A" refers to child's name

** If an utterance began by first calling the toddler's name, it was coded as attention call
(AC). Utterances were only assigned one code.

Appendix F – Sample observation/data – Atypical Toddler (25 minutes)

Child 3Fa	Teachers F, G, H & M	Site F
Teacher	Utterance	Code
G	I. has cheerios.	CM
G	I….	AC
F	Bye-bye? I'm not going now where.	CL
H	I. turn around	AC
G	I, turn around sit on your bottom	AC
H	No…go	BC
M	Go, I	BC
G	I. did it!	OU
G	I – no-no, come here	AC
G	kiss-kiss	OU
F	Shoot it	CO
F	I..	AC
F	I… let it go	AC
F	Here, I.	CO
F	Here, shhhhhh	CO
F	Shoot it like this.	CO
F	(Imitated laugh)	IM
F	You did it!	OU
F	Come out here.	CO
F	Whoa!	OU

Appendix G

Provider Demographics

Provider	Age*	Degree	Years of Experience
A	A	BS in Speech Language Pathology	1
B	A	BS in Psychology	2
C	B	Associates degree in progress (Family &Child)	12
D	B	BA in General Studies	10
E	A	Associates degree in Early Childhood	1.5
F	A	Associates degree in Child Development (CDA)	1
G	D	None	10
H	E	BS in Occupational Thearapy	16
I	D	BS in Psychology	5
J	C	None	10
K	C	BS in General Studies	11
L	D	MA in Management	3
M	B	CDA	11
N	A	CDA	4
O	A	BS in Early Childhood Education	2
P	C	BS in Civil Engineering	3
R	D	CDA	2
S	C	CDA	9
T	A	CDA	3
U	C	CDA	3

V	A	BS in Elementary Education	2
W	A	None	2
X	A	CDA	2

* Age Ranges

A = 18-25 years

B = 26-35

C = 36-45

D = 46-55

E = 56-65