12-2017

Preschool Enrollment and Elementary School Achievement in an East Tennessee School District

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A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Education in Educational Leadership

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by

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December 2017

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Keywords: Early Childhood Education, PreK, Student Achievement, Tennessee Voluntary Pre-K

ABSTACT

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The purpose of this study was to determine if a significant difference in achievement scores exists among students based on whether or not they attended preschool as measured by standardized achievement reading-language arts and math scores on the Tennessee Comprehensive Achievement Program assessment for fourth grade students in a single East Tennessee school district. The variables of grade level and preschool attendance were considered. The population consisted of fourth grade students during the 2014-2015 school year. Data were gathered from the Tennessee Comprehensive Assessment Program achievement test scores obtained from the 2014-2015 school year and from the school district's preschool attendance records. Independent t-tests were used to evaluate differences in the variables. Findings in this study did not show any significant difference in achievement tests scores of students who attended preschool and those who did not. Scale scores were tested in this model for fourth grade achievement scores. These scores consisted of Reading-Language Arts and Math. Areas tested were found to have no significant differences for fourth grade when compared by preschool attendance, gender, or ethnicity.

DEDICATION

This study is dedicated to:

To my loving wife, Victoria Voiles, for her love, encouragement, and support in allowing me to pursue my passions. Because of her I am a better person.

To my parents, Frankie and Angie Voiles, who have always supported my educational endeavors and encouraged me to work hard and never give up on my dreams.

ACKNOWLEDGMENTS

I would like to acknowledge the time and efforts of my graduate committee members: Dr. Virginia Foley, Dr. Bill Flora, Dr. Don Good, and Dr. Renee Moran.

I would also like to acknowledge the encouragement and guidance of my instructional coach and supervisor, Dr. Jaime Greene. She has provided me with help and support throughout my journey. She has been a sounding board for frustrations and successes during completion of this dissertation.

In addition, I would like to acknowledge my friend and teaching partner, Elizabeth Neill. I could not have finished this program without her support and reassurance. She cheered me on from the beginning.

Finally, I would like to acknowledge the staff at my school who has provided me with support and encouragement throughout this endeavor. They have been my cheering squad in achieving this outstanding accomplishment.

TABLE OF CONTENTS

Page

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

In his 2013 State of the Union address, President Obama called on the nation's lawmakers to expand access to preschool for America's children, stating that "studies show students grow up more likely to read and do math at grade level, graduate high school, hold a job, form more stable families of their own" (The White House, 2013). The President proposed that the federal government and states enter into partnership to provide prekindergarten access to America's youngest children (The White House, 2013). President Obama convened local policymakers, mayors, school superintendents, corporate and community leaders for the White House Summit on Early Education. There he announced a collective investment of $1 billion for the education and development of prekindergarten age children (The White House, 2014).

Tennessee legislators' preschool initiatives predate President Obama's call to action. In 2005, Tennessee officials passed the Voluntary Pre-K for Tennessee Act of 2005, which funded a pilot group of 148 PreK classes statewide. The law provided $25 million in excess lottery dollars to establish PreK classes through a competitive grant process (Tennessee Department of Education, 2013). By 2014, funding for the Voluntary Pre-K program reached $86,552,900, funding 935 PreK classes with more than 18,000 students enrolled. In addition to the state-funded PreK classrooms, the Voluntary Pre-K program provides for collaborative partnerships with over 200 classrooms with non-profit and for profit providers including Head Start, faith based agencies, community based agencies and higher education institutions. In 2012, the Tennessee Voluntary Pre-K program ranked nineteenth in terms of access to PreK programs for

four year olds, and thirteenth in terms of funding, all in an effort to better position children for success in school and beyond (Tennessee Department of Education, 2017).

New American Education Policy Program (2015) was designed to rate states on their birth to third grade policies that support strong leaders. The researchers examined state policies from grades PreK through third grade with a special emphasis on early childhood programs. The group then placed states into one of three categories: crawling, toddling, or walking Consideration of Tennessee's policies and programs earned the state a rank of "confidently toddling" meaning that it is progressing in some areas but not in others (New America, 2015). However, the Tennessee Department of Education has pledged to address these issues in its recent Every Student Succeeds Act (ESSA) state report (2016). The report indicates that efforts will be geared toward streamlining administrative processes for PreK programs, strategies for assisting young students who have experienced adverse childhood experiences at a young age, engaging with parents and families of PreK students, and a robust program of PreK portfolio assessment used in part for teacher accountability (Tennessee Department of Education, 2016).

Fourth grade is a watershed year when examining literacy rates among students (Baer, Baldi, Ayotte, & Green, 2007). Research (e.g. WriteExpress, 2015) indicates that two-thirds of all students who are unable to read on grade level by the end of fourth grade will end up in jail or on welfare. This statistic and its potential effects on society have lead over 30 states, including Tennessee, to pass policy requiring that students read on grade level by the end of third grade (National Center for Learning Disabilities, 2013).

The economic constraints of students who do not reading proficiently by fourth grade are also noted by state policymakers (National Center for Learning Disabilities, 2013). Colleges, the military, and employers are faced with a dwindling pool of qualified applicants because many

children get to fourth grade without reading proficiently which puts them on a track toward dropping out of school. With a national workforce that calls for increased technical knowledge, the current pool of applicants is neither big enough nor skilled enough to meet workforce demands (National Center for Learning Disabilities, 2013).

Research (e.g. Reynolds & Temple, 2005) suggests that the road to fourth grade non-proficiency begins prior to kindergarten. Several studies have examined the impact of preschool on school achievement in various settings. Studies have shown that participation in preschool programs promotes better educational and social outcomes for students. Sandoval-Hernandez, Taniguchi, and Aghakasir (2013) indicated that participation in preschool is associated with higher than average math achievement in fourth grade. Additionally, that study showed that the positive impact of participation in preschool was not dependent on a student's socioeconomic background or ethnicity.

Nationally, the effects of participation in preschool have been measured using results from the National Assessment of Educational Progress (NAEP) test. For example, Fitzpatrick's 2008 study revealed a statistically significant positive relationship between those with access to prekindergarten and those without.

Casico and Schanzenbach (2013) analyzed the relationship between students with access to universal preschool with fourth and eighth grade NAEP scores. Among those students identified as low-income, there did exist a statistically significant increase in scores for those with access to prekindergarten. The magnitude was even greater in fourth grade.

However, participation alone does not indicate the level of success for preschool participants. Different types of preschool (Head Start, public school based prekindergarten, private preschool, and other) garner different levels of effect on student achievement in later

grades, and differing philosophies and regulations drive program requirements. For example, teachers in public and school based prekindergarten programs are more likely to hold college degrees than those of head start programs (Center for Public Education, 2007).

Statement of the Problem

The purpose of this study was to determine if a significant difference in achievement scores exists among students based on whether or not they attended preschool as measured by standardized achievement reading-language arts and math scores on the Tennessee Comprehensive Achievement Program assessment for fourth grade students in a single East Tennessee school district.

Research Questions

The following research questions guided this study:

RQ1: Is there a significant difference in reading-language arts scaled scores on the Tennessee Comprehensive Achievement Program (TCAP) achievement test between fourth grade students who attended preschool and those who did not attend preschool?

RQ2: Is there a significant difference in math scaled scores on the TCAP achievement test between fourth grade students who attended preschool and those who did not attend preschool?

RQ3: Is there a significant difference in reading-language arts scaled scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not attend preschool?

RQ4: Is there a significant difference in reading-language arts scaled scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not attend preschool?

RQ5: Is there a significant difference in math scaled scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not attend preschool?

RQ6: Is there a significant difference in math scaled scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not attend preschool?

RQ7: Is there a significant difference in reading-language arts scaled scores on the TCAP achievement test between fourth grade African-American, Hispanic, and Caucasian students who attended preschool and those who did not attend preschool?

RQ8: Is there a significant difference in math scaled scores on the TCAP achievement test between fourth grade African-American, Hispanic, and Caucasian students who attended preschool and those who did not attend preschool?

Significance of the Study

With the push to ensure students graduate college and career ready, schools face increasing scrutiny of data at all levels. As a result of high-stakes accountability, districts are working diligently to identify and close achievement gaps among students as early as possible. Prekindergarten programs have emerged as a viable and sustainable intervention to promote school readiness and close achievement gaps among students of all demographics. While research clearly supports the facilitation of social, emotional, and physical development of

children, evidence of the effect of preschool participation on achievement in later grades is less prevalent (Barnett & Frede, 2010). Additionally, the type of preschool attended may have an impact on the long-lasting effects on the student (Barnett, 2008).

The single school district is located in upper East Tennessee in the heart of the Appalachian Mountains. The school district is part of a rural Appalachian region characterized by high poverty rates and a changing workforce. The system consists of eighteen schools including eleven elementary schools, four middle schools, two high schools, and one alternative school. In addition to the schools, the system includes a central office and an international center for newcomers to the United States. The system serves 10,381 students in prekindergarten through 12th grade. Students attend school for 180 days and teacher are employed for 200 days.

The school district is an area characterized by a challenging workforce landscape with multiple available jobs but few qualified job applicants. Therefore, many students live in poverty and utilize the free and reduced lunch program available to students. There are many different preschool options available to parents in the district including three preschools run by private, religious affiliated schools, four Head Start locations, multiple privately run daycare centers, and several church sponsored Mother's Day Out programs.

The single school system operates preschool classrooms at five of its elementary school sites. The program is designed for children who reside in the district and are 4 years of age. Enrollment is limited and is often in high demand as evidenced by long lines and waiting lists during the registration period. Prekindergarten classes operate on a schedule that reflects that of the regular school day. The program is a tuition based program, but there are scholarships available for students who meet socioeconomic guidelines. Currently, the program does not

utilize a common curriculum, but does provide common professional development to prekindergarten teachers from all five sites.

This study will provide useful information to the school district regarding the effectiveness of its preschool program in preparing students for academic success in school. While the information gathered through data analysis in this study is specifically significant applicable to a particular school system, leaders and stakeholders of other systems may find the information about the connection between preschool participation and success in fourth grade beneficial as well.

Definitions of Terms

The following definitions are specific to this study:

Academic Achievement – The extent to which a student has achieved an educational goal as measured by assessment, specifically the Tennessee Comprehensive Achievement Program (Ward, Stoker, & Murray, 1996).

Preschool/PreK – A classroom-based program for children at or below the age of five in the United States (Couchenour & Chrisman, 2016*)*.

On Grade Level – A term that describes the ability utilize knowledge and skills established as required for a grade level (Ligon, 2009).

School Readiness – Defined as the measure of how prepared a student is to be successful in school emotionally, socially, and cognitively (Attendance Works, n.d.).

Tennessee Comprehensive Assessment Program – A timed, state-level achievement test given to students in grades 3-8 each spring. The test measures proficiency in math, reading, language arts, science, and social studies (Tennessee Department of Education, 2010).

Tennessee Voluntary Pre-K – An initiative that provides four-year-olds in Tennessee the opportunity to participate in programs to develop school readiness skills. First priority is given to those students who could be considered at-risk (Tennessee Department of Education, 2017).

Limitations and Delimitations

The researcher is a public school teacher teaching English Language Arts since 2010 in the district examined in the study. This research contains a quantitative data analysis of Tennessee TCAP scores for students who attended preschool or a prekindergarten program prior to enrollment in one school district in East Tennessee. This research is limited to one public school district in East Tennessee and does not seek to examine results from all preschool programs or districts in Tennessee. Convenience sampling was used in this research. The study is limited to quantitative data related to participation in early childhood or prekindergarten programs and the relationship to Tennessee TCAP results in fourth grade. Therefore, results are not necessarily generalizable to any other setting.

Overview of the Study

This study is quantitative in nature and divided into five chapters. Chapter 1 provides an introduction, a statement of the problem, research questions, significance of the study, definition of terms, limitations and delimitations. Chapter 2 includes a review of literature and covers the following information: historical perspectives, theories applied to early childhood education, preschool and legislation, funding and sustainability, effect studies, teacher program and quality, school readiness, end of third grade reading proficiency, and a summary. In Chapter 3 the research methodology is outlined, and information is provided on the research design, the

population, data collection, data analysis, and a summary. Chapter 4 includes an analysis of data and contains a description of the population, and student achievement. Finally, Chapter 5 provides a summary of the findings, conclusions, and recommendations for the future study.

CHAPTER 2

REVIEW OF RELATED LITERATURE

This chapter provides a review of the literature significant to attendance in preschool programs. The chapter is divided into nine sections: (a) historical perspectives, (b) theories applied to early childhood education, (c) preschool and legislation, (d) funding and sustainability, (e) effect studies, (f) teacher program and quality, (g) school readiness, (h) end of third grade reading proficiency, and (i) a summary.

Historical Perspectives

Preschool programs have been in operation for decades as mothers, traditionally those who stayed at home to rear young children, were forced into the workplace by economic needs or developed a desire to work (Funderstanding, 2011). However, the purposes of these programs ranged anywhere from organized babysitting with little to no regard for academic endeavors to age-appropriate development programs intended to be an extension of a child's overall school career (Goldstein, 2007). A review of the history of the development of prekindergarten programs reveals the changing needs of society, parents, and children.

History PreKindergarten in United States

Early childhood education as a concept began with an early 1800s European mothers who provided education for their young children outside the home. During the Industrial Revolution, the idea came to the United States. Early versions included church-based infant schools, factory nurseries, and homes where others would care for the children of working parents (Funderstanding, 2011).

By the late 1800s child care in America consisted of both formal and informal programs, generally designed for the poor, immigrants, and minority populations seen as in need of charity. However, as the Progressive era ushered in women's reform efforts, development of childcare programs became a symbol of reform and modernization (Michel, 2011). As poor mothers were compelled to go to work many welfare reforms, including mothers' pensions, were tried and failed as social policy. Michel reported that children were often left alone in tenements or cars as mothers left for low-wage factory work. By the 1920s, the United States Children's Bureau researched the impact of maternal labor. Researchers found several incidences of injury, illness, and even death resulting from un- or under-supervised children of working mothers.

By the end of the Great Depression, approximately 300 nursery schools and 800-day nurseries were operating in the United States. As unemployment continued to rise and enrollment fell significantly (Michel, 2011). By the 1940s, the New Deal's Works Progress Administration established Emergency Nursery Schools (ENS) primarily for the purpose of providing employment for unemployed teachers. The program opened schools in forty-three states, enrolling children of unemployed Americans. According to Michel, unlike their nursery predecessors, the ENS schools included an educational component under the leadership of strong, early childhood educators.

In the 1960s, only 10% of United States three- and four-year-olds were enrolled in a classroom setting (Barnett, Robin, Hustedt, & Schulman, 2003). Since that time, the nation's interest in quality preschool education has changed considerably. Many societal factors have played a part in this increase in interest including maternal employment, anti-poverty programs, and research revealing the importance of early childhood development. By 2012 47% percent of United States three- and four-year-olds were enrolled in some type of prekindergarten classroom

setting including state-funded programs, federal Head Start/PreK, and government-funded centers (National Center for Education Statistics, 2017). Over this period of time, state funding has risen significantly to keep up with demand (Center for Public Education, 2007).

Federal and state programs are the impetus behind much of this growth in PreK enrollment over the past four decades (Gilliam & Zigler, 2004). Through the 1950s and 1960s as more states implemented compulsory kindergarten, experts began to acknowledge the benefits of early childhood education. Gilliam and Zigler noted that Head Start, a preschool program for low-income children, was a result of the War on Poverty led by then President Lyndon B. Johnson in 1965. Intended as a summer pilot program, Head Start eventually included an education component, health screenings, and support services for parents and guardians.

Following the advent of Head Start many states began to formulate preschool programs for low-income children as well. By the 1980s a growing number of states built their own preschool programs as a part of their own education reform (Gilliam & Zigler, 2004). State leaders also began to recognize long and short-term impact quality preschool could have on students as research began to extol its benefits. Landmark research projects including the High/Scope Perry Project, the Carolina Abecedarian project, and the Chicago Child-Parent Centers project all demonstrated gains of students who attended preschool throughout their academic careers (Center for Public Education, 2007).

This evidence fueled PreK growth in the 1980s and 1990s. By 1991, twenty-eight states had their own PreK programs. By 2008, the number of states with some form of state PreK increased to 38 (Barnett, Carolan, Fitzgerald, & Squires, 2012). PreK programs in several states operated in various settings including public and private schools, profit and non-profit programs, part and full time programs, and most require payment on the part of parents.

Since that time, a few states have begun to develop voluntary, or universal PreK, available for all families with Georgia leading the way. Georgia's preschool program began in 1992 as a pilot serving 750 at-risk four-year-olds at 20 sites. Utilizing lottery funds, the program expanded to a universal program open to all four-year-old children in 1995. By March 1996, Georgia organized the Office of School Readiness, dedicated to the state PreK program, federal nutritional programs, and early intervention services (Georgia Department of Early Care and Learning, 2014).

By the beginning of the 21st century, most federal funding earmarked for early childhood education fell into one of two categories: Head Start or the Child Care Development Fund (CCDF) (Blau, 2003). The latter was developed by consolidating efforts of early initiatives including the Welfare Reform Act of 1996. The CCDF gives federal grant monies to states for subsidizing the costs of childcare for eligible families and for programs that seek to improve the quality of early childcare services. Blau acknowledged that today policymakers continue to seek ways to fund universal PreK at the state level and expand services.

Theories Applied to Early Childhood Education

Many effective preschool programs are built on the theoretical framework of lead researchers in the field of education, child development, biology, or psychology. This section examines the work of several of the most important theorists who have shaped the field of child development and early childhood education.

Erik Erikson

Erik Erikson's work with child development led to his theories on children's psychosocial development. Influenced by Freud, Erikson's work emphasized the role of culture and society in child development. Erikson's theory of psychosocial development has eight distinct stages occurring from birth through adulthood. Erikson purports that in order to move from stage to stage, one must face a crisis and accomplish a task to overcome that crisis. When that crisis is resolved, the individual moves to the next stage of psychosocial development. Based on their personal development during each stage, this passage allows people to form personality strengths and weaknesses (Mooney, 2000). In some instances, the individual struggles to understand where he or she belongs. Erikson called this crisis an *identity crisis* which most often occurs between the adolescent and adulthood stages. (Erikson & Coles, 2000; Mooney, 2000).

The first four stages of Erikson's developmental framework are of greatest interest for the study of prekindergarten development. Stage one, Trust versus Mistrust, takes place from birth to age 1 (Erikson & Coles, 2000). It is at this stage that babies begin to develop an understanding of trust, both external and internal. External trust involves the belief that adults will be available and present to meet the baby's needs. Internal trust involves the baby's belief that he or she has the power to cope with circumstances and effect change. When this trust is fulfilled, the baby develops attachment to the adult.

The second stage occurs from age 2 to 3. This stage is known as Autonomy versus Shame and Doubt. In order to pass from this stage, the child must develop the ability to develop autonomy apart from shame and doubt. In this stage, the child learns to hold on and to let go.

This stage is characterized by the need for adults to set consistent limits and give the child clear choices (Erikson & Coles, 2000; Mooney, 2000).

The third stage is characterized needs ages and by Initiative versus Guilt (Erikson & Coles, 2000). The goal of this stage is for the child to emerge confident and competent. The fourth stage, Industry versus Inferiority, occurs from age 6 to 12. In this stage, children emerge with a sense of pride in accomplishment. It is important that children receive encouragement and praise from adults in this stage in order to build their own sense of self-efficacy.

Friedrich Forbel

Friedrich Frobel was one of the earliest contributors to the study of child development. Known as the father of kindergarten, Frobel built his theories on the idea that children had unique needs and capabilities. Prior to Frobel, children were viewed by society as small, imperfect adults in need of proper training. Frobel posited that childhood was not a rehearsal stage for adulthood, but rather a valuable stage of life with the purpose of learning and growing (Morrison, 1995). Frobel opened his first kindergarten in Germany in 1837 for children age 3 to 7. The name kindergarten, meaning child garden, revealed the nature of the school, to develop and nourish children during a period of great growth. Frobel's kindergarten emphasized social development, creativity, and exploration with typical activities ranging from rhyming games to fingerplays. Frobel further argued that early grades should be a crossroads of home and school. Therefore, his program emphasized the need for development activity at home as well as at school, and idea seen in many modern preschool programs (Brenner, 1990). From his belief in the importance of play as a part of learning came Frobel's educational toys known as Frobel's Gifts (Day, 1994).

Maria Montessori

Maria Montessori was another significant contributor to the body of knowledge around early childhood development. A medical doctor and teacher, Montessori sought to develop a system for educating young children. The Montessori method is characterized by education as a natural process rather than a constrained set of strategic steps or standards. Montessori proposed that by age 3, a child has already developed the basis for the development of personality and is ready for the process of formal education. Further, Montessori (1912) posited that children know when they are ready for the next step in their learning and require a certain amount of freedom in their learning environment. Therefore, the role of teachers is not one of direct instructor, but of one who plans and prepares cultural and environmental experiences (Montessori, 1967).

Montessori asserted that children grow and develop through distinct stages of development and therefore have specific educational needs at each stage. The first stage of growth in Montessori's framework occurs from birth to age 6 when Montessori proposed most intelligence is formed. The second stage occurs from age 6 to age 12 and the third stage occurs from age 12 to 18. Montessori theorized that sensory development was critical in child development. Therefore, the Montessori method is characterized by tactile activities that challenge the senses of children (Day, 1994). Montessori's ideas about child development serve as the basis of multiple Montessori schools in existence today (Brenner, 1990).

John Locke

John Locke asserted that children were essentially a blank slate learning all behaviors through interaction with the environment. An English philosopher, Locke purported that no principle is universally accepted by every human being. He went on to say that people could

have no idea in their head of which they are unaware. Therefore, it cannot be said that people hold principles until they are taught. Locke reported that knowledge was built from ideas, which come from experience. These experiences are one of two types: sensation, or experiences that occur through the five senses and reflection, or the mind's own recognition of its own functions including thinking, believing, and doubt (Locke, 1700). This theory developed into the environmentalist movement of child development a theory characterized by the belief in nurture over nature. These ideas also serve as a basis for the support of early childhood intervention for the most disadvantaged children (Morrison, 1995).

John Jacques Rousseau

Rousseau's theory was based on the idea that children are innately good and that educators should recognize that goodness. Unlike those theorists who credit socialization with child development, Rousseau noted that a child should be guided by his own reason throughout his education. Rousseau acknowledged that three sources, nature, men and things, coincide to lead to a well-educated individual (Gianoustos, 2006) These tenets became known as naturalism due to the view that learning is a natural process.

Rousseau concluded that from birth to age 5 children learn from physical experiences with the environment. From age 5 to 12, learning occurs from exploration of the environment. Therefore, the Rousseau approach to learning is one that involves multiple hands on activities. Rousseau posited a strict boundary between childhood and adulthood purporting that children had their own ways of interacting with and processing information from the environment (Rousseau, 1979).

Rousseau's tenets were unique for the time in that he purported that children should not learn to read at an early age. Rather, that they only begin to read when they have a natural desire to read. Rousseau stressed that childhood should not be limited to formal schooling, but that educators should be respectful of a young child's need to play and enjoy childhood (Rousseau, 1979).

John Dewey

Dewey served as a principal figure in the progressive education movement of the late 1800s. This movement emphasizes children's interests and roles as a social being as key factors in their education (Brewer, 2004). Dewey proposed that education did not occur as an isolated incident, but as a relational experience with the real world (Dewey, 1916). Dewey stated that the process of education begins at birth as children gain knowledge from in order to participate in society.

Dewey's theory stated that knowledge itself was a social condition, therefore making it impossible to prepare a child for any distinct set of conditions. Therefore, the purpose of education is to develop the child's capability to interact with the world around him (Dewey, 1897). Today, Dewey's influence can be seen in unit-based curriculum that integrates real world experiences and are strategically relevant to students.

Jean Piaget

Piaget was a significantly influential 20th century researcher of developmental psychology. Originally trained in biology and psychology, Piaget referred to himself as a genetic epistemologist. Piaget's work focused heavily on the idea that what separated man from animal

was his ability to reason abstractly. Eventually, his work would focus on the cognitive development of children. Through his work, Piaget concluded the following: 1) children's cognitive development should include physical and mental activity, 2) the foundation of the development of learning is experience with the environment, and 3) development is continuous and results from environmental interaction throughout the maturation process (Piaget, 1969).

Piaget divided the divided the cognitive development of children into three stages. He proposed that children passed through these phases in order, moving upward toward more complex levels of thinking. Piaget purported that different children progress through the stages at different rates (Piaget, 1969).

Stage one in Piaget's theory is the *sensorimotor* period which takes place from birth to age 2. In this stage, children learn to coordinate senses with motor response. The child begins to walk, crawl, pick up objects, and recognize situations. Language can be used for demands and cataloguing (Piaget, 1969).

Stage two is the *preoperational* stage. This stage occurs from age 2 to age 7. This stage is characterized by symbolic thinking, development of grammar syntax, and expression of full concepts. The child can use language and symbols including letters, and egocentrism becomes evident (Piaget, 1969).

Stage three is known as the *concrete operations* stage. This stage occurs between ages 7 and 11. In this stage, children demonstrate a mature understanding of cause and effect relationships. Intelligence is demonstrated through logical manipulation of symbols and objects. Egocentrism begins to diminish (Piaget, 1969).

The final stage is the *formal operations* stage from age 11 and onward. In this stage, children are able to use symbols related to abstract concepts. They begin to form hypotheses and are able to see abstract relationships (Piaget, 1969).

Piaget's theory is still evident in modern curriculum design in that it favors cognitive process over product. However, Piaget's theory that teaching children concepts before they arrive at the appropriate stage runs contrary to the belief that all children should be expected to learn at the same rate (Hopkins, 2011).

Abraham Maslow

Maslow was an American psychologist whose work would be defined by his theory of a hierarchy of needs that culminates in self-actualization. According to Maslow (1954), basic needs must be met before intrinsic motivation can occur. Maslow identified the five needs of all humans as physiological needs, safety needs, love and belonging, esteem, and self-actualization. Maslow emphasized that lower needs must be satisfied before higher needs can be attained.

Maslow's theory relates to early childhood education in that students of poverty often do not have their basic needs met upon coming to school. This could hinder their ability to learn. Further, Maslow stated that students whose needs have been continually met at young ages develop a level of perseverance and healthy character not prevalent among those without basic needs met. Therefore, schools must be aware of where students are in the hierarchy and work to develop self-actualization in a strategic manner (Maslow, 1954).

Lev Vygotsky

Vygotsky was a Soviet psychologist and founder of a human culture and biosocial development theory known as cultural-historical psychology. Vygotsky (1978) posited that child development is an active process where the child experiences shared social processes and turns them into internal constructs. Because children are constantly immersed into society and culture they are consistently constructing knowledge based on experiences in context. According to Vygotsky, human nature is created within cultural context, both the overall culture and the specific setting. Vygotsky viewed language as a crucial aspect to development and emphasized the importance of language development over any other child development factor. His theory proposed that language had both an intrapersonal as well as interpersonal function in child development in that it children used it not only to communicate with others, but to direct their own thoughts and behaviors (Vygotsky, 1978). In this setting, development can be seen as cooperatively constructive between child and adult or peer (Rogoff & Morelli, 1989). Today cooperative learning and collaboration are built upon the ideas of Vygotsky's theory.

Preschool and Legislation

Educators agree that participation in quality preschool programming assists in a child's social and academic development (Strickland and Riley-Ayers, 2012). Consequently, policies and laws have been developed to increase access to preschool for all students.

Goals 2000

Goals 2000 (1994) was created by a coalition of state governors concerned about the state of America's public schools. States could voluntarily agree to work toward the objectives

outlined in Goals 2000 with the overarching goal of increasing American academic achievement. One of the goals of Goals 2000 stated that by the year 2000, American children would come to school ready to learn, including having access to high quality, developmentally appropriate preschool programs.

Additionally, Goals 2000 sought to reiterate the importance of parental involvement by focusing on the parent as the child's first teacher. Thus, Goals 2000 called for parents to have access to any training or support needed to ensure school readiness from home. An additional element of Goals 2000 involved the awarding of grants to nonprofit organizations working in tandem with local education agencies to establish resource centers to support parents of children from birth to age five. At the grant-funded centers, parents of preschool-age children could participate in Home Instruction Program for Preschool Youngsters or the Parents as Teachers program (Goals 2000, 1994).

No Child Left Behind Act

On January 8, 2002, President George W. Bush signed the No Child Left Behind Act of 2001. This act, a reauthorization of the Elementary and Secondary Education Act, was designed to increase gains in student achievement and hold systems and states accountable for the growth and success of all students. At the heart of the act were requirements for standardized testing to measure student progress beginning in third grade (Jacobson, 2006).

Jacobson (2006) and Stipek (2006) posited that the No Child Left Behind (NCLB) act did not adequately address the needs of children under the age of 5 and did not go far enough in attempting to close the achievement gap apparent before the start of school. However, many experts feared a downward outreach of NCLB into early childhood. The threat of federally

mandated testing in preschool and early grades caused concern over age-appropriateness. Preschool experts, including Jim Lesco, president of the National Association of Early Childhood Specialists in State Departments of Education, cited the wide range of academic experience of young children in preschool as well as the variable range of credentials of preschool teachers as reasons to avoid the testing required of NCLB in preschool (Jacobson, 2006).

Even in the absence of formal preschool legislation in NCLB, Stipek (2006) investigated the informal pressures put on preschool teachers as a result of NCLB testing at the third-grade level. According to Stipek's research, preschool teachers were pressured to begin teaching academic skills to children before they were ready. This was especially troublesome to preschool teachers of low-income students who often start preschool over a year behind their peers in terms of academic competency. Pressuring teachers to introduce students to academic skills before readiness could lead to practices that work against children's academic growth. Additionally, the skills tested under NCLB did not measure developmental skills appropriate to preschool instruction. Ultimately, Stipek recommended that preschool teachers continue to receive the training necessary to execute quality preschool instruction (Stipek, 2006).

Voluntary Pre-K of Tennessee

In May of 2005 the Tennessee House and Senate passed the Voluntary Pre-K for Tennessee legislation. The bill provided for the spending of $25 million in lottery money on quality PreK. By the academic year 2013-2014, expenditures for Tennessee's PreK programs reached $85 million. The state was supporting 935 PreK classrooms and over 18,500 four-year-olds each year (Tennessee Department of Education, 2013).

The basic principles of Tennessee's Voluntary Pre-k program are built on the idea that quality PreK programming should be accessible to all 4 years old in Tennessee with an emphasis on at-risk children and high priority communities. Under the legislation, local education providers can collaborate with nonprofit, non-school providers and local Head-Start programs to apply for funds to provide preschool access to local 4 year olds. The program relies heavily on these partnerships. As of 2013, over 200 collaborative classroom partnerships existed between school districts and nonprofit providers including Faith Based Agencies and higher education institutions. The program is overseen by the Office of Early Learning, which serves as a consultant to preschool programs around policies including small class size, high-quality curriculum, minimum required 5 days of 5.5 hours of instruction per day, and certification of teachers. In 2012, Tennessee Voluntary Pre-K was recognized as a national leader in quality PreK programming, achieving nine of ten benchmarks outlined by the National Institute for Early Education Research (Tennessee Department of Education, 2013).

Race to the Top

In 2009, the United States Department of Education launched a federal grant program known as Race to the Top. The competitive program awarded states and local districts funds from the American Recovery and Reinvestment Act (2009) to enact innovative programs in education. The Race to the Top Early Learning Challenge (RTT-ELC) was specifically designed to award funds to organizations that sought to ensure children were ready for success in kindergarten, most specifically those considered at-risk.

Through the RTT-ELC, the department helped states focus on improving early learning and development programs for preschool children. The grant was designed to support states in their efforts to: (1) increase access to high-quality preschool for low-income and disadvantaged

infants, toddlers, and preschoolers; (2) design high quality prekindergarten programs and services, and; (3) ensure that any assessments used in preschool programs conform to the recommendations of the national Research Council (American Recovery and Reinvestment Act, 2009).

On December 19, 2013, six states (Georgia, Kentucky, Michigan, New Jersey, Pennsylvania, and New York) were awarded a total of $280 million from the Race to the Top Early Learning Challenge. The winning states utilized funds to establish linguistically and developmentally appropriate learning standards, enact the use of quality program standards, improve states' rating systems for preschool, and promote health and family engagement. Commissioner Arne Duncan lauded the program as one that was able to close achievement gaps and provide opportunities for the nation's youngest students (U.S. Department of Education, 2012).

Funding and Sustainability

Funding

State funding to support preschool for at-risk children emerged in the 1960s (Mitchell, 2001). The expansion of state level funding was reported as one of the most influential factors in the expansion of preschool throughout the late 20th century (Barnett & Yarosz, 2007). During the 2008-2009 academic year, state funded preschool enrollment was 1,216,077 and states allocated five billion dollars for preschool programs. Since that time, a majority of preschool funding was a combination of funds from the state and federal level in order to increase access to preschool for all students.

Barnett et al. (2003) found returns on investment only in fully funded prekindergarten programs. While funding for PreK continues to come from the state and local level stagnation in PreK enrollment in the 2010s led to an unprecedented decline in funding, a drop of $500 million across the US State level. Per child funding decreased by $442 million in 2012 from 2011. Though funding varies widely from state to state, the decline occurred in 27 to 40 states with PreK programs. Barnett et al. (2012) presented research by Rutgers indicating that funding cuts had implications in terms of reduction in quality of programs.

Several state funded PreK programs depend on additional funding streams including locally directed funds to fund PreK programs fully. At the district level, many LEAs are committed to funding early childhood education. This requires districts to explore multiple funding strategies. One strategy districts have used is to access NCLB funding to sustain or expand early childhood classrooms (Mitchell, 2001).

Sustainability

Research in child development and neuroscience demonstrates that outcomes for at-risk students can be improved with sustainable, quality preschool and that the financial investment a community makes to preschool does see a positive return (Barnett & Yarosz, 2007). Barnett and Yarosz reported that children from families in poverty who participate in high quality preschool show improved cognitive and social development as evidenced by empirical research of preschool's short and long-term effects supports. These results appear both immediately and over time. Immediate benefits include higher school achievement, improved motivation, fewer special education referrals, and improved motivation. Long-term effects include higher graduation rates, more economic success, and a decrease in adult crime.

Long-term effects of participation can be attributed to cognitive and academic advantages experienced in preschool programs. (Temple, Reynolds, & Miedel, 2000). When students begin to adjust to formal educational settings as young children, they later transform these attributes in the form of positive adult behaviors. Further, there is additional research support for parental involvement children in early childhood educational settings (Reynolds & Temple, 2005).

Research also suggests that timing and duration of early childhood education is also of concern (Merskey and Reynolds, 2007). According to Merskey and Reynolds, the most effective preschool programs begin within the first three years of life and continue on, providing supports for parents. These early interventions allow the child to improve in cognitive, language, and motor skills. Effective programs provide a multitude of services and support over a sustained period of time.

Preschool Studies

HighScope Perry Preschool Project

Lifetime Effects: The High/Scope Perry Preschool Study of 1967 examined the effects of preschool on 123 at-risk children born in poverty. At ages 3 and 4, the children were randomly sorted into two groups: a program group that received a previously determined high-quality preschool education and a comparison group who received no preschool education. 97% of the participants in the study were interviewed at age 40, and participants' records including school, criminal, and social services were gathered (Schweinhart, 2003).

The study found that the participants in the preschool program had higher lifetime earnings, fewer recorded criminal incidents, longer employment histories, and higher high school

graduation rates than those who were not enrolled in preschool (Schweinhart, 2003). Additionally, 15% of those in the preschool group had been served by special education programs compared to 34% of the non-preschool group. Test scores were noticeably higher among preschool participants. At age 14 preschool participants' achievement test scores were 29% higher than the nonpreschool group. At age 19 participants in the preschool group scored higher on the Adult Performance Level Survey of the American College Testing Program (Bracey, 2003).

Abecedarian Studies

Children in the series of randomized controlled trials known as the "Abecedarian Studies" included at-risk students based on multiple conditions including poverty, young mother, low birth weight, parental abandonment, or low parental educational level. Children in the Abecedarian study came from varied social backgrounds. The study began in 1972 and continued through 2009.

According to a 1998 report by Campbell et al.:

> This longitudinal study provided an opportunity to examine adolescent scholastic performance as a joint function of early intervention, personal characteristics, and family factors. The study was multidisciplinary involving a prospective, longitudinal experiment with a 2 x 2 crossover design. The original investigators included developmental and educational psychologists and pediatricians. Study participants were from families who met a predetermined level for having a child with cognitive delays or academic problems. The High Risk Index included such factors as low levels of parental education, low income, single-parent families, and evidence of social disorganization. A very important feature of the Abecedarian program was the random assignment of participants to the treatment or control conditions. (p. 145)

Those in the study group received preschool instruction using the Learning Games curriculum.

Most children who were in the study group were considered of normal IQ range at the beginning of the study and remained in normal IQ range at the end. More than half of those at-risk and of normal IQ who did not receive intervention fell below the normal IQ range by age 48 months. Children who did not receive intervention were twice as likely to be placed in special education programs by the time they reached age 15. By age 21 nearly 70% of adults who had received intervention through the Abecedarian program were attending college or were employed compared to 40% who did not receive intervention (Sparling, 2010).

Chicago Longitudinal Study

The Chicago Longitudinal study of 1999 investigated the development of 1,539 minority children of high-poverty neighborhoods of Chicago who attended government-funded kindergarten classes from 1985-1986. The study focused primarily on factors that are alterable by program or policy intervention. The project studied the students for 19 years.

By age 23 to 24, students who had attended Chicago preschools showed significantly better outcomes than those not attending preschool in terms of high school completion, grade completion, college attendance, rate of criminal activity and conviction, and length of time receiving public aid (Reynolds, 1999).

NIEER 5-State PreK Study

In 2005, the National Institute for Early Education Research studied preschool programs in Michigan, New Jersey, Oklahoma, South Carolina, and West Virginia in order to estimate the academic effects of preschool programs on students entering kindergarten. Using a regression discontinuity approach, the study sought to estimate gains from one-year student participation in

state-funded preschool at age 4. In nearly all programs, teachers had 4 year college degrees in early childhood education (Barnett, Brown, & Shore, 2004).

Results from the study showed that children who attended the state-funded preschool programs rated 31% higher vocabulary score gains from those who did not, representing an additional three-month progression in growth. Preschool participants' math skills including number concepts, addition, subtraction, telling time, and counting money increased 44%. Additionally, those who participated in preschool showed an 85% increase in print awareness including knowledge of letters, letter-sound association, and familiarity with book concepts. Researchers purported that the study provided strong evidence that participation in quality preschool programming produced gains in learning and development prior to enrollment in school (Barnett et al., 2004).

TN-VPK Effectiveness Study

Following a 2005 legislated investment of $213 million new dollars for Tennessee Voluntary Pre-K (TN-VPK), the Peabody Research Institute of Vanderbilt University collaborated with the Tennessee Department of Education to launch a statewide evaluation of the effectiveness of the program. Funded by the Institute of Education Sciences, the study was designed to answer the following questions:

1. Does participation in TN-VPK improve children's academic and behavioral skills when they enter kindergarten?
2. Does participation in TN-VPK improve children's long-term academic and behavioral skills after Pre-K?
3. What are the characteristics of the children who benefit the most from TN-VPK?

4. What characteristics of TN-VPK teachers, classrooms, and school/system organization are associated with improvements in children's school readiness? (Vanderbilt University, n.d.)

There were two primary parts to the study. In Part 1 over 3,000 children were randomly assigned to TN-VPK classes in schools where demand for participation outnumbered availability. The researchers tracked the three thousand children through state databases of academic skills and teacher ratings for social-emotional behavior through third grade. Those children who were not able to get into a TN-VPK program were also tracked. Assessment scores at the end of third grade were then analyzed. (Vanderbilt University, n.d.)

In Part 2 of the study, researchers looked at specific TN-VPK classrooms for 2 years to examine students' school readiness at kindergarten entry. Kindergarten entry skills of students who have completed two years of TN-VPK were compared with those of children just enrolled in TN-VPK. The goal of Part 2 was to determine classroom features associated with kindergarten readiness (Vanderbilt University, n.d.).

In 2015, coinvestigators Lipsey, Hofer, and Farran reported that children who attended TN-VPK made greater gains on multiple measure of early achievement compared to those who did not attend. Additionally, their teachers rated TN-VPK students as being better prepared for kindergarten. However, by the end of kindergarten, those who had not attended PreK caught up and there were no longer significant differences between the groups. Further, by the end of second grade, academic performance of both groups of students had flattened and began to fall behind national norms. Also by the end of second grade, children who attended TN-VPK were not performing better on achievement measures as children who did not attend (Lipsey et al., 2015).

The conclusions of the study showed that TN-VPK is not producing the positive effects it set out to. However, the researchers did make suggestions when considering the results. First, the researchers suggest that poverty is a significant factor when determining future academic disadvantage. Second, Tennessee has made progress by building a PreK infrastructure, but needs to continue working on quality. Finally, the researchers suggest that Tennessee PreK is not well integrated into the standardized instructional sequence of grades K-3, which may be a barrier to continuity needed to allow gains and future achievement (Lipsey et al., 2015).

Teacher Program and Quality

In the early days of preschool education the goals of age-appropriate tasks were primarily socialization, separation from home, interacting with others, and experiencing a new environment. In the early 21st century, however, research challenged this thinking. The National Research Council (NRC) published a report in 2001 that documented a shift from these traditional views of early childhood learning to a view that showed a time of tremendous linguistic, conceptual, and social growth (National Research Council, 1998). While the NRC stopped short of identifying any single, superior preschool curriculum, it did find that those programs that were well-planned and of high-quality yielded greater results and better prepared students to master formal schooling (National Research Council, 1998).

The National Association for the Education of Young Children (NAEYC) is another entity that has sought to define quality of early childhood instructional practices. The NAEYC found that pedagogical factors including quality teacher training, child-teacher interaction, teacher-student ration, classroom environment and organization, and lesson implementation all factored in to preschool programs considered to be of high quality. This research led to the

NAEYC's creation of recommended practice for early childhood education providers. The standards include practices such as development of a caring community of learners, teaching to enhance development and learning, goals-based planning, assessment of learning, and establishing relationships (Copple & Bredekamp, 2009).

The High Scope Preschool Curriculum Comparison study examined the effect of differing preschool curricula on a sample of 68 randomly assigned preschoolers. Curricula choices included direct instruction, play-based instruction, and High Scope instruction. While all children in the study demonstrated an increase in intelligence scores, students in the direct instruction group showed greater growth in social development (Almon & Miller, 2011). Though direct instruction was reported as positive in the High Scope study, the First Steps study rendered results that suggest children had higher interest in reading and math when teachers provided more child-centered play time and wait until they are older to begin formal instruction (Lerkkanen et al., 2015). Therefore the balance between instruction and child-centered play is difficult to determine with certainty.

Prekindergarten teacher preparation and professional development has also been noted as a hallmark of program quality (Clifford et al., 2003). The NRC also pointed to instructional practices that yielded better academic results as well including incorporation of learning goals and utilization of teachers with deep knowledge of early childhood education. This however was at odds with reports of teacher training levels among adults working with young children. A few states require all PreK teachers have a college degree as well as certification in early childhood education. Many others only require a Child Development Associate certificate. Additionally, Clifford et al. posited that research shows children in poverty are more likely to be enrolled in programs with lower-qualified teachers.

School Readiness

Many preschool programs are built on the notion that starting the learning process at an early age builds the foundation for life-long learning. Therefore, early childhood programs can be preparation for a child's entire academic career (Strickland & Riley-Ayers, 2012). For many public schools, this process begins in the kindergarten year. However, more and more public schools are beginning the process earlier in order to allow children an earlier start.

Research by Espinoza (2002) emphasized that learning in the first five years of life has a direct impact on the ability to learn in school and school success. Espinoza purported that child indicators of having attended a high quality program include:

- Kindergarten entry with academic success skills
- Understanding of verbal and numerical concepts
- Social competency
- Longer persistence with activity
- Likelihood of typical progression through primary grades
- Less likely to be referred to special education
- Less likely to be retained in kindergarten.

A recent data analysis from the Annie E. Casey Foundation (2016) determined that most children in the United States may lag in social-emotional awareness and cognitive skills. Preschool programs that focus on school readiness teach a combination of elements including social-emotional education, communication skills, and behavioral skills that will be used by students to interact with society. Without proper readiness skills, students may begin a continuum of struggling in school. Current trends indicate that only 50% of children living in the

United States have cognitive skills appropriate for their age. For comparison, only 19% of children living in poverty do (Annie E. Casey Foundation, 2016).

Later in life, students may begin to have difficulty with academic demands due to their lack of social-emotional, communication, and behavioral skills. Research indicates that children who enter kindergarten behind in cognitive and language skills are only likely to overcome those deficits if they are physically fit and have strong social-emotional capabilities (Vandivere, Pitzer, Halle & Hair, 2004). There is speculation that these difficulties begin by grades two and three.

End of Third Grade Reading Proficiency

In 2010, the Annie E. Casey Foundation published the results of Kids Count special report called Early Warning! Why Reading by the End of Third Grade Matters. The report warned that 6.6 million children in living in low-income homes from birth to age eight were at-risk for failing to graduate high school on time because they would not be reading proficiently by the end of third grade. This report, along with others like it lead many states, including Tennessee to enact legislation that emphasizes third grade reading proficiency for all students. Closer research revealed the importance of this grade level benchmark.

Among fourth graders who took the NAEP test in 2009, 83% of low-income children, and 85% of students from high-poverty schools failed to score at the proficient level in reading. Half of all test takers from low-income homes and 53% of from high-poverty schools score below the basic level. Among minority ethnic groups, the disparities are particularly high. Eighty-nine percent of black, 87% of Hispanic, and 85% of Native American students scored below proficient (US Department of Ed, 2007). According to NAEP, fourth graders who score at the proficient level:

> should be able to demonstrate an overall understanding of the text, providing inferential as well as literal information. When reading text appropriate to fourth grade, they should be able to extend the ideas in the text by making inferences, drawing conclusions, and making connections to their own experiences. The connection between the text and what the student infers should be clear. (NAEP, 2011)

Researchers view these numbers as problematic because they represent the potential for long-term societal failure for students. Low-income fourth grade students who are unable to score proficient in reading on NAEP are likely to live lives in the low income, least-productive, low-skill, and most costly categories of citizenship (Annie E. Casey Foundation 2016).

From kindergarten through third grade, the focus of literacy instruction is on learning to read. However, this instruction typically shifts to reading to learn in fourth grade. At this point the focus is on developing content knowledge by accessing information from text. According to another report from the Annie E. Casey Foundation, half of fourth grade instructional text is incomprehensible to students who read below grade level (2010). Further, three fourths of students who are not proficient readers in third grade will remain poor readers through high school (U.S. Department of Education, 1999). In addition to being poor readers, these students tend to have more social and behavioral problems in school as. The National Research Council (1998) reports that a student's reading proficiency at the end of third grade can be used to reasonably and accurately predict successful high school graduation.

The Annie E. Casey Foundation (2010) report identified multiple factors that contribute to this deficiency in grade level reading. First, for low-income children, the report stated that a readiness gap fuels what we know as the achievement gap. One contributor to this readiness gap is lack of access to developmentally appropriate, high-quality preschool programs. Physical

conditions at birth including low birth weight can also interfere with students' ability to learn. Differences in resources available to children at home during infancy and toddlerhood including health problems, lack of early linguistic development, and slow development of social and emotional skills also put children academically behind upon entering school, and all of these problems can be barriers to good school attendance.

The National Reading Panel (2000) identified five essential components of effective reading instruction. These components include phonemic awareness, or the ability to manipulate sounds in words, phonics, or the knowledge of relationships between letters and sounds, vocabulary, or the understanding of words in reading, fluency, or the ability to read rapidly, and comprehension, or the ability to gain meaning while reading. These instructional elements would eventually be the cornerstone of the foundational skills of the Common Core State Standards.

In response to the research, the Annie E. Casey Foundation (2010) set forth four recommendations in pursuit of a clearly articulated goal: increasing the number of children, especially from low-income families who read proficiently by the end of third grade. The recommendations are as follows:

- Develop a coherent system of early care and education that aligns, integrates, and coordinates what happens from birth through third grade so children are ready to take on the learning tasks associated with fourth grade and beyond.
- Encourage and enable parents, families, and caregivers to play their indispensable roles as co-producers of good outcomes for their children.
- Prioritize, support, and invest in results-driven initiatives to transform low-performing schools into high-quality teaching and learning environments in which all children, including those from low-income families and high-poverty neighborhoods, are present,

engaged, and educated to high standards.

- Find, develop, and deploy practical and scalable solutions to two of the most significant contributors to the under-achievement of children from low- income families—chronic absence from school and summer learning loss.

Additional research reveals a greater urgency for efforts to boost children's reading proficiency in early grades. For example, a 2011 study (e.g. Feister, 2013) states that kindergarten students in the lower levels of reading achievement are likely to remain there throughout school. Further, at each data collection point throughout the study, struggling readers had fallen further behind their peers. Further research (e.g. Haywood, 2009) shows that children who are not proficient readers by third grade are four times less likely to graduate on time than proficient readers.

The necessity of reading proficiently by the end of third grade and the abundance of research on it lead Ken Stanovich, a psychologist with deep research roots in reading and language disabilities to refer to the idea as the Matthew Effect (Paul, 2009). Matthew refers to the Bible verse stating, "For whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath" (Matthew 13:12). In other words, students who are behind stay behind and fall farther behind, while proficient students continue to progress. For example, throughout grade levels, school assignments increasingly require more reading proficiency in order to learn content, so children who lack reading proficiency are less able to access that content, falling further behind. Knowledge of this effect has led many states, including Tennessee to pass legislation drawing a hard line on proficient reading in third grade in order to pass to fourth grade.

Chapter Summary

The United States and the State of Tennessee have enacted policies and legislation that reflect an understanding of the need for preschool and early childhood education in order to help students develop academic skills and appropriate social-emotional behaviors. This need is especially prevalent for children living in poverty. To that end, much legislation, funding, and programming has gone toward the development of preschool opportunities to support the needs of all children. For several decades, programs such as Head Start, private preschool programs, and Voluntary Pre-K have sought to provide students with the early interventions necessary for school readiness. Research does show that developmentally appropriate early childhood education is beneficial to children and is a sound public investment. However, research around the effectiveness of Tennessee Voluntary pre-kindergarten is not showing that it provides long-term benefits.

Programming that is built on sound childhood development theory has academic as well as social-emotional benefits for children and better prepares them for school. In order for American students to be ready for kindergarten and maintain a trajectory of academic success through graduation, it is important that all children have the opportunity to participate in effective prekindergarten education.

CHAPTER 3

RESEARCH METHODOLOGY

The purpose of this study was to determine if a significant difference in achievement scores exists among students based on whether or not they attended preschool as measured by standardized achievement reading-language arts and math scores on the Tennessee Comprehensive Achievement Program assessment for fourth grade students in a single East Tennessee school district.

Research Questions and Null Hypotheses

The following research questions and corresponding null hypotheses guided the study:

RQ1: Is there a significant difference in reading-language arts scaled scores on the Tennessee Comprehensive Achievement Program (TCAP) achievement test between fourth grade students who attended preschool and those who did not attend preschool?

HO1: There is no significant difference in reading-language arts scores on the TCAP achievement test between fourth grade students who attended preschool and those who did not attend preschool.

RQ2: Is there a significant difference in math scaled scores on the TCAP achievement test between fourth grade students who attended preschool and those who did not attend preschool?

HO2: There is no significant difference in math scaled scores on the TCAP achievement test between fourth grade students who attended preschool and those who did not attend preschool.

RQ3: Is there a significant difference in reading-language arts scaled scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not attend preschool?

HO3: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not attend preschool.

RQ4: Is there a significant difference in reading-language arts scaled scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not attend preschool?

HO4: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not attend preschool.

RQ5: Is there a significant difference in math scaled scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not attend preschool?

HO5: There is no significant difference in math scaled scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not attend preschool.

RQ6: Is there a significant difference in math scaled scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not attend preschool?

HO6: There is no significant difference in math scaled scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not attend preschool.

RQ7: Is there a significant difference in reading-language arts scaled scores on the TCAP achievement test between fourth grade African-American, Hispanic, and Caucasian students who attended preschool and those who did not attend preschool?

$HO7_1$: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between fourth grade African-American who attended preschool and those who did not attend preschool.

$HO7_2$: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between fourth grade Hispanic students who attended preschool and those who did not attend preschool.

$HO7_3$: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between fourth grade Caucasian students who attended preschool and those who did not attend preschool.

RQ8: Is there a significant difference in math scaled scores on the TCAP achievement test between fourth grade African-American, Hispanic, and White students who attended preschool and those who did not attend preschool?

$HO8_1$: There is no significant difference in math scaled scores on the TCAP achievement test between fourth grade African-American students who attended preschool and those who did not attend preschool.

$HO8_2$: There is no significant difference in math scaled scores on the TCAP achievement test between fourth grade Hispanic students who attended preschool and those who did not attend preschool.

$HO8_3$: There is no significant difference in math scaled scores on the TCAP achievement test between fourth Caucasian students who attended preschool and those who did not attend preschool.

Sample

The sample for this study was comprised of 798 students who attended fourth-grade during the 2014-2015 school year at one of eleven elementary schools in East Tennessee. Four hundred fifteen students were males and 383 are females. Within this cohort of students were 548 Caucasian students, 178 Hispanic students, and 72 African-American students. All students for whom measureable scores were available on a state-normed assessment and current grade level assignment were included.

Instrumentation

The data came from 2014-2015 TCAP Achievement scores, specifically reading language arts and math scaled scores. A scaled score is the total number of correct responses (raw score) that has been converted into a consistent and standardized scale. Scaled scores control for differences due to multiple test forms and item difficulty commonly found on standardized assessments. The TCAP Achievement test is a standardized assessment that was administered to all Tennessee students in grades three through eleven and assesses student mastery of grade-level standards in reading language arts, math, science and social studies. The TCAP Achievement test is administered every spring. This study will closely investigate students' scaled scores in reading-language arts and math. The reading-language arts portion of the TCAP test consists of two subtests: reading and language arts. This test, given in grade 4, assesses language,

vocabulary, writing/research, communication and media, logic, informational text, and literature. The math portion in grade 4 assesses mathematical processes, number and operations, algebra, geometry and measurement, data analysis, statistics, and probability. TCAP results are used to tests determine whether a child is below basic, basic, proficient, or advanced in the academic areas tested (Tennessee Department of Education, 2011).

Data Collection

Data were provided by the school district after the researcher gained permission from the director of schools on June 2, 2017. Approval to pursue the completion of the study was obtained from the ETSU Institutional Review Board on June 13, 2017. Data were collected on students who were in the fourth grade during the 2014-2015 school year. Demographic data including grade level, school, and prekindergarten attendance were collected for each student. The data for those students who attended a prekindergarten program within the single school system and those who did not attend the prekindergarten program were provided to the researcher from the Preschool Supervisor who had previously retrieved the information from the school system computer database. The TCAP achievement scale score from the fourth grade years were retrieved by the researcher from the Department of Education testing results website, Pearson Access. A unique identification number was assigned to each student for the purposes of this study. This allowed all subjects to remain anonymous to the researcher and maintain confidentiality throughout the study.

Data Analysis

Data were entered into a PC using Microsoft Office 2010 as the word processing

document. These data were then transferred into an SPSS file. Research questions were analyzed using a series of independent samples *t* tests. All data were analyzed at the .05 level of significance.

Chapter Summary

A non-experimental quantitative method was chosen for this study due to the researcher's interest to determine the effectiveness of a preschool program on the achievement scores of the sample. The researcher was concerned with assessing the degree of relationship between the variables in each subgroup: participants and nonparticipants of preschool programs, in addition to comparing the results by gender and ethnicity. To answer research questions 1 through 8 an independent t-test was conducted. Findings of these t-tests are presented in Chapter 4 along with a summary of the results and a description of the population.

CHAPTER 4

FINDINGS

The purpose of this study was to determine if a significant difference in achievement scores exists among students based on whether or not they attended preschool as measured by standardized achievement reading-language arts and math scores on the Tennessee Comprehensive Achievement Program assessment for fourth grade students in a single East Tennessee school district. Data were collected for the 2014-2015 school year from archival data located in the school district's central office and the Department of Education testing data website, Person Access.

Of the 813 fourth graders during the 2014-2015 school year, 15 students who did not take the Tennessee Comprehensive Assessment Program (TCAP) or took a modified version of the TCAP were excluded from this study. Therefore the sample consisted of 798 students.

Independent sample t-tests were used in this study to evaluate the difference in preschool attendance on the achievement test scores in reading-language arts and math of fourth grade students. Additionally, independent sample t-tests were used to assess the results by gender and ethnicity.

Research Question 1

Is there a significant difference in reading-language arts scaled scores on the Tennessee Comprehensive Achievement Program (TCAP) achievement tests between fourth grade students who attended preschool and those who did not attend preschool?

The following corresponding null hypothesis was tested:

$HO1_1$: There is no significant difference in reading-language arts scores on the TCAP achievement test between fourth grade students who attended preschool and those who did not attend preschool.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in reading-language arts scores on the TCAP achievement test between fourth grade students who attended preschool and those who did not. The test was not significant, $t(796) = .18$, $p = .86$. Therefore, the null hypothesis was retained. The η^2 index was .01, which indicated a small effect size. The reading-language arts achievement test mean for fourth grade students who attended preschool ($M = 2.55$, $SD = .79$) was not statistically different from the mean score of fourth grade students who did not attend preschool ($M = 2.54$, $SD = .82$). The 95% confidence interval for the difference in means was quite wide, ranging from -.13 to .15. Figure 1 shows the distribution for the two groups.

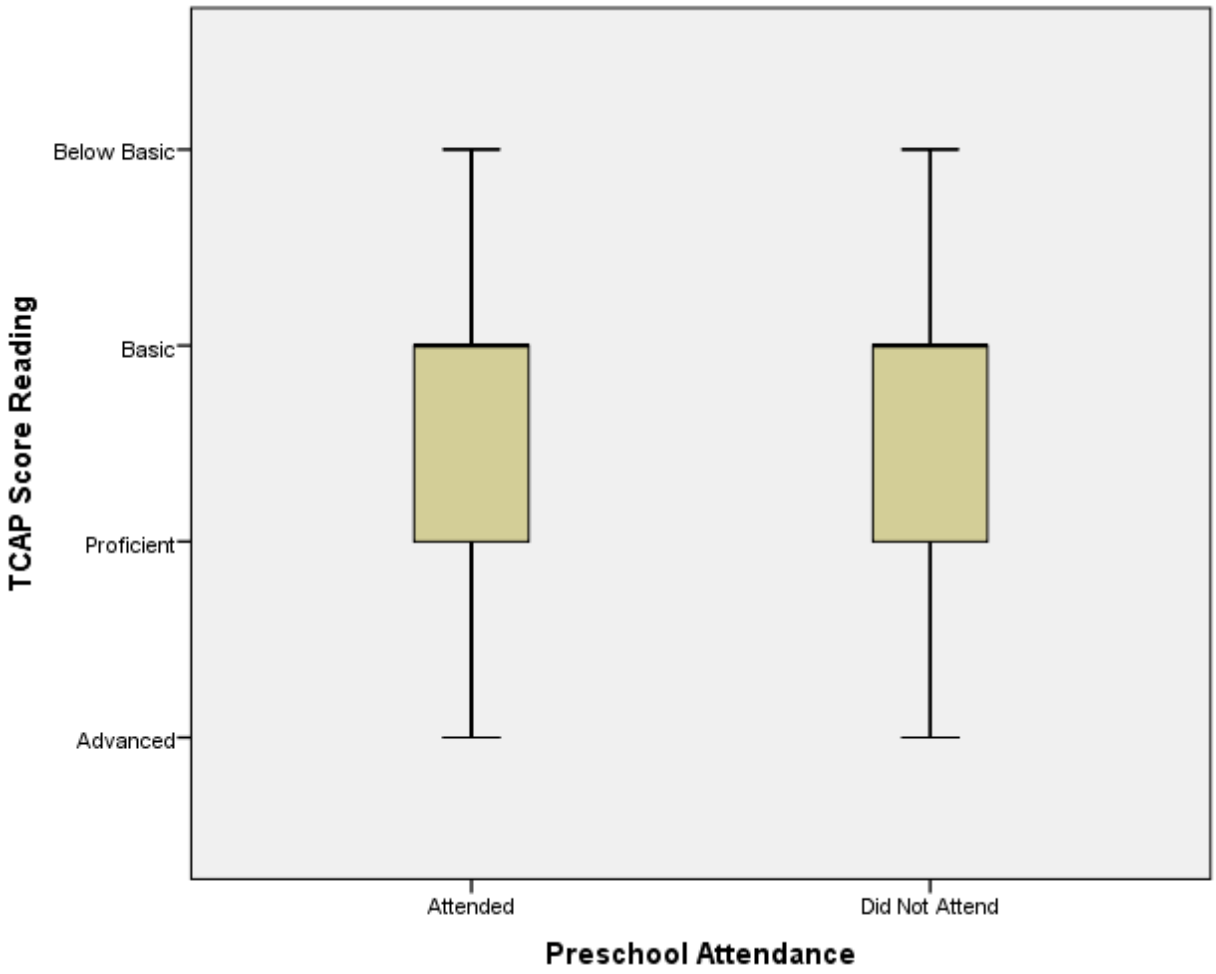

Figure 1. Distribution of fourth grade reading-language arts scores by attendance or nonattendance in a PreK program.

Research Question 2

Is there a significant difference in math scaled scores on the TCAP achievement tests between fourth grade students who attended preschool and those who did not attend preschool? The following corresponding null hypothesis was tested:

$HO2_1$: There is no significant difference in math scaled scores on the TCAP achievement test between fourth grade students who attended preschool and those who did not attend preschool.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in math scores on the TCAP achievement test between fourth grade students who attended preschool and those who did not. The test was not significant, $t(796) = .03$, $p = .98$. Therefore, the null hypothesis was retained. The η^2 index was .02, which indicated a small effect size. The math achievement test scores' mean for fourth grade students who attended preschool ($M = 2.34$, $SD = .93$) was almost identical to the mean fourth grade students who did not attend preschool ($M = 2.54$, $SD = .93$). The 95% confidence interval for the difference in means was quite wide, ranging from -.16 to .17. Figure 2 shows the distribution for the two groups.

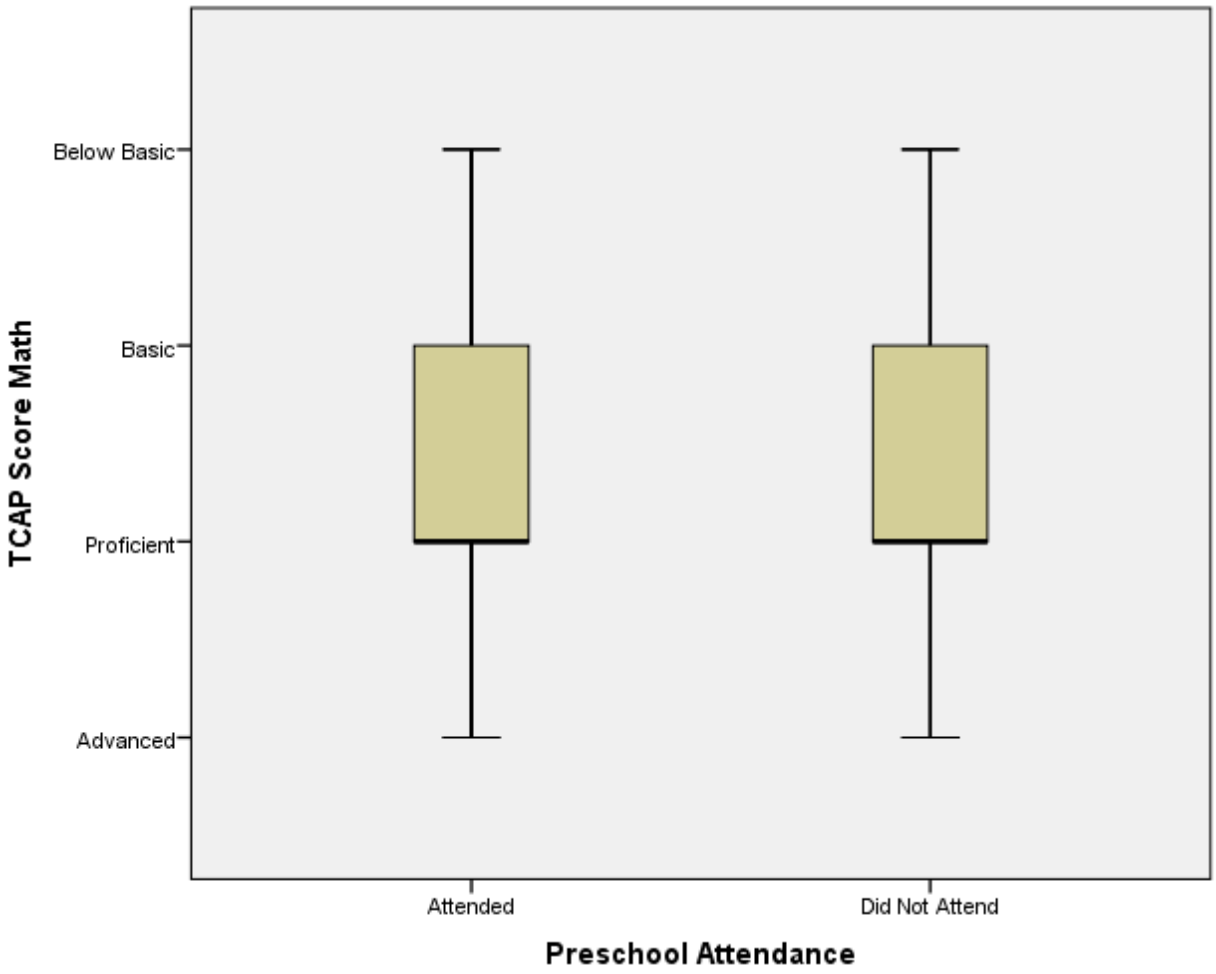

Figure 2. Distribution of fourth grade math scores by attendance or nonattendance in a PreK program.

Research Question 3

Is there a significant difference in reading-language arts scaled scores on the TCAP achievement tests between male fourth grade students who attended preschool and those who did not attend preschool?

The following corresponding null hypothesis was tested:

$HO3_1$: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not attend preschool.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in reading-language arts scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not. The test was not significant, $t(406) = .58$, $p = .57$. Therefore, the null hypothesis was retained. The η^2 index was .07, which indicated a small effect size. The reading-language arts achievement test scores' mean for male fourth grade students who attended preschool ($M = 2.57$, $SD = .86$) was almost identical to the mean male fourth grade students who did not attend preschool ($M = 2.63$, $SD = .81$). The 95% confidence interval for the difference in means was quite wide, ranging from -.27 to .15. Figure 3 shows the distribution for the two groups.

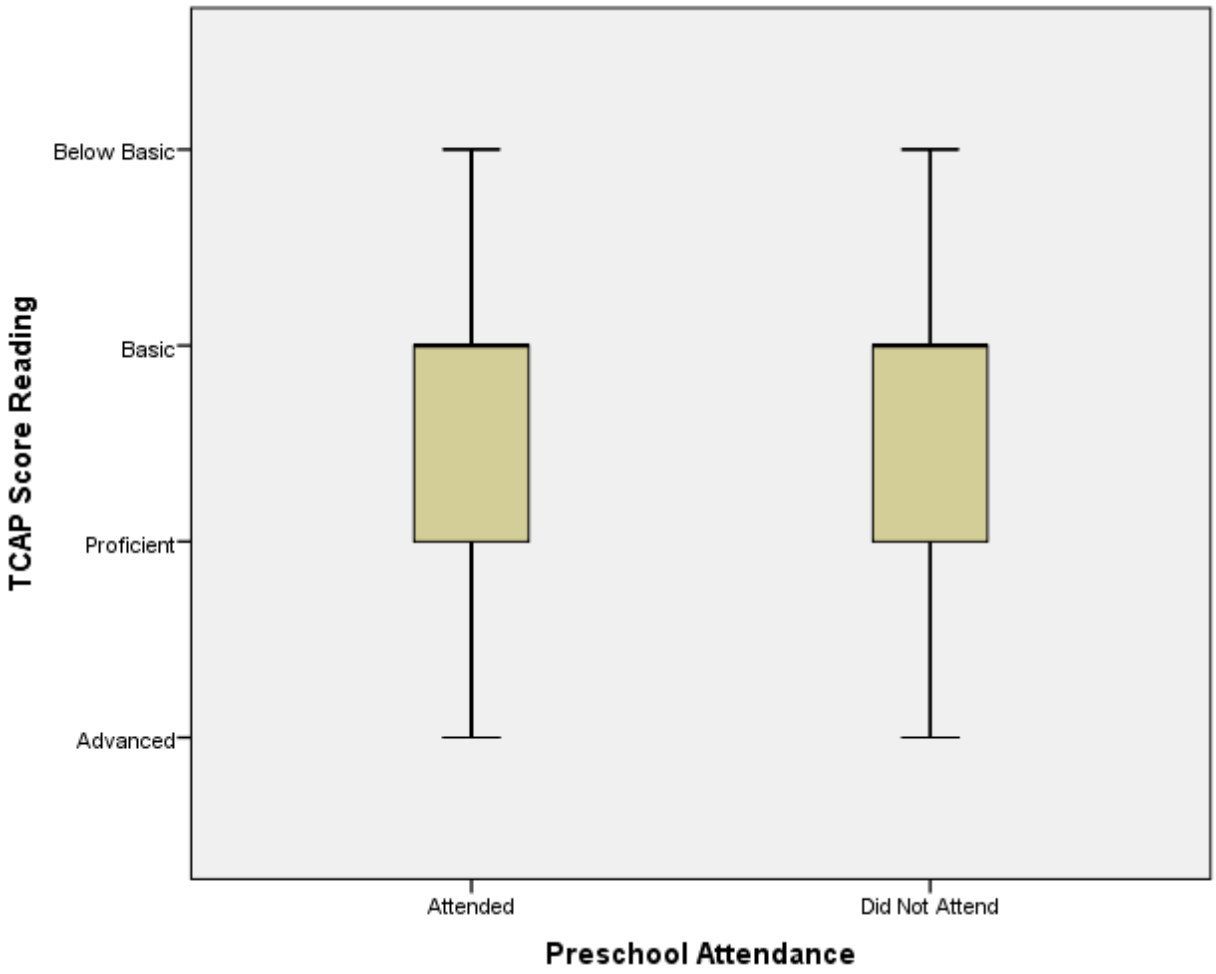

Figure 3. Distribution of male fourth grade reading-language arts scores by attendance or nonattendance in a PreK program.

Research Question 4

Is there a significant difference in reading-language arts scaled scores on the TCAP achievement tests between female fourth grade students who attended preschool and those who did not attend preschool?

The following corresponding null hypothesis was tested:

$HO4_1$: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not attend preschool.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in reading-language arts scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not. The test was not significant, $t(388) = .93$, $p = .36$. Therefore, the null hypothesis was retained. The η^2 index was .11, which indicated a large effect size. The reading-language arts achievement test scores' mean for female fourth grade students who attended preschool ($M = 2.53$, $SD = .73$) was almost identical to the mean female fourth grade students who did not attend preschool ($M = 2.44$, $SD = .81$). The 95% confidence interval for the difference in means was quite wide, ranging from -.10 to .28. Figure 4 shows the distribution for the two groups.

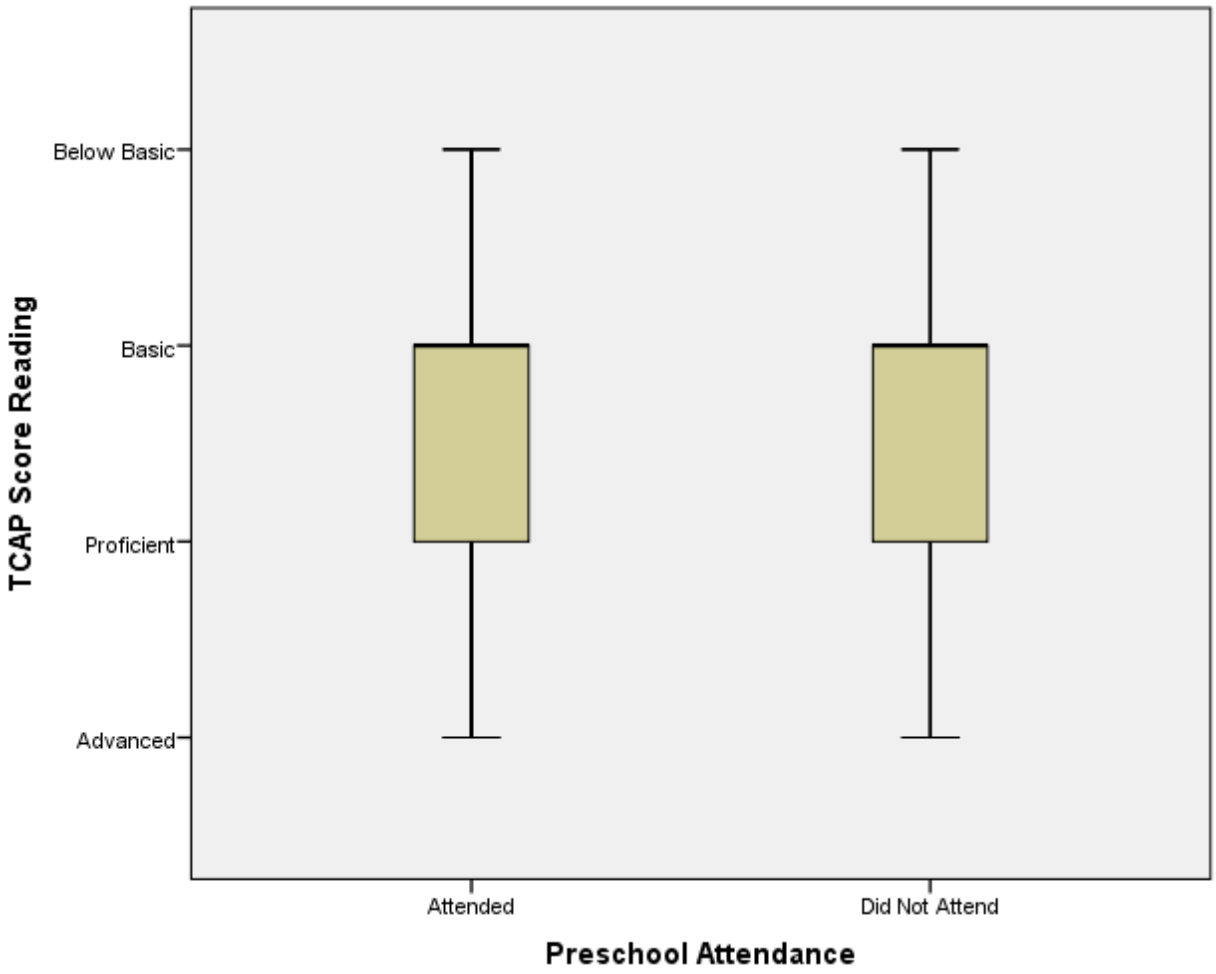

Figure 4. Distribution of female fourth grade reading-language arts scores by attendance or nonattendance in a PreK program.

Research Question 5

Is there a significant difference in math scaled scores on the TCAP achievement tests between male fourth grade students who attended preschool and those who did not attend preschool?

The following corresponding null hypothesis was tested:

$HO5_1$: There is no significant difference in math scaled scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not attend preschool.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in math arts scores on the TCAP achievement test between male fourth grade students who attended preschool and those who did not. The test was not significant, $t(406) = 1.40$, $p = .16$. Therefore, the null hypothesis was retained. The η^2 index was .18, which indicated a large effect size. The math achievement test scores' mean for male fourth grade students who attended preschool ($M = 2.19$, $SD = .88$) was almost identical to the mean male fourth grade students who did not attend preschool ($M = 2.35$, $SD = .95$). The 95% confidence interval for the difference in means was quite wide, ranging from -.40 to .06. Figure 5 shows the distribution for the two groups.

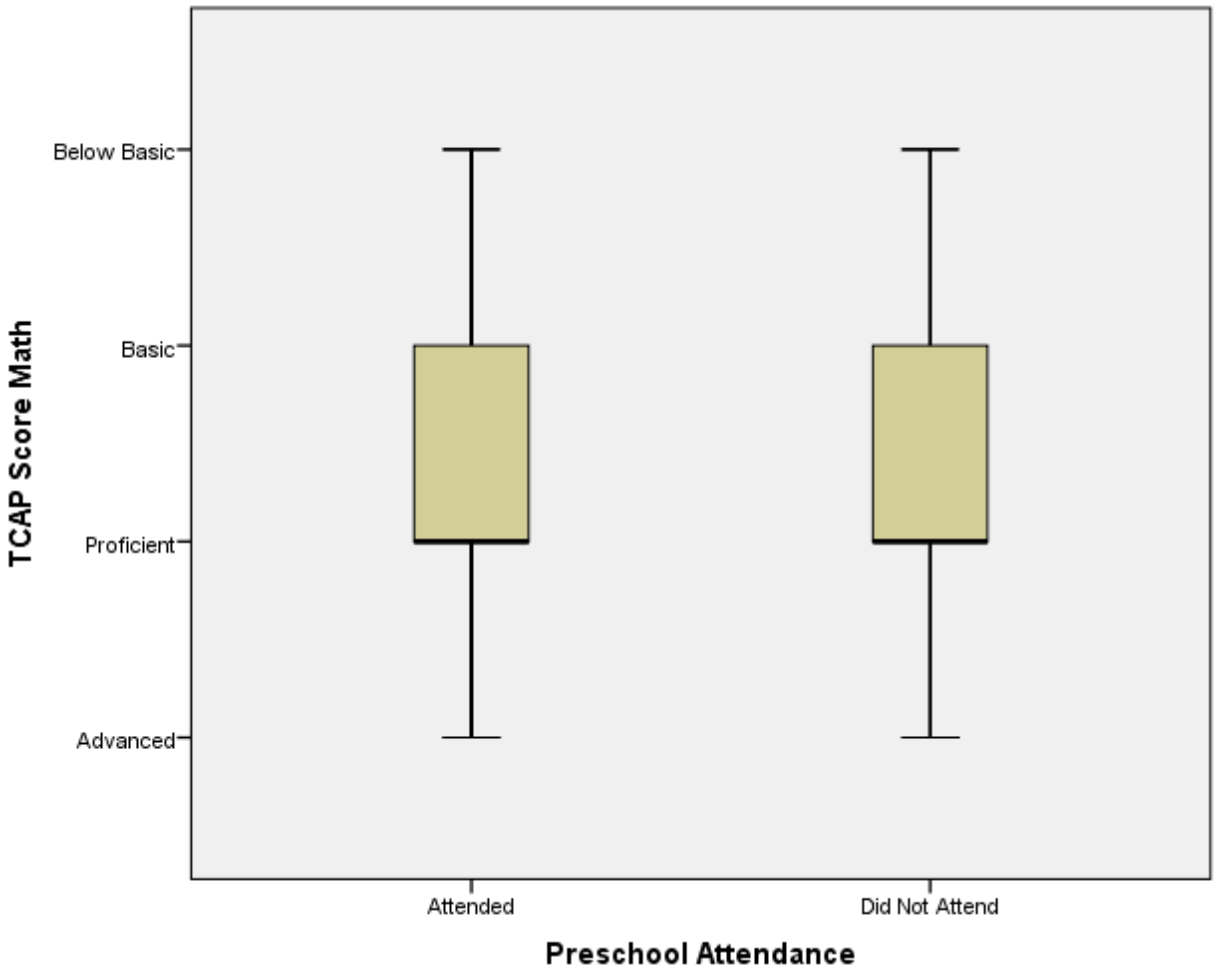

Figure 5. Distribution of male fourth grade math scores by attendance or nonattendance in a PreK program.

Research Question 6

Is there a significant difference in math scaled scores on the TCAP achievement tests between female fourth grade students who attended preschool and those who did not attend preschool?

The following corresponding null hypothesis was tested:

$HO6_1$: There is no significant difference in math scaled scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not attend preschool.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in math arts scores on the TCAP achievement test between female fourth grade students who attended preschool and those who did not. The test was not significant, $t(388) = 1.43$, $p = .15$. Therefore, the null hypothesis was retained. The η^2 index was .17, which indicated a large effect size. The math achievement test scores' mean for female fourth grade students who attended preschool ($M = 2.50$, $SD = .96$) was almost identical to the mean male fourth grade students who did not attend preschool ($M = 2.33$, $SD = .91$). The 95% confidence interval for the difference in means was quite wide, ranging from -.06 to .41. Figure 6 shows the distribution for the two groups.

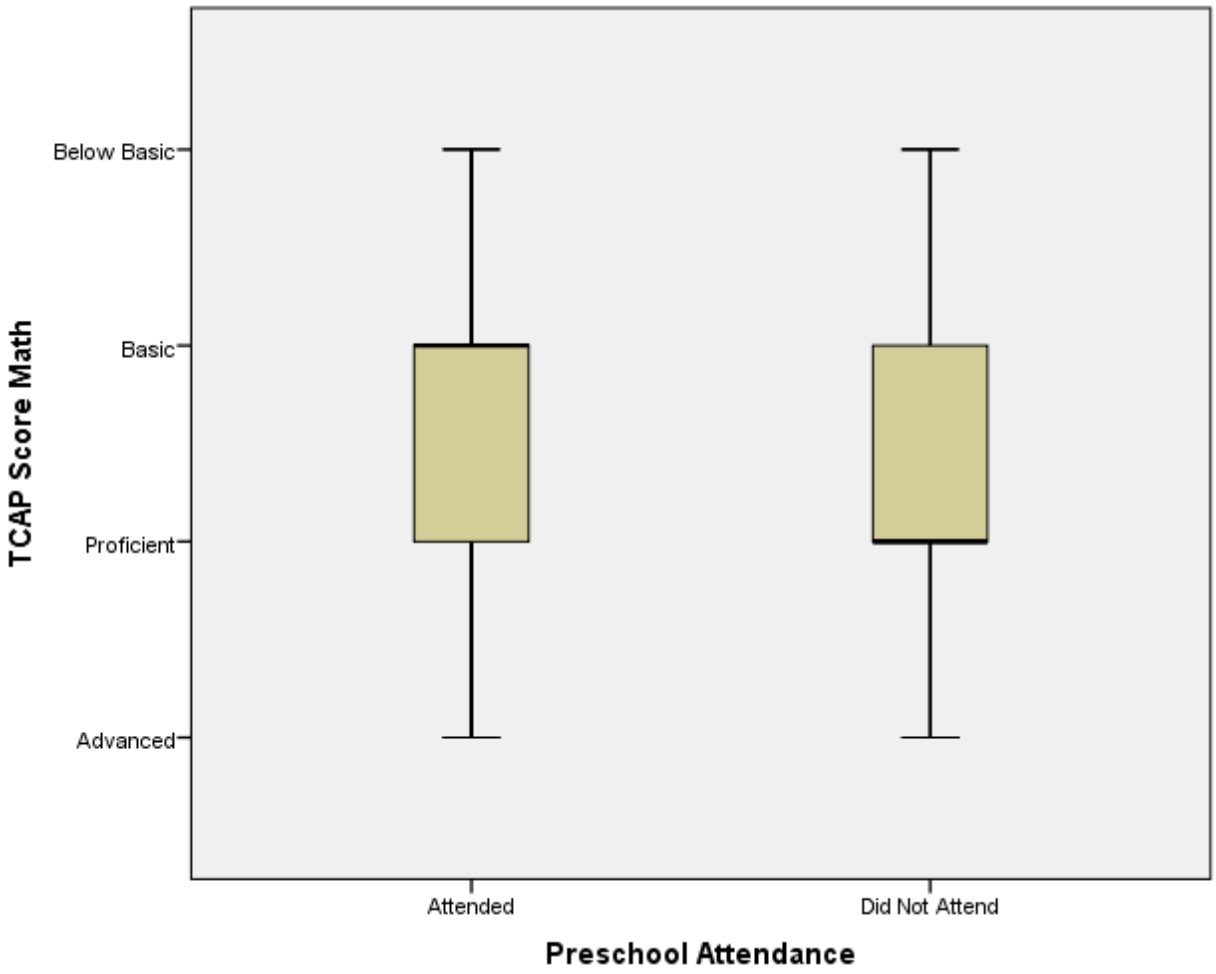

Figure 6. Distribution of female fourth grade math scores by attendance or nonattendance in a PreK program.

Research Question 7

Is there a significant difference in reading-language arts scaled scores on the TCAP achievement tests between fourth grade African American, Hispanic, and White students who attended preschool and those who did not attend preschool?

The following corresponding null hypotheses were tested:

$HO7_1$: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between fourth grade African American who attended preschool and those who did not attend preschool.

$HO7_2$: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between fourth grade Hispanic students who attended preschool and those who did not attend preschool.

$HO7_3$: There is no significant difference in reading-language arts scaled scores on the TCAP achievement test between fourth grade Caucasian students who attended preschool and those who did not attend preschool.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in reading-language arts scores on the TCAP achievement test between fourth grade African American students who attended preschool and those who did not. The test was not significant, $t(51) = .36$, $p = .72$. Therefore, the null hypothesis was retained. The η^2 index was .11, which indicated a large effect size. The reading-language arts achievement test scores' mean for African American fourth grade students who attended preschool ($M = 2.79$, $SD = .70$) was almost identical to the mean African American fourth grade students who did not attend preschool ($M = 2.69$, $SD = .86$). The 95% confidence interval for the difference in means was quite wide, ranging from -.42 to .57. Figure 7.1 shows the distribution for the two groups.

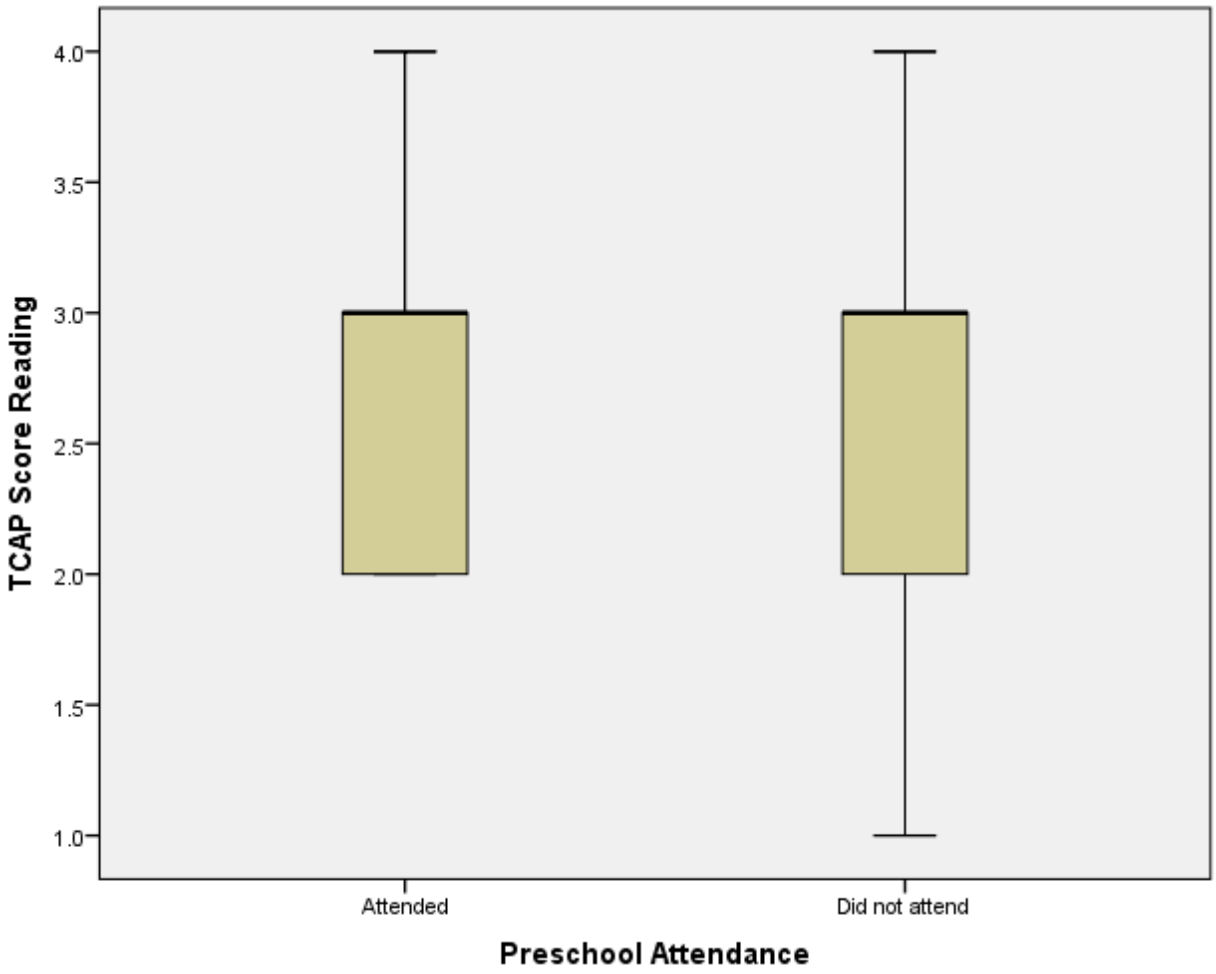

Figure 7.1. Distribution of African American fourth grade reading-language arts scores by attendance or nonattendance in a PreK program.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in reading-language arts scores on the TCAP achievement test between fourth grade Hispanic students who attended preschool and those who did not. The test was not significant, $t(206) = .11$, $p = .96$. Therefore, the null hypothesis was retained. The η^2 index was .01, which indicated a small effect size. The reading-language arts achievement test scores' mean for Hispanic fourth grade students who attended preschool ($M = 2.87$, $SD = .66$) was almost identical to the mean Hispanic fourth grade students who did not attend

preschool (M = 2.86, SD = .76). The 95% confidence interval for the difference in means was quite wide, ranging from -.25 to .25. Figure 7.2 shows the distribution for the two groups.

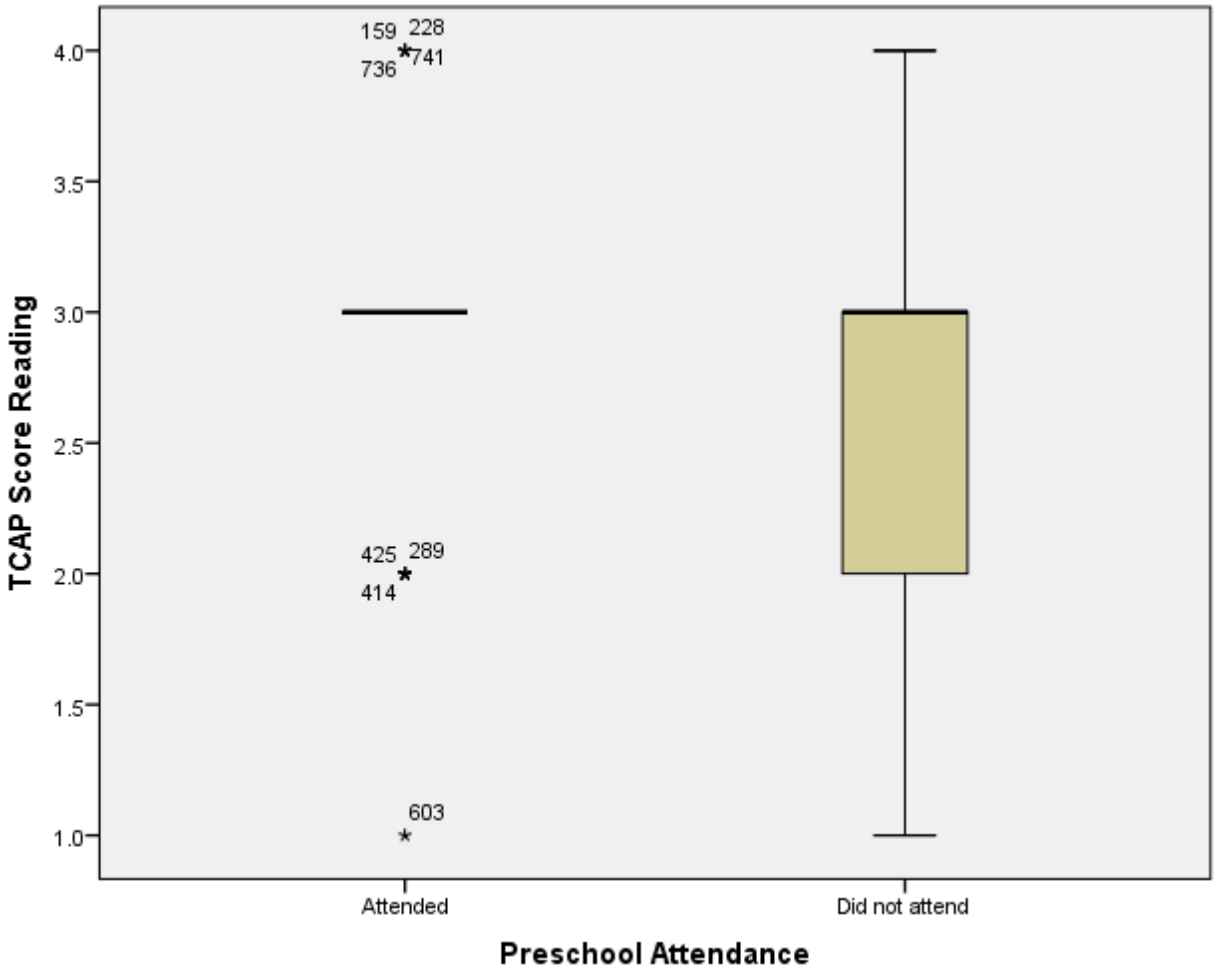

Figure 7.2. Distribution of Hispanic fourth grade reading-language arts scores by attendance or nonattendance in a PreK program.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in reading-language arts scores on the TCAP achievement test between fourth grade Caucasian students who attended preschool and those who did not. The test was not significant, $t(535) = .08$, $p = .93$. Therefore, the null hypothesis was retained. The η^2

index was .008, which indicated a small effect size. The reading-language arts achievement test scores' mean for Caucasian fourth grade students who attended preschool (M = 2.40, SD = .82) was almost identical to the mean Caucasian fourth grade students who did not attend preschool (M = 2.41, SD = .80). The 95% confidence interval for the difference in means was quite wide, ranging from -.18 to .17. Figure 7.3 shows the distribution for the two groups.

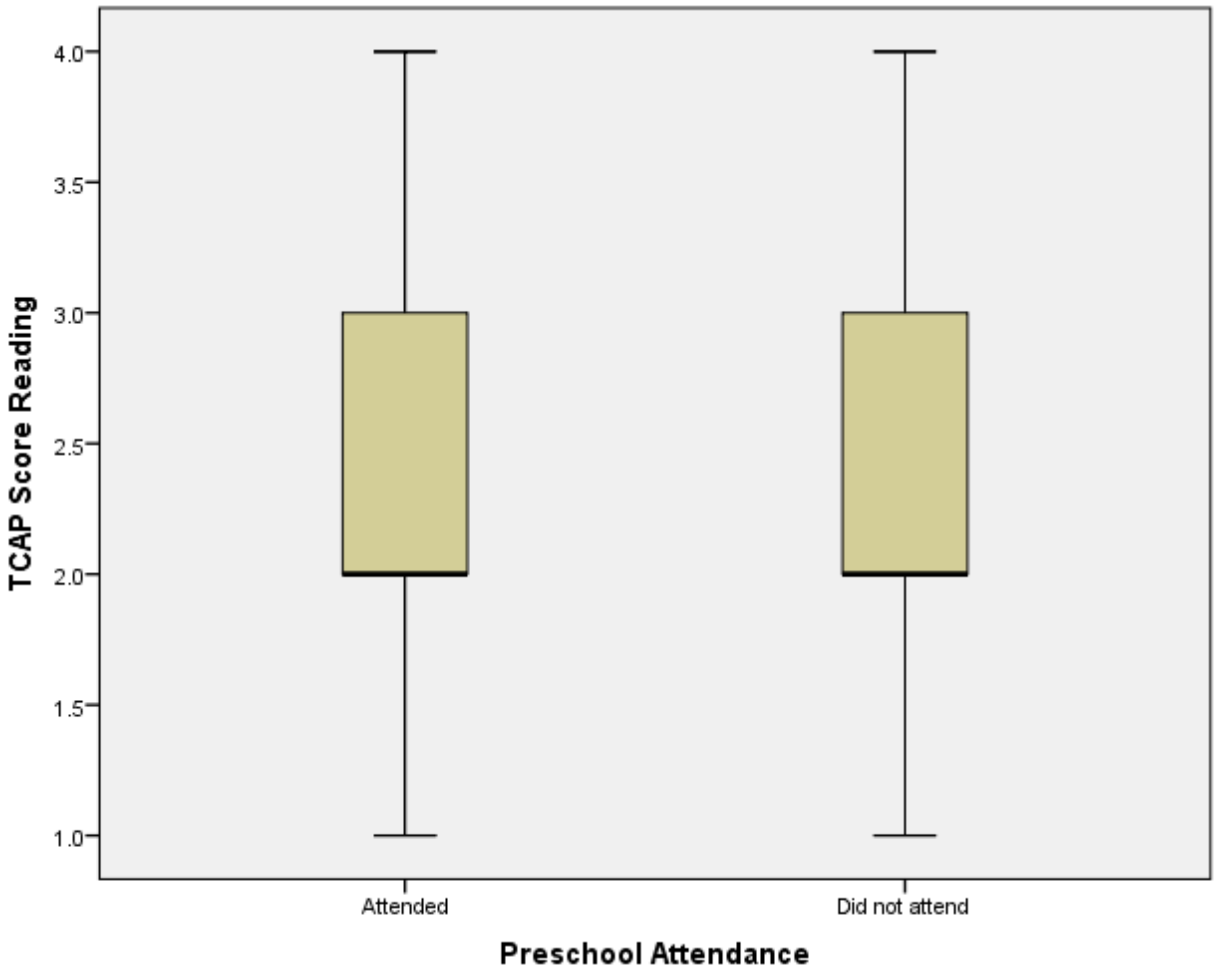

Figure 7.3. Distribution of Caucasian fourth grade reading-language arts scores by attendance or nonattendance in a PreK program.

Research Question 8

Is there a significant difference in math scaled scores on the TCAP achievement tests between fourth grade African-American, Hispanic, and White students who attended preschool and those who did not attend preschool?

The following corresponding null hypotheses were tested:

$HO8_1$: There is no significant difference in math scaled scores on the TCAP achievement test between fourth grade African-American students who attended preschool and those who did not attend preschool.

$HO8_{2:}$ There is no significant difference in math arts scaled scores on the TCAP achievement test between fourth grade Hispanic students who attended preschool and those who did not attend preschool.

HO8$_3$: There is no significant difference in math scaled scores on the TCAP achievement test between fourth grade Caucasian students who attended preschool and those who did not attend preschool.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in math scores on the TCAP achievement test between fourth grade African American students who attended preschool and those who did not. The test was not significant, $t(51) = 1.17$, $p = .25$. Therefore, the null hypothesis was retained. The η^2 index was .36, which indicated a large effect size. The math achievement test scores' mean for African American fourth grade students who attended preschool ($M = 2.43$, $SD = .94$) was almost identical to the mean African American fourth grade students who did not attend preschool ($M = 2.78$, $SD = .93$). The 95% confidence interval for the difference in means was quite wide, ranging from -.92 to .26. Figure 8.1 shows the distribution for the two groups.

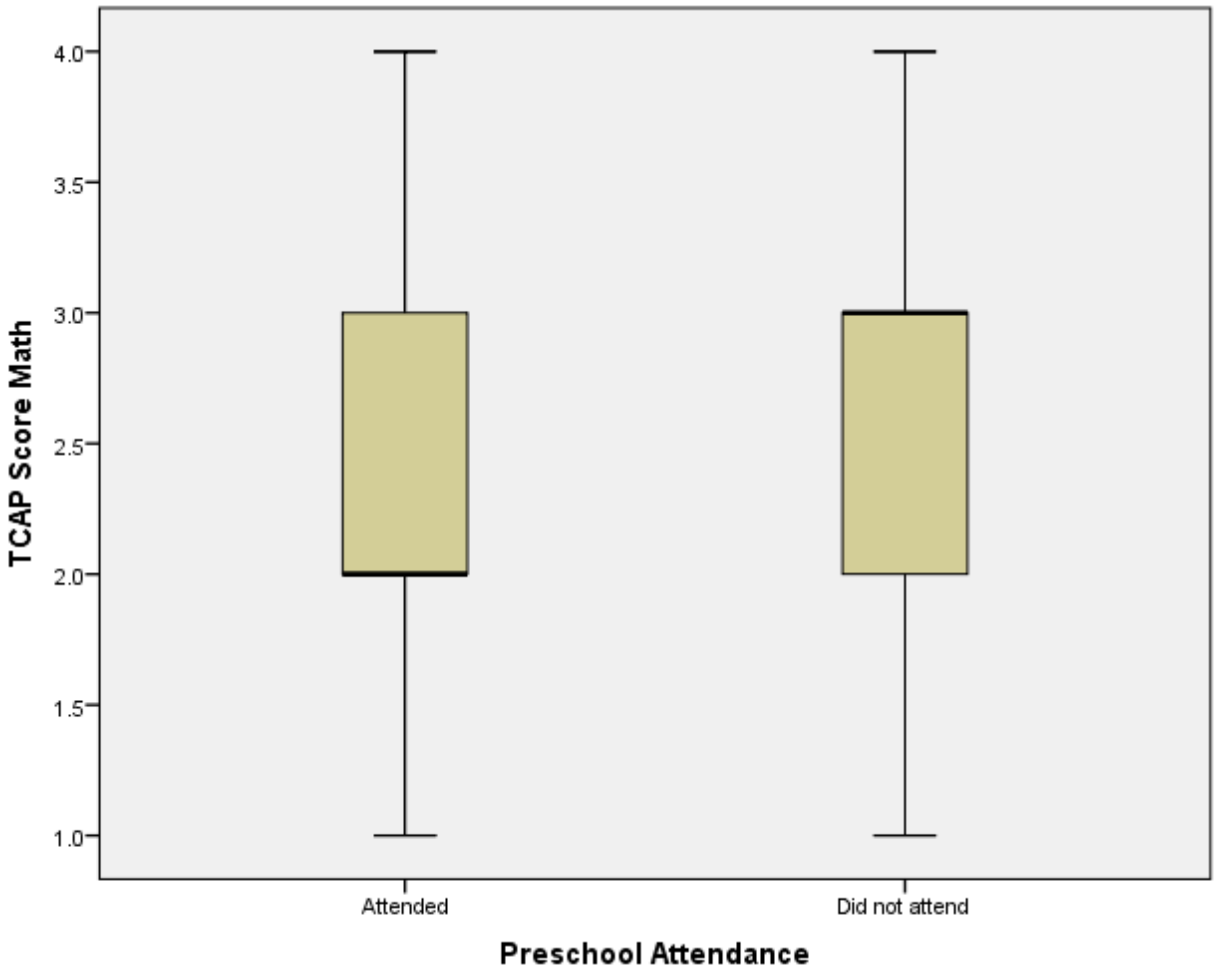

Figure 8.1. Distribution of African American fourth grade math scores by attendance or nonattendance in a PreK program.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in math scores on the TCAP achievement test between fourth grade Hispanic students who attended preschool and those who did not. The test was not significant, $t(206) = -.75$, $p = .46$. Therefore, the null hypothesis was retained. The η^2 index was .12, which indicated a large effect size. The math achievement test scores' mean for Hispanic fourth grade students who attended preschool ($M = 2.51$, $SD = .94$) was almost identical to the mean Hispanic fourth grade students who did not attend preschool ($M = 2.63$, $SD = .84$).

The 95% confidence interval for the difference in means was quite wide, ranging from -.42 to .22. Figure 8.2 shows the distribution for the two groups.

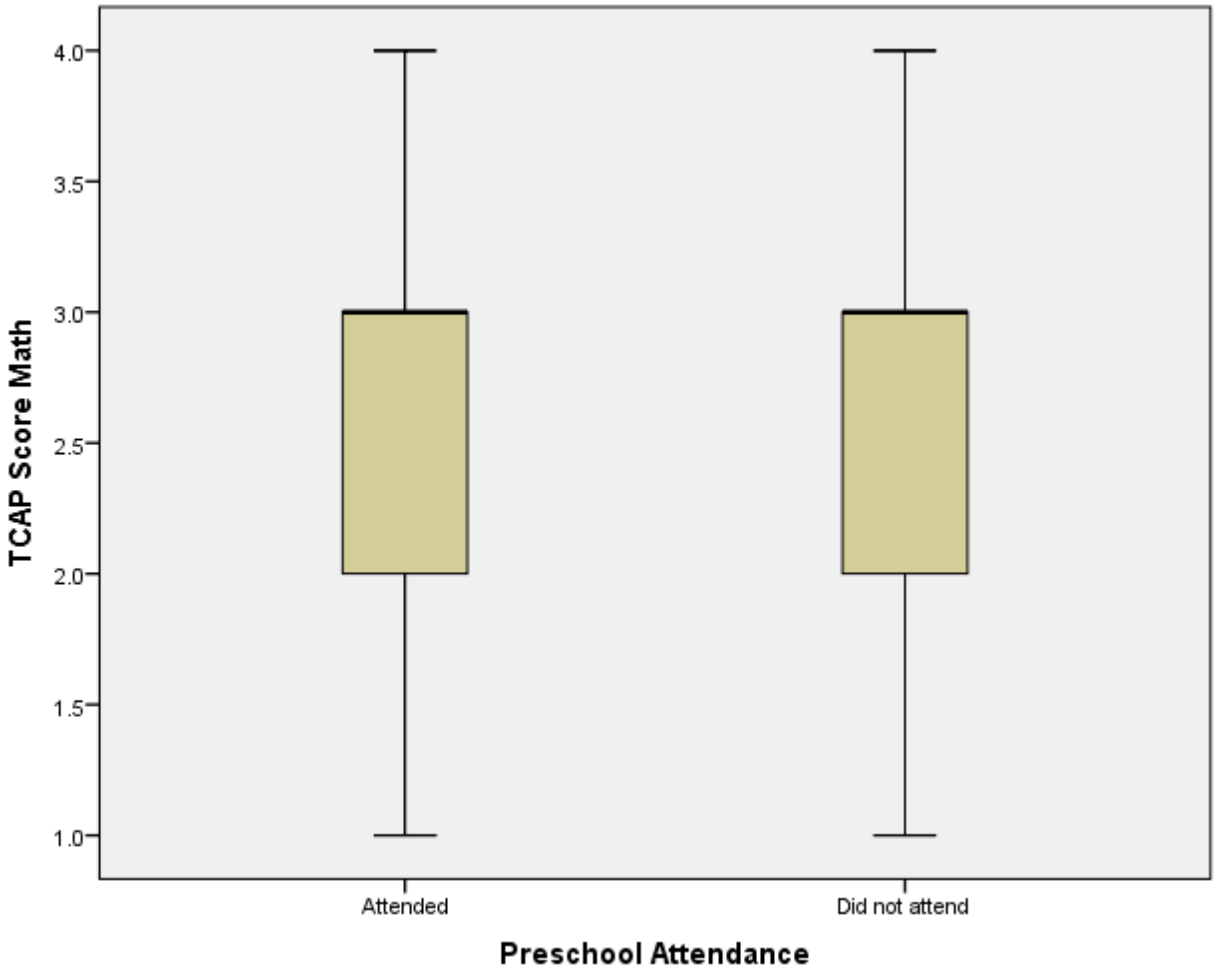

Figure 8.2. Distribution of Hispanic fourth grade math scores by attendance or nonattendance in a PreK program.

An independent sample t-test was conducted to evaluate the hypothesis that there is no significant difference in math scores on the TCAP achievement test between fourth grade Caucasian students who attended preschool and those who did not. The test was not significant, $t(535) = .72$, $p = .47$. Therefore, the null hypothesis was retained. The η^2 index was .07,

which indicated a small effect size. The math achievement test scores' mean for Caucasian fourth grade students who attended preschool (M = 2.27, SD = .93) was almost identical to the mean Caucasian fourth grade students who did not attend preschool (M = 2.20, SD = .92). The 95% confidence interval for the difference in means was quite wide, ranging from -.13 to .28. Figure 8.3 shows the distribution for the two groups.

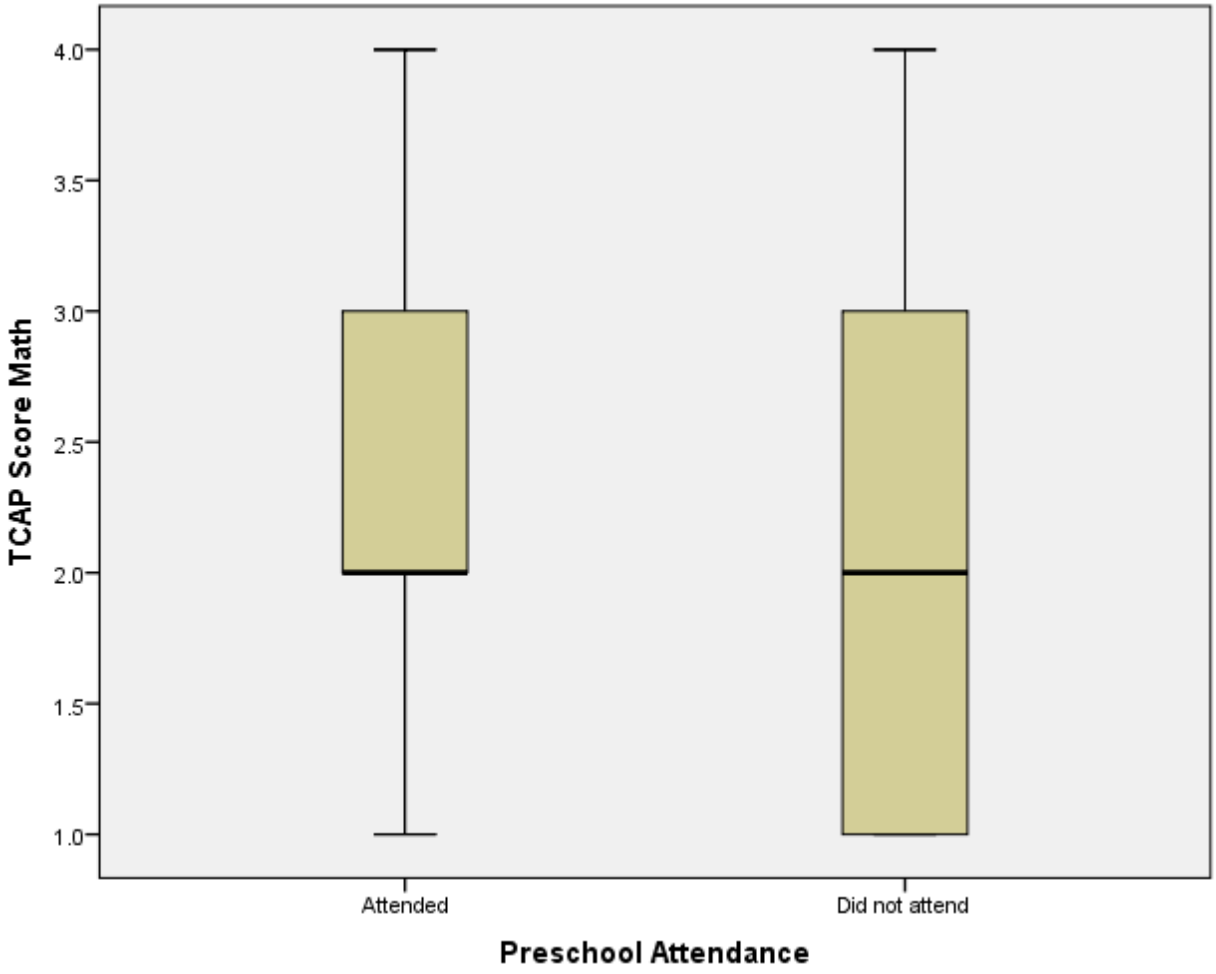

Figure 8.3. Distribution of Caucasian fourth grade math scores by attendance or nonattendance in a PreK program.

Chapter Summary

This study examined the difference in academic achievement in reading-language arts and math as measured by TCAP scale scores among students in the fourth grade in a single school district in East Tennessee based on student attendance in a preschool program. This study found that no significant difference existed between the academic achievement at the end of fourth grade of those students who attended preschool and those who did not. Detailed summary and interpretation to provide meaningful conclusions, summary of findings, and recommendations are presented in Chapter 5.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study was designed to determine if a difference exists in the academic achievement of fourth grade students who attended preschool and those who did not attend preschool. A quantitative research methodology was used to gather and analyze the TCAP results of fourth grade students in a single school district in East Tennessee for the purpose of the study. This chapter provides a summary of the findings as well as conclusions and recommendations for future research.

Preschool programs have long been thought to develop early learning skills in children and prepare them for success in the coming first years of school (Nelson, Westheus, & McCoud, 2003). In recent years, states have increased their investment spending on preschool more than 200 percent (NIEER & ECS, 2014). However, the profile of a preschool program ranges from a daily babysitting service to highly structured, academically driven programs. Results of previous research has been mixed with regard to whether or not attendance in a preschool program has long lasting positive effect on a student's academic success (Barnett et al., 2004; Vanderbilt University, n.d.). Although much of the research indicated the positive effect of participation in preschool, the lack of generalizable studies underscores the need for local studies in order for local educational leaders to make sound judgments about local preschool programs.

Summary of Findings

The findings of this study ran contradictory to the findings of most studies presented in the literature review. The positive effects found in previous studies were not found in this study.

Research Question 1

Is there a significant difference in reading-language arts scaled scores on the Tennessee Comprehensive Achievement Program (TCAP) achievement tests between fourth grade students who attended preschool and those who did not?

For fourth grade reading-language arts scaled scores on TCAP the difference between students who attended preschool and those who did not was not significant. Therefore, the hypothesis was retained. These results ran contrary to analysis of data by Magnuson et al. (2003) which found that students who had attended PreK scored higher on reading tests than those who received parental care.

Research Question 2

Is there a significant difference in math scaled scores on the TCAP achievement tests between fourth grade students who attended preschool and those who did not?

For fourth grade math scaled scores on TCAP the difference between students who attended preschool and those who did not was not significant. Therefore, the hypothesis was retained. This is in direct contrast to the findings of Gormley et al. (2005) who reported significant math gains among students in Boston and Tulsa's universal Prek programs.

Research Question 3

Is there a significant difference in reading-language arts scaled scores on the TCAP achievement tests between male fourth grade students who attended preschool and those who did not?

For fourth grade math scaled scores on TCAP the difference between male students who attended preschool and those who did not was not significant. Therefore, the hypothesis was

retained. These findings align with the findings of Anderson (2008) whose reanalysis of the Perry Preschool, Abacedarian, and Early Training Project data determined that preschool had no significant long term results for boys.

Research Question 4

Is there a significant difference in reading-language arts scaled scores on the TCAP achievement tests between female fourth grade students who attended preschool and those who did not?

For fourth grade reading-language arts scaled scores on TCAP the difference between female students who attended preschool and those who did not was not significant. Therefore, the hypothesis was retained. This is in contrast to the findings of Goodman and Sianesi (2005) who found that participation in Prek has long-term positive effects for girls.

Research Question 5

Is there a significant difference in math scaled scores on the TCAP achievement tests between male fourth grade students who attended preschool and those who did not?

For fourth grade math scaled scores on TCAP the difference between male students who attended preschool and those who did not was not significant. Therefore, the hypothesis was retained. This is in alignment with the results found by Anderson (2008) that participation in Prek showed no significant impact on male students.

Research Question 6

Is there a significant difference in math scaled scores on the TCAP achievement tests between female fourth grade students who attended preschool and those who did not?

For fourth grade math scaled scores on TCAP the difference between female students who attended preschool and those who did not was not significant. Therefore, the hypothesis was retained. This is in contrast to the findings of Goodman and Sianesi (2005) who found that participation in Prek has long-term positive effects for girls.

Research Question 7

Is there a significant difference in reading-language arts scaled scores on the TCAP achievement tests between fourth grade African-American, Hispanic, and Caucasian students who attended preschool and those who did not?

For fourth grade reading-language arts scaled scores on TCAP the difference between African-American, Hispanic, and Caucasian students who attended preschool and those who did not was not significant. Therefore, the null hypotheses were retained. This is in direct contrast to the findings of the NIEER (2016) who reported that access to high-quality universal Prek essentially closed the achievement gap for minority children entering kindergarten.

Research Question 8

Is there a significant difference in math scaled scores on the TCAP achievement tests between fourth grade African-American, Hispanic, and White students who attended preschool and those who did not?

For fourth grade math scaled scores on TCAP the difference between African-American, Hispanic, and Caucasian students who attended preschool and those who did not was not significant. Therefore, the hypotheses were retained. These findings are in direct contrast to findings of the NIEER (2016) who estimated that access to high quality universal Prek would reduce the kindergarten entry achievement gap in math 78 percent for Hispanics and 45 percent for African-Americans.

Conclusions

This study found no significant difference regarding preschool attendance and academic achievement in grade four among students in a single school district in East Tennessee. Tennessee PreK is limited to low income students to prepare them for school and prevent achievement gaps. The fact that these students from historically disadvantaged demographic groups did not show a significant gap in achievement when compared to others shows that participation in preschool in this district is effective at preventing or closing learning gaps. Though this study mirrored the purpose of studies presented in the literature review in-analyzing the effects of preschool attendance, the study differed in nature to the national studies in the following ways:

- The High/Scope Perry project included long-term follow up data on students well into adulthood
- The Abecedarian Study focused solely on students indicated to be at-risk.
- The Abecedarian study recorded data longitudinally, spanning 37 years.
- The Abecedarian study focused on results as measured by student IQ scores.

- The Chicago Longitudinal study focused solely on students living in high poverty neighborhoods.
- The NIEER 5-State PreK Study utilized a regression discontinuity approach.

The population of this study has not advanced in age enough to determine long term effects of preschool into adulthood. Additionally, the district studied includes students of all income and socioeconomic status, race, and ethnicity. Therefore, no definitive conclusions can be reached about students in the single school district in East Tennessee and participation in preschool as an indicator of success in later grades.

Recommendations for Practice

In light of the results of this study, it is recommended that the district in East Tennessee continue to collect and analyze data regarding the impact of preschool attendance on students in its district. The results of this study indicated that there was not a statistically significant relationship between reading-language arts scores and math scores of students in fourth grade who attended preschool and those who did not. Therefore, officials in the East Tennessee school district studied would be advised to continue studying additional cohorts to determine recommendations about preschool and drive decisions about preschool funding and partnerships. For example the district could collect information on the population and disaggregate data based on socioeconomic status, the qualifications of the preschool teachers or providers, a comparison of the curricula used in varying preschool programs, or the amount of funding each program receives. These examinations would further delineate which variables in programs affect the success of its preschool graduates.

Finally, further comparison research could be conducted to determine if the results of this study reflect the results in other districts. A comparison among districts would allow the researcher to determine if these results are unique to this single school district or if they are compatible with those of multiple school districts in Tennessee. One could examine trends in results regionally, statewide, and nationwide.

Recommendations for Future Study

This study was conducted to examine the relationship between academic achievement of students who attended preschool and those who did not in one school district in East Tennessee. Follow-up study could be conducted in early grades utilizing scores from the Tennessee Kindergarten Entrance Inventory, and the early grades assessment given in second grade. A longitudinal extension of this study could be conducted, following participants through high school and analyzing data in terms of graduation rate, ACT, SAT, retention rates, and college entrance. The information presented in the literature review suggests that attendance at a preschool program would be beneficial for preschool aged children with benefits extending through adulthood. This study focused primarily on academic success as measured at the end of fourth grade. Although this study did not seek to determine long term effects of attendance in preschool beyond fourth grade, the population of this study could feasibly be followed through adulthood to determine if long-term benefits occur. This would allow the researcher to compare subjects who attended preschool and those who did not when analyzing ACT scores, graduation rates, and measures of successful integration into society.

The school system examined in this study does not currently seek or receive any perception data from parents regarding their child's experience in preschool or what type of

preschool the child attended. If this information were to be collected and logged, one could potentially study the effects of different types of preschool, i.e., daycare, Head Start, faith based preschool, school system sponsored preschool, etc., to determine differences in effects of varying programs. This would allow the researcher to determine which types of programs may provide the most positive effect, a measure that would be beneficial to parents making decisions about which type of program to access for their children.

Summary

This study examined the difference in academic achievement in reading-language arts and math as measured by TCAP scale scores among students in the fourth grade in a single school district in East Tennessee based on student attendance in a preschool program. The study provides useful information to the district as well as parents regarding the importance of attending preschool prior to entering formal schooling and the potential effects on achievement in later grades. This study could be beneficial to educators when examining information about the association between preschool attendance and success in school. Additionally, this information could be useful to parents when determining whether or not to enroll their child in preschool. Though the literature review provided a generous amount of research indicated the positive effects of preschool attendance, this study found that no significant difference existed between the academic achievement at the end of fourth grade of those students who attended preschool and those who did not.

This study, presented over five chapters examined the difference in TCAP achievement scores in reading-language arts and math for fourth grade students based on their participation or nonparticipation in preschool. Chapter 1 includes an introduction to the problem studied,

statement of the problem, research questions, significance of the study, definition of terms, limitations and delimitations, and an overview of the study. Chapter 2 provides an in-depth review of the literature including an examination of historical perspectives of preschool, major theories applied in early childhood curriculum, legislation regarding preschool both in the United States and in Tennessee, funding and sustainability of preschool programs in Tennessee, major studies previously conducted on the effects of preschool, teacher program and quality, school readiness, and proficiency at the end of fourth grade. Chapter 3 describes the quantitative methodology used during the research. Chapter 4 gives a description of the data collected as it relates to the research questions. Chapter 5 includes a summary of findings, conclusions from the research, and recommendations for future research.

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