THE DIFFERENCES IN APPROACHES TO LEARNING AMONG KINDERGARTNERS WHO
ATTENDED STATE-FUNDED PRE-K

by

Kristin Harvey Mobbs

Liberty University

A Dissertation Presented in Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

Liberty University

June 2014
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ABSTRACT

This causal-comparative study examined the differences in early childhood experiences on the critical school readiness domain of approaches to learning. Kindergarten teachers from a small district in northeast Georgia completed the Learning Behaviors Scale to examine the dependent variables of competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility from a convenience sample of 187 kindergarten students. The school district provided archived data that included kindergarten class lists, preschool experiences during the 2012-2013 school year, race, gender, free/reduced lunch status, and elementary school attended for kindergarten in order to examine kindergartners’ learning behaviors. Descriptive statistics provided information on the mean differences between the three independent variable groups, dependent variables, and demographic variables. A MANOVA analyzed the linear combination of all of the variables and determined whether groups differed on more than one dependent variable. Individual ANOVAs provided information on each of the preschool groups and the four approaches to learning dependent variables. Results indicated no statistically significant differences in approaches to learning based on preschool experience. This study contributed to the existing body of literature on the effects of quality preschool experiences on the critical and relatively unexplored domain of approaches to learning.

Keywords: pre-K, approaches to learning, Learning Behavior Scale, competence motivation, attitude toward learning, attention/persistence, strategy/flexibility
Dedication

I dedicated this manuscript to my husband, Kevin, who has been my greatest supporter in all of my academic endeavors and encouraged me to pursue my dream of earning a doctorate degree. Thank you for your love and support throughout the process and for being my partner in life. I dedicate this paper to my two energetic and loving sons, Luke and Tyler, who were always patient while mom spent hours in the office working on “homework”.

This paper is dedicated to my parents, Steve and Jill Harvey, who have always supported me in every aspect of my life. Thank you for always setting a Godly example, valuing education, and providing continuous encouragement and prayer support throughout the process.

Finally, this paper is dedicated to all pre-K teachers who cultivate young children’s interest and creativity in learning and set the stage for a solid learning foundation.
Acknowledgements

First, I want to thank my Lord and Savior, Jesus Christ, who has directed me in all areas of my life and given me the strength and endurance to complete this project. Dr. Tracey Pritchard, there are no words that adequately express my gratitude to you. Thank you for always being so responsive to my questions and needs, providing constant encouragement, and going above and beyond to ensure I met my timeline goals. I am confident that our paths crossed during this process because of prayer and God’s sovereign plan. Dr. David Gorman, thank you for your constructive feedback and keen eye to details to help make improvements to my manuscript. Thank you, Dr. Karen Rodenroth, for your constant availability, encouragement, and always celebrating my successes. To my friend and colleague, Mishea Griffeth Dean, thank you for inspiring me to start the program, providing support throughout my coursework and dissertation, and being willing to lend an ear. Next, I would like to thank my research consultant, Dr. Amanda Swapkiw, for requiring excellence from the initial development of my manuscript to the end and guiding me with a solid foundation for my study. I have no doubt that your high expectations, thoughtful and speedy responses to my questions, and guidance pushed me to complete this project. I would like to express my appreciation to Dr. Paul McDermott at the University of Pennsylvania for giving me permission to use the Learning Behavior Scale in my study. Finally, I want to thank the kindergarten teachers who participated in my study and provided valuable information on school readiness.
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List of Abbreviations

Analysis of Variance (ANOVA)

Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K)

Elementary and Secondary Education Act of 1965 (ESEA)

Georgia Department of Early Child and Learning (DECAL)

Georgia Kindergarten Assessment Program (GKAP)

Individuals with Disabilities Act (IDEA)

Learning Behavior Scale (LBS)

National Association for the Education of Young Children (NAEYC)

National Education Goals Panel (NEGP)

No Child Left Behind (NCLB)

Multivariate Analysis of Variance (MANOVA)

Peabody Picture Vocabulary Test (PPVT)

Professional Standards Commission (PSC)

Oral and Written Language Scales (OWLS)

Woodcock Johnson Test of Achievement (WJ-ACH)
CHAPTER ONE: INTRODUCTION

School readiness has become a national priority and a principal justification for public investment in early childhood programs (Barnett, 2008; Barnett, 2010; Brown & Gasko, 2012; Bulotsky-Shearer, Dominguez, & Bell, 2012). The National Education Goals Panel (NEGP) (1991) that emerged from the National Education Summit assembly in 1989 targeted readiness and prompted reform of early learning and instruction (Barbarin et al., 2008). School readiness is a complex phenomenon with a broad constellation of developmental, academic, and personal/social skills contributing to a child’s ability to learn (Bulotsky-Shearer & Fernandez, 2011; Duncan et al., 2007; National Education Goals Panel, 1991). A solid early childhood foundation is essential for developing school readiness skills and establishing support for academic and social achievement before students begin kindergarten. The attainment of academic, behavior, and learning skills is a cumulative process that involves mastering new skills and adding to prior knowledge. At the preschool level, children’s cognitive, academic, and social competence success is associated with increased short- and long-term achievement outcomes (Aguilar & Tansini, 2012; Barnett, 2010).

The NEGP (1991) recommended a set of readiness standards based on a broad body of literature, targeting children’s health and development that includes five dimensions: (a) health and motor development, (b) social and emotional development, (c) approaches to learning, (d) language, and (e) general knowledge. In 1997, the NEGP proposed several goals that reformed learning and instruction in America’s public schools, with the first goal focusing on school readiness. The primary objective of Goal 1 (National Education Goals Panel, 1997) includes high quality and developmentally appropriate preschools to assist children to enter school “ready to learn” (p. 1), with the other objectives addressing parental involvement and support and
children’s physical health. In 2001, Congress reauthorized and passed the *Elementary and Secondary Education Act of 1965* (ESEA), also known as the *No Child Left Behind Act* (NCLB), with a stated purpose to close the achievement gap among students entering kindergarten (Gayl, Young, & Patterson, 2010; Lazarus & Ortega, 2007). Since Congress passed these federal declarations, individual states have focused on preschool settings, adopted a multidimensional view of readiness, and implemented specific academic goals linked to kindergarten state standards (Bulotsky-Shearer et al., 2012; Hatcher, Nuner, & Paulsel, 2012).

Recent interest in preschool programs have developed from significant gaps in school readiness before kindergarten and from research documenting the positive effects of preschool attendance on children’s academic, social, and behavioral success (Bulotsky-Shearer et al., 2012). To address achievement disparities and increase student readiness for kindergarten, federal and state education agencies must examine prekindergarten experiences and high quality universal early childhood education (Barnett, 2010). Researchers found that students who attended high quality preschool had consistent gains on achievement scores, higher standardized test scores, lower retention rates, on-time graduation rates, and decreased placement in special education (Magnuson & Shager, 2010; Quesenberry, Hemmeter, & Ostrosky, 2011). In addition, former preschool participants were less likely to cost taxpayers money by decreasing the prevalence of welfare, teen pregnancy rates, and placement in the criminal justice system, in turn leading to higher future earnings for those attendees (Barnett & Hustedt, 2003; Brown & Wright, 2011).

Opponents of universal pre-K argue that the population of children needing concentrated early childhood intervention is small, and universal programs do not meet the severe and challenging needs of some young children (Finn, 2010). Most three- and four-year-olds attend
preschool, and adding more publically sponsored programs is irresponsible, unnecessary, and cost prohibitive. Many preschool programs do not always use sophisticated curriculum and robust academic expectations that align with kindergarten standards, because these agendas fail to consider how young children develop and learn (Brown & Gasko, 2012). Furthermore, the academic benefits evident immediately after completing preschool programs often fade by the 3rd grade and have little influence over a child’s success in grades k-12 (Finn, 2010).

There are significant differences between preschool programs’ academic expectations and students’ preparedness for kindergarten (Barnett, 2010; Brown & Wright, 2011; Lasser & Fite, 2011). State-funded, high quality pre-K programs have produced short- and long-term academic gains, especially for disadvantaged children living in rural areas (Barnett, 2008; Barnett, 2010; Fitzpatrick, 2008). These high quality programs are distinguishable from other programs because they provide stronger curriculum guidelines, rigorous teacher standards, and lower child-to-staff ratios when compared to other licensed childcare centers (Hustedt & Barnett, 2011). Nine southern states, including Georgia, rank nationally for student enrollment in high quality pre-K programs and have documented substantial learning gains and economic advantages (Hustedt & Barnett, 2011; Southern Education Foundation, 2010). Studies that included four Southern states found extensive cost benefits as every dollar spent on programs generated up to eight dollars of direct and indirect budget saving benefits (e.g., reduced retention rates and special education placement) (Barnett, 2010; Lasser & Fite, 2011; Magnuson & Shager, 2010; Southern Educational Foundation, 2010).

Due to a national focus on school readiness and federal and state preschool program initiatives, additional research is needed to evaluate various early childhood experiences and investigate outcomes across less researched readiness domains. The purpose of this study was to
review prior research that investigated the effects of participation in quality preschool programs and differences in early childhood experiences on the critical and relatively unexplored readiness domain of approaches to learning.

**Background**

Preschool attendance has increased from 10% to 70% in the past 50 years (Barnett, 2010; Magnuson & Shager, 2010). Attendance and funding for preschool programs will continue to increase in the future at the federal, state, and local levels (Brown & Wright, 2011; Huang, Invernizzi, & Drake, 2012). Federal subsidies have targeted low-income families and included programs and incentives such as Head Start, preschool special education programs, child-care subsidies, federal income tax credits for child care, and the Child Care Food Program (Barnett, 2008; Barnett, 2010). Despite providing funding for low-income families, public programs fail to address the needs of a majority of poor children and the quality of the programs is often lacking (Barnett, 2010). With this in mind, states have shifted their focus to universal programs, which have produced significant effects on children’s learning (Henry, Gordon, & Rickman, 2006). Universal programs provide education for all students, irrespective of their income level. Disadvantaged students appear to make significant academic and behavioral gains in universal programs (Barnett, 2010; Magnuson & Shager, 2010). Disadvantaged children learn more from advantaged peers than from disadvantaged peers, and low-income students’ achievement scores increase when they attend preschool programs with advantaged peers. Overall, universal pre-K programs appear to reach more disadvantaged children and to provide more substantial developmental gains than income-targeted early learning centers (Barnett, 2010).

In 1993, Georgia became the first state to implement universal pre-K (Henry, Gordon, & Rickman, 2006; Hustedt & Barnett, 2011). The state program accepted income only eligible
children the first two years and eventually included all age-eligible state residents in 1995. Program enrollment increased quickly as more than 60,000 four-year olds enrolled by 1998. At the beginning of the 2008-2009 school year, the state served 53% of all eligible preschoolers (Hustedt & Barnett, 2011). Since then, 20 other states have followed and offered universal pre-K. Of those states, the southern states, which include Tennessee, Virginia, and North Carolina, provide the most comprehensive and quality prekindergarten services and have increased pre-K enrollment and funding (Barnett, 2010; Hustedt & Barnett, 2011; Southern Education Foundation, 2010).

Currently Georgia, the nation’s oldest universal state preschool program, serves more than 94,000 students each year (Peisner-Feinberg, LaForett, Schaaf, & Hildebrandt, 2013). Georgia pre-K is voluntary and available to all children who turn four by September 1. The state program employs highly qualified teachers, is open five days a week for a state-mandated 6.5 hours a day, and provides extended-day services. The classes are located in a variety of approved facilities including public schools, private day care centers, and Head Start classrooms. The program has a comprehensive set of academic, language, communication, social, and emotional development goals (Barnett, 2010; Fitzpatrick, 2008; Henry et al., 2006; Southern Education Foundation, 2011). The Georgia pre-K program has provided evidence of significant long-term academic advantages, resulting in long-term budget and economic benefits (Henry et al., 2006; Hustedt & Barnett, 2011; Southern Education Foundation, 2011).

Since the implementation of universal pre-K, the state of Georgia’s grade retention rate decreased from 4.1% in 2002 to 3.7% in 2010, which saved the state millions of dollars (Southern Education Foundation, 2011). In addition, over the past five years the student dropout rate has declined, going from 3.5% to 2.6%. The program has reduced special education
placements, with numbers decreasing 9.9% from 2007 to 2010 (Southern Education Foundation, 2011). Because Georgia’s pre-K is lottery funded, the program will save the state more than $200 million dollars in tax expenditures over the next six years without spending any money in state tax revenues (Southern Education Foundation, 2011). In Georgia, the state-funded pre-K program is growing at a rapid rate, teaching an inclusive set of learning goals that focus on language, communication, and social emotional development (Henry et al., 2006). The expansion of state-funded programs has prompted an interest in comparing the quality outcomes and effectiveness of state and federally funded programs (Barnett, 2010; Henry et al., 2006; Lasser & Fite, 2011).

Head Start is a national, federally supported program that provides comprehensive and developmental services focused on increasing academic skills related to school readiness for low-income preschool students (Wrobel, 2012). Henry et al. (2006) compared the developmental outcomes of students who attended Head Start and low-income students who attended Georgia pre-K. The authors found that both groups made significant gains on four standardized assessments, confirming the importance of early childhood programs for low-income children. However, students who attended Georgia pre-K performed higher at the end of preschool and in the beginning of kindergarten on the following five direct developmental assessments: Peabody Picture Vocabulary Test (PPVT), Woodcock Johnson Test of Achievement (WJ-ACH), and the Oral and Written Language Scales (OWLS). In addition, Georgia pre-k students outperformed their Head Start peers in 14 out of 17 school readiness skills (e.g., intellectual curiosity, attitudes towards schooling, social skills, and communication) as determined by their kindergarten teachers. Researchers found that the difference between
groups was highest on the overall kindergarten readiness item (+0.84, \(p<.05\), \(d=0.32\)) with kindergarten teachers generally rating pre-K participants as “good” (Henry et al., 2006, p.91).

An earlier study investigated the educational outcomes of Georgia pre-K and found that students who attended the program demonstrated similar academic improvements as students who attended private preschool programs and Head Start programs (Henry et al., 2003). While Head Start enrollment has remained stable across the years, state pre-K programs enrollments increased from 693,000 to 1.3 million between 2001 and 2008 (Barnett et al., 2010; Bassok, 2012). There are distinct differences in the targeted populations and program standards of state and federally funded preschool programs. Students participating in early childhood programs that emphasize inclusive academic and social goals benefit from increased development and overall school readiness (Barnett, 2010; Henry et al., 2006).

Because school readiness is multi-faceted, child development is best understood in an ecosystemic context providing possible solutions to why research supports better outcomes for children attending high quality universal pre-K (Barnett, 2010; Gormley, 2008; Henry et al., 2006; Huang et al, 2012). Many components contribute to a child’s early learning capabilities, including the individual child, family members, teacher characteristics, and peer influences (Bulotsky-Shearer & Fernandez, 2011). The influence of a preschool environment affects the overall development of a child and there are connections between a child’s individual characteristics and the environment in which he or she interacts (Bronfenbrenner, 1977a). The feedback children receive from others influences future academic and behavioral outcomes (Brown & Gasko, 2012). Early cognitive and academic success is associated with short- and long-term achievement effects. In addition, early problem behavior affects educational performance including reading and math ability, receptive and expressive language, and global
approaches to learning outcomes (Bulotsky-Shearer & Fernandez, 2011; Smith, Lewis, & Stormont, 2011; Tillery, Varjas, Meyers, & Collins, 2010). The achievement and behavior patterns of children are established early on and set the boundaries for later attainment, emphasizing the importance of positive environmental influences and solid, high quality early childhood experiences (Lasser & Fite, 2011). Based on this information, it is important to consider the whole child and to adopt a broad ecological framework when investigating early childhood preschool programs and their influences on important readiness domains (Duncan et al., 2007).

The developmental ecological theory provides a foundation for understanding the influence that settings and interactions can have on a child’s early development and readiness skills (Bronfenbrenner, 1977a, 1977b). The theory suggests that settings, instructional materials, and interactions with peers, teachers, and parents contribute to a child’s learning. Therefore, children’s early school experiences and their interactions that occur within a school setting may influence social behavior, learning, and developmental outcomes (Bulotsky-Shearer et al., 2010).

There is a broad body of school readiness research supporting positive and quality early preschool experiences on increased achievement and cognitive skills in elementary students (Aguilar & Tansini, 2012; Barnett, 2010; Gormley, 2008; Henry et al., 2006; Henry & Rickman, 2007; Huang et al, 2012; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007; Magnuson, Ruhm, & Waldfogel, 2007; Magnuson & Shager, 2010; Nelson, 2005). However, there are nonacademic developmental domains, including approaches to learning, that require further investigation when considering environmental influences, educating the whole child, and targeting dimensions of readiness. Approaches to learning or how a student engages in learning are foundational learning behaviors that consist of a variety of effective learning skills and are a
critical construct in school readiness (Bulotsky-Shearer et al., 2011). Effective learning behaviors influence other domains such as social competence, adjustment, cognitive development, and engagement. In addition, learning behaviors predict future academic success and are a buffer against exposure to academic and social risk factors (Rikoon, McDermott, & Fantuzzo, 2012). These positive learning behaviors such as working cooperatively, task persistence, openness to new challenges, and attentiveness are teachable skills and learned through observation and interactions, but have received little attention. No research to date has investigated these acute learning behavior skills in relationship to various early childhood experiences (Bulotsky-Shearer et al., 2010; Chen & McNamee, 2011; Dominguez, Vitiello, Fuccillo, Greenfield, & Bulotsky-Shearer, 2011; McDermott, 1999; Donmíñquez, Vitiello, Maier, & Greenfield, 2010; McDermott, Mordell, & Stolzfus, 2001; Rikoon et al., 2012; Worrell, Vandiver, & Watkins, 2001). This study investigated these learning behaviors among kindergarten students who had differing learning experiences and sought to increase awareness of the importance of providing high quality preschool experiences and targeting learning behavior skills in efforts to increase future school success for all students.

**Problem Statement**

School readiness and child development are multifaceted and influenced by early childhood settings and interactions (Bronfenbrenner, 1977a, 1977b; Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Lourenco, 2012). Preschool students attending high quality preschools have shown significant improvements in academic and cognitive domains (Barnett, 2008; Doggett & Wat, 2010; Gormley, 2008; Huang et al, 2012; Nelson, 2005; Taylor, Gibbs, & Slate, 2000). Approaches to learning have been identified as a critical construct in school readiness; however, it is one of the least understood and researched domains (Bulotsky-Shearer &
Fernandez, 2011; Chen & McNamee, 2011; Dominguez et al., 2011; Vitiello, Greenfield, Munis, & George, 2011; Ziv, 2013). The problem is that few studies have examined the important learning behavior constructs of motivation, engagement, persistence, attitude toward learning, flexibility, and attention in relation to early childcare experiences, despite evidence of their influence over short- and long-term academic, social, and behavioral success (Bulotsky-Shearer & Fernandez, 2011).

**Purpose Statement**

The purpose of this causal-comparative study was to test the developmental ecological theory that relates the importance of early childhood experiences to the critical school readiness domain of approaches to learning, while controlling for kindergarten curriculum exposure at four Title I elementary schools located in rural, northeast Georgia.

The researcher defined the independent variable of early childhood experiences in each of the three groups. The first group included kindergarten students who had participated in Georgia’s high quality pre-K program. The second group consisted of kindergarten students who participated in private preschools or federally funded preschool programs. The third independent variable group was kindergarten students who had not participated in federal, state, private, or other early childhood preschool programs.

The researcher defined the dependent variables as approaches to learning and specifically measured competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility. By selecting participants from schools with similar demographics (e.g., Title 1), the researcher controlled the extraneous variables of gender, socioeconomic status, and race. Research suggests that low-income students, males, and minorities often enter school behind their female, white, and advantaged peers (Bulotsky-Shearer et al., 2012). Disadvantaged and
traditionally marginalized students are at an increased risk of developing behavior and social problems (Bulosky-Shearer & Fernandez, 2011), and girls demonstrate higher approaches to learning (Domínguez et al., 2010), perform better in school, and engage in higher positive peer interactions (Coolahan, Fantuzzo, Mendez, & McDermott, 2000; Schaefer, 2004).

When applied to this study, the ecological theory would propose that the independent variables of early childcare experiences would influence the dependent variables of competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility. The theory assumes that a child’s overall development is an inseparable part of direct and indirect settings and interactions in early childhood (Brenfenbrenner, 1977a). Learning behaviors are teachable (McDermott, Mordell, & Stoltzfus, 2001; Schaefer & McDermott, 1999) and high quality school environments are proximal spheres of influence where positive social interactions, engagement, learning, and motivational processes can be acquired and nurtured (Bulotsky-Shearer et al., 2012; Chen & McNamee, 2011; Domínguez et al., 2011; Fantuzzo & McWayne, 2001; McWayne, Fantuzzo, & McDermott, 2004; Schaefer, 2004).

**Significance of the Study**

This study may add to the current literature on the effects of quality early childhood education on the critical and relatively unexplored domain of approaches to learning. Ecological developmental theory supports the notion that children not exposed to quality preschool environments are at additional risk for not engaging in important learning behaviors such as motivation, engagement, persistence, and cooperation (Bronfenbrenner, 1977b). Recent studies found significant gaps in the literature regarding the approaches to learning readiness domain and recommended that additional studies include teacher ratings and investigate preschool influences and predictor variables, classroom quality, and individual child, teacher, and
environmental characteristics (Bulotsky-Shearer et al., 2012; Bulotsky-Shearer et al., 2010; Bulotsky-Shearer & Fernandez, 2011; Chen & McNamee, 2011; Dominguez et al., 2010; Dominguez et al., 2011). This study may increase awareness of the importance of quality preschool experiences and the effects of unexplored readiness behaviors that can influence overall academic trajectories. In addition, learning behaviors are responsive to teaching and mutable (Schaefer & McDermott, 1999), so investigating these influences may be useful for educational interventions aimed at increasing academic performance (Vitiello et al., 2011). Effective learning behaviors could influence treatment interactions and interventions over cognitive domains such as processing speed, spatial ability, and verbal and nonverbal reasoning and could reduce learning disabilities (McDermott, Goldberg, Watkins, Stanley, & Glutting, 2006).

This study may expand research on the influences of early childhood experiences on approaches to learning in a rural demographic sample of kindergarten students from a predominately low-income area. This study is significant because the largest source of state and local funding for young children, not connected to a federal program, is state-funded pre-K. States are the largest sponsors for 4-year-old services as state spending exceeded 5 billion in the 2009 fiscal year (Hustedt & Barnett, 2011). Pre-k enrollment will increase and create greater budgetary commitments in the future (Huang et al., 2012). There is a lack of cohesiveness among various state and federal agencies about whether universal, targeted, or private programs are most effective (Hustedt & Barnett, 2011). Due to the widespread investment of pre-K, programs need examined for effectiveness and outcomes in students’ school readiness skills in all developmental areas.
Research Question(s)

The research questions for this study were:

**RQ₁:** Is there a statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**RQ₂:** Is there a statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**RQ₃:** Is there a statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**RQ₄:** Is there a statistically significant difference in kindergartners’ attention/persistence as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**RQ₅:** Is there a statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?
Hypotheses

**H**₁: There will be a statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H**₂: There will be a statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H**₃: There will be a statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H**₄: There will be a statistically significant difference in kindergartners’ attention/persistence as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H**₅: There will be a statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

Alternatively, the following are the null hypotheses:
**H₀₁:** There will be no statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₂:** There will be no statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₃:** There will be no statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₄:** There will be no statistically significant difference in kindergartners’ attention/persistence as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₅:** There will be no statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).
Identification of Variables

There were three levels of the independent variable: (a) state-funded pre-K, (b) federal funded, private, or other early childhood preschool programs, and (c) no participation in early childhood preschool programs.

State-funded pre-K included Bright from the Start (2013c) educational programs located within Georgia’s public schools or private daycare facilities that operate under specific guidelines set by the Georgia Department of Education. These sites met all program and site level requirements for Georgia pre-K programs including staff certifications, research-based curriculum, and classroom quality standards (Georgia Department of Early Childhood and Learning, 2013).

Federal funded, private, or other early childhood preschool programs included Head Start programs subsidized by the United States government, private preschools, and other childhood programs that offered 4-year-old services in exchange for tuition. These programs encompassed church-based schools, private-not-for-profit, and private-for-profit such as childcare facilities and college-preparatory day schools with families generally paying the schools or centers directly (Henry & Rickman, 2005). Children with no participation in early childcare facilities were defined as students who enter kindergarten with no experience in a formal childcare setting the year prior to entering kindergarten.

There were four dependent variables: (a) competence motivation, (b) attitude toward learning, (c) attention/persistence, and (d) strategy/flexibility. The Learning Behavior Scale, a 29-item teacher rating scale, measured these instrumental learning behaviors (McDermott et al., 2001).
Competence motivation is a child’s degree of mastery attempts related to his or her sense of learning competence derived from Robert White’s (1959) concept of motivation. White (1959) believed that competence motivation was a propensity to explore and influence one’s environment and was different from the biologically driven motivation of hunger, thirst, and sleep. Competence motivation involves exploratory behavior, and students exhibiting these characteristics view the environment as changeable, with effective consequences resulting from these variable transactions (White, 1959). The Learning Behavior Scale includes items for the competence motivation domain such as displays reluctance to tackle new tasks, delays or hesitates to answer questions, indicates tasks are too hard or makes no attempt at new tasks, and demonstrates lack of attention or disinterested in learning activities (McDermott et al., 2001; Worrell et al., 2001).

Attitude towards learning is a student’s ability to engage in learning activities, to display an eager and constructive temperament towards learning, and to exhibit a willingness to try new learning activities (Dominguez et al., 2011). On the Learning Behavior Scale, the attitude toward learning domain includes the following items: unwilling to accept help uncooperative in class activities, adopting a don’t-care attitude to success or failure, and showing little desire to please (McDermott et al., 2001; Worrell et al., 2001).

Attention/persistence examines students’ willingness and ability to follow through and complete tasks, the degree of distractibility, and persistence on difficult and new learning activities. Some items on this domain include: tries but concentration easily fades, says tasks are too hard without making much effort to attempt them, spends insufficient time on analyzing problems, is easily distracted, and fidgets, squirms, and leaves seat unnecessarily (McDermott et al., 2001; Worrell et al., 2001).
Strategy/Flexibility is a student’s interactions between peers and teachers and his or her ability to approach learning tasks in an appropriate way (Worrell et al., 2001). This domain specifically includes the ability to be flexible, to accept help from others, a desire to please the teacher, and to sustain appropriate behavior when faced with challenging learning activities. Strategy/Flexibility targets the student’s ability to follow classroom behavior norms and regulate emotions in order to be successful in future scholastic environments. This variable is important because students who exhibit early emotional and aggressive challenges are at a higher risk for future peer rejection, bullying, relational aggression, and school expulsion (Bulotsky-Shearer et al., 2012).

On the Learning Behavior Scale, the strategy/flexibility domain specifically references the following items: follows peculiar and inflexible procedures in tackling tasks, gets aggressive or hostile when frustrated or when work is corrected, does not work well in a bad mood, and carries out tasks according to own ideas rather than in accepted way (McDermott et al., 2001; Worrell et al., 2001).

**Definitions**

For the purposes of this study, the following terms provide clarity:

*Attention/Persistence*: The ability to sustain attention to classroom tasks and remain engaged in learning activities such as remaining seated, staying focused, spending time critically analyzing problems, and being tenacious in attempting learning activities (McDermott et al., 2001; Worrell et al., 2001).

*Approaches to Learning*: An important dimension of school readiness that investigates how children engage in learning and includes competence motivation, attitude toward learning,
attention, persistence, strategy/flexibility, and cooperation in learning tasks (Bulotsky-Shearer et al., 2011).

*Attitude toward learning:* A student’s disposition towards learning tasks and peer and teacher interactions such as a desire to please the teacher, a willingness to accept help and try new things, and the ability to be supportive and interested in classroom activities (McDermott et al., 2001; Worrell et al., 2001).

*Competence Motivation:* A student’s degree of mastery attempts related to one’s sense of learning competence involving exploratory behavior such as tackling new tasks, answering questions, attempting new and difficult tasks, and interested in learning activities (McDermott et al., 2001; Rikoon et al., 2012; White, 1959).

*Developmental Ecological Theory:* A theory derived from Urie Bronfenbrenner (1977a, 1977b) in which he identified five environmental systems that influence a child’s early developmental outcomes, especially in disadvantaged and marginalized children. Among these environments, children have direct and indirect interactions, but the systems that have the greatest impact are those in direct contact to them. The Microsystems, or the most immediate environments, include the family, school, peers, classroom setting, and instructional methods. Children may encounter different cultural experiences and expectations based on different contexts. Teachers need to help students adapt to new learning environments as well as acknowledge and support their cultures. Bronfenbrenner’s other systems include the Mesosystem, Exosystem, Macrosystem, and Chronosystem.

*Georgia Pre-K:* The state of Georgia’s lottery funded, high quality pre-K programs operate under specific guidelines set up by the Georgia Department of Education for Georgia pre-K programs. The programs have rigorous requirements for staff certifications, research-
based curriculum, and classroom quality standards (Georgia Department of Early Childhood and Learning, 2013).

**Head Start:** The longest running and renowned federally supported preschool program for low-income children across the nation aimed at reducing gaps in school readiness (Wrobel, 2012). To be eligible for the program, families must be at or below 100% of the national poverty line (Quesenberry et al., 2011).

**Strategy/Flexibility:** Positive age-appropriate responses and interactions between peers and teachers including accepting help from others, being malleable to changes in routines, and regulating reactions (e.g., anger, tears, etc.) when frustrated or upset (McDermott et al., 2001; Worrell et al., 2001).

**Title I:** The largest source of federal funding given to school districts that serve low-income students and ensure they receive a high quality education. Individual schools qualify for assistance when at least 40% of the children are eligible for free and reduced lunch (Gayl et al., 2010; Hustedt & Barnett, 2011).

**Research Summary**

This causal-comparative research study investigated early childhood experiences on the critical school readiness domain of approaches to learning at four Title I elementary schools in rural, northeast Georgia. This research design was most appropriate because the researcher was exploring possible cause and effect relationships among variables and was unable to manipulate the independent variable due to already implemented treatment groups prior to the study (Gall, Gall, & Borg, 2007). There were three levels of the independent variable: (a) state-funded pre-K, (b) federal funded, private, or other early childhood preschool programs, and (c) no participation in early childhood preschool programs. There were four dependent variables.
(competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility) measured by the Learning Behavior Scale (McDermott, 1999; McDermott et al., 2001). This study was both practically and empirically significant because effective learning behaviors have significant influences on other important domains such as social competence, adjustment, cognitive development, and engagement and are predictive of future academic success (Rikoon et al., 2012). In addition, these learning behaviors have received little attention (Bulotsky-Shearer et al., 2010; Chen & McNamee, 2011; Donminquez et al., 2010; Dominguez et al., 2011; McDermott, 1999; Worrell et al., 2001), and no research to date has investigated these acute learning behavior skills in relationship to various early childhood experiences.

This study used archived data provided by the school district during the 2012-2013 school year for collecting kindergarten class lists, preschool experiences, race, gender, and SES (as measured by free/reduced lunch status). Descriptive statistics provided information on the mean differences between the three independent variable groups, dependent variables, and demographic variables. The researcher used a MANOVA to analyze the data, to test the null hypothesis, and to determine whether groups differed on more than one related dependent variable. Individual ANOVAs provided information on each of the preschool groups and the four different learning behavior domains. The researcher selected participants from schools with similar demographics (e.g., Title I and race) in order to create homogenous groups and to reduce the likelihood of sampling errors. This study contributed to the current literature on the effects of quality preschool experiences on the critical and relatively unexplored domain of approaches to learning.
CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

School readiness describes a variety of pre academic, personal-social, and learning behavior skills necessary to make a successful transition from preschool to the formal school environment (Duncan et al., 2007). School readiness involves interactions between the child’s personal characteristics and the school’s capacity to meet a student’s needs (Barbarin et al., 2008; Duncan, 2007). Psychologists, educators, lawmakers, and developmental theorists have identified distinct functions that contribute to a child’s readiness and early learning experience including stimulating environments, adequate health care, motor development, a language rich environment, general knowledge, social emotional development, and approaches to learning (Barbarin, et al., 2008; Chazan-Cohen, et al., 2009; National Education Goals Panel, 1991; National Education Goals Panel, 1997; Reynolds, 1991). In the past, school readiness referred to a set of cognitive and academic skills that children must demonstrate prior to entering school such as early literacy, language, and numerical knowledge. However, national and state interest in readiness has shifted to addressing social, adaptive, and learning behavior skills. Nonacademic readiness behaviors are necessary to exhibit academic success, and children are cognitively and socially stimulated by the environments in which they interact (Bierman et al., 2008; Duncan et al., 2007; National Education Goals Panel, 1997; Nelson, 2005).

There are significant discrepancies in the performance and social skills of students beginning kindergarten, and preschool attendance is a factor in contributing to students’ long- and short-term academic and behavioral success (Barnett, 2008; Barnett & Hustedt, 2003; Doggett & Wat, 2010). Many states are now offering universal pre-K to all age-eligible participants and these quality programs have produced significant economic and performance
benefits. Research into the immediate and longstanding effects of preschool attendance shows increases in receptive vocabulary, phonemic awareness, cognitive and academic scores, graduation rates, continuing education and a decrease in school dropout and grade retention (Barnett & Hustedt, 2005; Magnuson et al., 2007; Reynolds, Magnuson, & Ou, 2010). In their longitudinal study, Magnuson et al. (2007) found that preschool is associated with significantly higher reading and math scores for at risk students, and that early education has lasting cognitive gains for disadvantaged children. Full time (e.g., five days a week) preschool attendance resulted in better gains than part time attendance and an earlier start predicted higher intellectual development. These reading and math scores were sustainable and evident at the age of seven (Barnett, 2010; Swiniarski, 2007).

There are foundational precursors and emergent skills that predict later reading outcomes, and children’s responses to learning can give educators knowledge regarding students’ developing skills and their need for further intervention (Burchinal et al., 2002; Burns, 2011; Lee, 2010). Universal pre-K programs can screen children for information regarding these emerging broad literacy areas in order to direct student instruction and implement preemptive interventions (Barnett, 2008; Invernizzi, Landrum, Teichman, & Townsend, 2010). Early identification of learning and developmental problems provides opportunities for parents and school personnel to gain knowledge about the student’s disabilities or delays and be proactive about beginning research-based interventions. Researchers found five critical hypotheses that contribute to early intervention and preschool program effectiveness: (a) cognitive and achievement advantage, (b) social adjustment, (c) family supported, (d) motivational advantage (e.g., children’s motivation or perceived motivation), and (e) school supported or effective school and learning environments (Assel, Landry, Swank, & Gunnewig, 2007; Reynolds,
Magnuson, & Ou, 2010). Programs that combine these comprehensive intervening mechanisms and consider bioecological perspectives are likely to produce students who experience long-term school and societal success (Reynolds, Temple, & Ou, 2010; Sheridan, 2009). This review of literature will examine early childhood programs, preschool curriculums and pedagogy, and the effects of positive approaches to learning; however, it is first important to acknowledge the theoretical framework that will guide and support this current research.

**Conceptual or Theoretical Framework**

The developmental ecological theory provides a framework for examining quality preschool pedagogy and programs and their influences on learning behaviors. The theory acknowledges the importance of system interactions in children’s experiences, development, and opportunities for learning. The founder of the theory, Urie Bronfenbrenner (1977a, 1977b), identified five environmental systems that influence a child’s early developmental outcomes, especially in disadvantaged and marginalized children. Within these environments, children have direct and indirect interactions, but the systems that have the greatest impact on the child are those directly related to them. The microsystems, or the immediate environments, include the family, school, peers, classroom setting, and instructional methods. Children may encounter different cultural experiences and expectations based on different contexts and adapt their behavior based on environmental expectations (Peirson, Boydell, Ferguson, & Ferris, 2011). Teachers need to help students adapt to new learning environments as well as acknowledge and support their cultures (Bronfenbrenner, 1977a; Burns, 2011).

In addition to the microsystem, Bronfenbrenner’s (1977a) theory encompasses the mesosystem, which is the relationship between different microsystems and connections between contexts. For example, children who are rejected by their parents will need a teacher to help
them develop positive relationships with others. The exosystem does not have an active role in the child’s immediate context but may indirectly affect the child’s development. Some indirect influences in the outer circle of the child’s life in the exosystem include parents’ employers, family health care workers, and central school administrators (Leonard, 2011). The macrosystem is the culture in which the child lives and includes the values, beliefs, policies, laws, and traditions of the home and school settings. The last setting, chronosystem, includes traumatizing events in children’s lives, such as divorce or relocating, that affect their ability to learn (Onchwari, Onchwari, & Keengwe, 2008). Children’s early school experiences and interactions shape their behavior, learning, peer interactions, and overall developmental outcomes (Bulotsky-Shearer & Fernandez, 2011). Bronfenbrenner (1977b) based his theory on the work of psychologist Lev Vygotsky’s early cultural-historical theory. Vygotsky recognized how nature and nurture work in concert to develop higher mental functions. He promoted high quality preschool and believed that culture defined a child’s whole course of development (Bodrova, 2005).

Bronfenbrenner’s (1977a) multiple interconnected environmental systems operate under several assumptions that are critical for understanding how to structure preschool curriculum and instruction: (a) children are an inseparable part of a system, (b) a notable dysfunction with a child is a problem with the system and not within the child, (c) disturbances are a result of a mismatch between the individual’s skills, knowledge, and environmental demands, and (d) interventions should focus on how to make the system more effective (Bronfenbrenner, 1977a; Burns, 2011). Preschool curriculum developers and teachers must understand the dynamic influences of a child’s environment on the overall development of a child and cater the program to address the individual needs and learning styles of the child. A quality program and
curriculum can either create a barrier to dismal social and economic conditions or enhance a nurturing setting in which the child lives. As Salva (1989) noted:

…a fine preschool can offer children a richer, more purposefully varied environment than all but the most fortunate homes can provide….A skillful preschool teacher can give children more concentrated, perceptive attention than even the most doting parents know how to give. (p.52)

Policy makers, state departments of education, school districts, and schools must encourage high quality preschool programs that acknowledge context and interactions in students’ lives. Higher academic and behavioral mental functions have their origins in social processes and social relations (Wambach, Brothen, & Dikel, 2000). High quality programs should acknowledge the impact of ecological theory development in providing families with community resources, learning about the children’s culture, teaching acceptance, and enhancing communication with all students, particularly those from other cultures and economic backgrounds. Teachers should create opportunities to connect with students, to ask children and parents about ideas for learning, and to encourage communication between families in order to foster a sense of belonging (Onchwari et al., 2008).

In summary, the ecological theory acknowledges environmental influences and the interactions that influence childhood development. The theory assumes that individuals are a part of a system and that disturbances are not a problem within the child but within the system (Bronfenbrenner, 1977a, 1977b). The most effective interventions for behavior, learning, and developmental skills should focus on the system. Therefore, this current research investigates early childhood preschool environments as a framework for the acquisition of positive learning
behaviors while acknowledging an ecological perspective when considering preventative science, interventions, and policy changes (Burns, 2011).

**Historical Perspective**

The *No Child Left Behind Act (NCLB) of 2001*, aimed at increasing accountability and proficiency, was a landmark education reform because it increased attention and research towards early childhood education and readiness skills (Barbarin et al., 2008). The NCLB encouraged federal and state governments to recognize achievement and behavior gaps among students entering kindergarten. The National Education Goals Panel (NEGP) was established in 1991 under the administration of President George Bush, setting the stage for NCLB and future concentration on school readiness. The NEGP proposed that all children begin school “ready to learn” by the year 2000, causing a widespread push towards public investment in high quality pre-K programs (Barbarin et al., 2008; Barnett, 2010; National Education Goals Panel, 1991).

According to the U.S. Census Bureau (2011), preschool programs for children ages 3 to 5 nearly doubled between 1990 and 2009, growing from 1.2 million students to 2.7 million. During this time, state-level investment soared doubling from 2.4 billion dollars in the United States in 2002 to more than 5.4 billion in 2009 (Barnett et al., 2010; Bassok, 2012). The increase in state spending represents a push across government sectors in public sponsorship of early childhood programs. In fact, states are now the primary public providers of early childhood programs, surpassing the federally supported program, Head Start, in 2006 (Bassok, 2012). Title I of the federal *Elementary and Secondary Education Act of 1965 (ESEA)* provides another source of funding for pre-K programs (Gayl et al., 2010). Title I is the largest source of funding for low-income students, with subsidies tied to the number of students in the school qualifying for free and reduced lunch. Schools are able to use Title I funds for a variety of educational
purposes, including pre-K services. In 2002, the United States Department of Education estimated that schools used between 2 and 3 percent of Title I funds for early childhood education (Gayl et al., 2010; Hustedt & Barnett, 2011).

**Foundational Preschool Curriculum, Pedagogy, and Programs Studies**

It is important to investigate foundational preschool programs that set the standard for early childhood development and pedagogy. Researchers suggest that social climates and instructional approaches have a significant impact on children’s preparedness for school and their short- and long-term academic, learning, and behavior effects (Assel et al., 2007; Henry & Rickman, 2007; Magnuson et al., 2007; Stipek, et al., 1998). In the past, a debate in early childhood programs and curriculum models revolved around a divide in the use of a formal, academic, teacher-directed, approach and the use of an informal, child-centered approach (Awwad, 2012; Case, 1993). According to curriculum developers, “The way children are facilitated to learn is a crucial part of the curriculum and can tell us a great deal about educators’ pedagogical approaches” (Guimaraes & McSherry, 2002, p. 88). Teacher-directed, formal approaches focus on transmitting knowledge with the belief that learning occurs when children produce appropriate responses based on teacher-produced stimuli (Schweinhart & Weikart, 1998).

Founded on behavioral learning principles, formal and scripted approaches emphasize positive reinforcement of correct responses to direct students to learning. Opponents of adult-directed approaches argue that these methods do not result in skill generalization and intrinsic motivation in children (Guimaraes & McSherry, 2002; Schweinhart & Weikart, 1998). Stylistic learning behaviors are teachable and predictive of future academic success; therefore, it is
imperative that students are exposed to curriculum that encourages them to adopt beneficial approaches to learning (Rikoon et al., 2012).

Child-centered approaches center on free-play and child-initiated activities, with the belief that young children need to choose their learning activities as well as their peer interactions. Researchers have found that children who interact with higher-skilled peers stimulate increased skill development in language, communication, social, and problem solving skills (Henry & Rickman, 2007). Allowing children to lead in their learning, based on their own interests, contributes to effective acquisition of skills and increases their intrinsic motivation, attentiveness, and level of engagement. The child-initiated approaches originated in cognitive-developmental and constructivist psychological traditions but coincide with an ecological perspective in the understanding that academic and behavior functions have their origin in social and environmental influences and relationships (Wambach et al., 2000). Sheridan (2009) suggested that in order to deconstruct, construct, and define preschool pedagogical quality, developers must consider an ecological framework that respects perspective and time and contains both structural characteristics and cultural sensitivity. Preschool pedagogical quality includes the following four dimensions: (a) the dimensions of society, (b) the dimensions of teachers, (c) the dimensions of children, and (d) the dimensions of learning context.

The term constructivism, which is the belief that children learn when they solve problems, experiment with objects, and interact with children and adults, is the foundation of child-initiated approaches (Guimaraes & McSherry, 2002; Schweinhart & Weikart, 1998). Developmental Piagetian theory concluded that education should encompass assessing cognitive structures available to the learner and then present materials that assimilate these structures (Awwad, 2013; Lourenco, 2012). Piaget believed that children were highly active organisms
capable of constructing their own internal structures through a reflective process (Awwad, 2013). To improve children’s intellectual power, educators should assess the processes and structure of students’ current knowledge, generate curriculum based on these structures, and challenge children to take an active role in changing and expanding these structures (Awwad, 2013; Case, 1993). Piaget’s philosophy viewed children as active participants in their own learning. The theory served as a basis for educational reform and as a way to provide equal opportunity to diverse populations from a cultural and economic standpoint (Case, 1993).

There are several historical studies on early childhood programs that are the foundation for preschool pedagogy and provide evidence of the short and long-term advantages of participation in high quality programs (Barnett & Hustedt, 2005; Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; Graue, Clements, Reynolds, & Niles, 2004; Reynolds, Magnuson, & Ou, 2010; Schweinhart & Weikart, 1997; Stipek et al., 1998). The High/Scope curriculum model is an open-framework approach based on Piaget’s constructivist theory of child development (Lunenburg, 2000). The teacher and the child work collaboratively to construct and initiate learning activities. Daily activities are child planned, involve small- and large-group lessons, and encompass a combination of indoor and outdoor activities. Teachers facilitate intellectual, social, and physical experiences in the children’s development. The child-initiated domains include the following: social relations, creative representation, music and movement, language and literacy, space and time, and logical mathematical operations of classification, seriation, numbers and applications (Schweinhart & Weikart, 1997).

One of the most famous preschool studies, the High/Scope Perry study (Schweinhart & Weikart, 1997), examined the long-term effects of different preschool curriculum for 68 disadvantaged preschool students in Ypsilanti, Michigan. The study began in 1967 and included
students aged three and four who participated in the Direct Instruction, High/Scope, or Nursery School curriculum. At age 10, all students appeared to have similar robust cognitive and academic effects from participating in the well-implemented curriculum models. However, at age 15, differences began to emerge in the students based on the programs they had attended. The researchers reported that compared to the other models, students in the Direct Instruction group had two and a half times more acts of misconduct, indicated they were not respected by their family members, and engaged in fewer social activities such as playing sports. Schweinhart and Weikart (1997) followed up with the students at age 23 and found that students who participated in the Direct Instruction had three times as many felony arrests. In addition, 47% of the group had been treated for an emotional disturbance during school compared to 6% of students in the other two models. One difference between the approaches is that Direct Instruction curriculum focused on academic objectives, ignoring social and planning objectives. The researchers confirmed the importance of integrating child-initiated learning activities and targeting social development to ensure long lasting benefits in preschool programs serving disadvantaged children.

In 1972, the Carolina Abecedarian Project identified at-risk infants based on low-income status and other predictors of academic and social difficulties. The program, based in rural North Carolina, followed a family support model, aimed at enhancing parental involvement and increasing social, emotional, and cognitive development (Reynolds, Temple, & Ou, 2010). One group of children attended the full day, year-round Abecedarian program until the age of five while the other group received intervention until the age of three. The researcher followed up with the groups at ages 12, 15, and 21. The program effects were greatest for students who participated in the full 5-year program when compared to students who participated in the three-
year-old day care program. Compared to the group who had just attended until the age of three, students who attended the full day, year round program until the age of five had higher performance in academic and IQ tests. In addition, the group was more likely to enroll in a four-year college, was better educated, and more likely to be employed (Barnett & Hustedt, 2005; Campbell et al., 2001; Reynolds, Temple, & Ou, 2010).

Studies into the Chicago Child-Parent Centers yielded positive outcomes for students in low-income areas (Graue et al., 2004; Reynolds et al., 2012; Reynolds, Magnuson, & Ou, 2010; Reynolds, Temple & Ou, 2010). The centers began in 1967 through Title 1 funding and were located in or near public schools in high poverty areas around Chicago. The centers accepted children ages three to five attending five days a week including a six-week summer program. The program was founded on the notion that school success required stable learning environments with active parental participation (Graue et al., 2004). The program featured five critical elements including early intervention, parental involvement, a language/basic skills learning approach, health and social services, and educational continuity from preschool throughout the early school years (Reynolds et al., 2004). Follow-up studies have shown positive long-term outcomes such as persistent gains in reading achievement, continued parental involvement, lower rates of grade retention and special education placement, and a higher rate of educational attainment (Reynolds et al., 2012; Reynolds, Temple, & Ou, 2010). Graue et al. (2004) examined short- and long-term effects of the Chicago Child-Parent Centers based on teacher-rated curriculum approaches. Although the centers focused on all five critical elements, some teachers rated themselves as higher in teacher directed curriculum approaches and some in child directed. Researchers found that a blended teacher-directed, basic skills approach and child-initiated learning approach was consistently associated with strong short- and long-term
outcomes (Graue et al., 2004). There were two exceptions in that a high teacher-instructional focus was associated with increased kindergarten achievement in both word analysis and mathematics. A strong child-initiated instructional approach, compared to other approaches, was most associated with high school completion (Graue et al., 2004).

In a study examining longitudinal data from the Chicago Child-Parent Centers, Reynolds, Temple and Ou (2010) found that participation in the high quality program accounted for increased high school completion rates (46%), higher-grade completion rates (51%), and lower adult incarceration rates (59%). The researchers confirmed the advantages of positive early childhood experiences on both academic (reading and math achievement scores) and non-academic domains (social adjustment, motivation, juvenile arrest, problem behavior, and educational expectations) throughout the school years. The impact of the Chicago Centers on early childhood development and adult well-being supports an ecological model focused curriculum that incorporates family and school interactions, cognitive-academic skills, and social-emotional development on the influences of the child’s development.

Child-centered curriculum and teaching models center on both free play and child-initiated activities and appear to address individual needs and learning styles better than formal, academic, teacher-directed approaches (Awwad, 2013; Henry & Rickman, 2007). The child-initiated approaches facilitate learning by encouraging students to meet the expectations for appropriate classroom behavior such as cooperating with peers and teachers and controlling frustration during difficult tasks (Coolahan, Fantuzzo, Mendez, & McDermott, 2000; Sheridan, 2009). Although direct instructional approaches appear to increase academic and cognitive domains (Schweinhart & Weikart, 1997), they fail to produce positive effects on students’ social-emotional development (Barnett & Ackerman, 2006). To be efficient and productive, preschool
programs need to integrate a balance of academic knowledge and social skills learning that influence and develop student success in school targeting areas such as self-regulation, taking responsibility, getting along with others, and developing a positive attitude towards school (Barnett & Ackerman, 2006). Researchers investigating longstanding, historical preschool studies suggest that a quality early childcare program can positively shape social-emotional, behavior, and learning outcomes in young children (Graue et al., 2004; Reynolds, Temple, & Ou, 2010; Schweinhart & Weikart, 1997). These programs should take into account diverse student backgrounds and be organized to facilitate the unique and intricate experiences in a child’s development (Sheridan, 2009).

**Head Start**

In 1964, the administration of President Lyndon Johnson created the federally funded program Head Start, as part of a “War on Poverty” (Wrobel, 2012). Head Start has since been the longest running and recognizable program for low-income preschoolers. The program has been termed the nation’s premier early childhood program aimed at reducing socioeconomic gaps in school readiness (Bierman et al., 2008; Wrobel, 2012). In order to be eligible for Head Start, families must be at or below 100% of the national poverty line (Quesenberry et al., 2011). In 2009, 1,591 Head Start programs operated in 49,000 classrooms across the United States, serving 904,153 children, with 54 percent four years or older, at an approximate cost of 7 billion dollars per year (Anderson & Foster, 2010; Barnett & Ackerman, 2006; Gelber & Isen, 2013). Since its inception, Head Start has provided services to more than 23 million preschool students in order to combat the dismal socioeconomic conditions for disadvantaged children (Anderson & Foster, 2010).
Head Start programs use either the High/Scope curriculum or Creative Curriculum for preschoolers, both of which encourage child-initiated methods, positive teacher child relationship, and strategic learning interactions (Bierman et al., 2008; Wrobel, 2012). Head Start utilizes a “whole child” approach and includes the following five learning objectives: (a) enhancing children’s growth and development, (b) encouraging families to be the primary caregivers of their children, (c) providing children with nutritional, health, and education services, (d) being a liaison for families and community services, and (e) offering well-organized programs that increase parental involvement (Henry et al., 2006; Wrobel, 2012).

Early childcare advocates have applauded Head Start for being a comprehensive program that encourages active involvement from parents, provides social services, and is especially qualified in meeting the needs of students with disabilities (Wrobel, 2012). Head Start’s support and services to students with special needs is higher than the required 10 percent allocated by the federal government (Redden, et al. 2001; Wrobel, 2012). While the Individuals with Disabilities Act (IDEA) mandates that all preschool programs meet students’ unique needs, Head Start serves approximately 14 percent of students with disabilities. Researchers suggest that students participating in Head Start demonstrate developmental gains, and that the program excels at fostering parental involvement, promoting nutritional health, and addressing physical health outcomes (Gelber & Isen, 2013; Reynolds, Magnuson, & Ou, 2010).

Children living in poverty are especially vulnerable to social-emotional, behavioral, and learning challenges (Quesenberry et al., 2011). Studies have found that students participating in Head Start required fewer special education placements, demonstrated increases of 0.5 standard deviations in IQ from the start to finish of the program, and exhibited lower rates of emotional disturbance and intellectual disabilities (Redden et al., 2001; Reynolds, Temple, & Ou, 2010).
Furthermore, former Head Start students increased positive attitudes towards school (Ramey, Lanzi, Phillips, & Ramey, 1998) and reduced incidences of smoking in adolescence (Anderson & Foster, 2010). In elementary school, former Head Start students demonstrated significant gains in reading and math and typical levels of growth in social skills (Reynolds, Temple, & Ou, 2010). Abbott-Shim, Lambert, and McCarty (2003) found that children in Head Start increased their receptive vocabulary, phonemic awareness, and even demonstrated positive health-related outcomes. Garces, Thomas, and Currie (2002) examined sibling groups where only one child had attended Head Start. The sibling who attended the preschool program was more likely to have completed high school and attended college than the sibling who had not. Hispanic children who attended Head Start demonstrated higher academic performance at age 11 compared to their siblings who had not participated in the program (Currie & Thomas, 1999).

A majority of the criticism aimed at Head Start supporters involves overall quality and lack of participation from the programs’ intended audience—low-income students. Head Start only serves students living in poverty, yet results suggest the program only serves 40 percent of eligible students (Bassok, 2012; Wrobel, 2012). Targeting income eligible students is expensive, and when family incomes change, some students may be required to terminate their enrollment due to program regulations. Universal programs are more likely to give access to more complete coverage of disadvantaged students; therefore, voters may be more likely to support programs when eligibility is for all children. There are developmental and financial advantages for all students to have high quality preschool programs, which will likely exceed the cost expenditure (Hustedt & Barnett, 2011). In addition, some feel that states are in better positions to handle the needs of the community and have better qualified teachers. State pre-k programs have more inclusive eligibility requirements, produce higher academic and positive peer effects, and can
integrate k-12 standards in the preschool curriculum (Bassok, 2012; Henry et al, 2006; Wrobel, 2012). Barnett (2010) reported that frequent criticisms of Head Start programs include minimal teacher qualifications, larger class sizes, and lower teacher salaries. Teacher salaries in Head Start programs are significantly less, sometimes as much as half, of what pre-K teachers in state universal programs report (Barnett, 2010).

**Universal State-funded Pre-K**

In the United States, most children now have their first school experience during preschool rather than kindergarten. This shift in school entry and enrollment for three and four-year-olds is due in part to increased state investment in early childhood programs and state-funded pre-K (Hustedt & Barnett, 2011). In 2010, 40 states had universal pre-K programs and enrollment near 1.3 million children. These high quality state programs have similar characteristics in that they are voluntary, free, open to all four year olds regardless of income status, and follow state-specific requirements concerning class size, staff, child ratios, and teacher professional development. In addition, these programs are funded directly by the state and have specific comprehensive readiness standards, often linked to k-12 state standards, targeting physical, motor, language, social/emotional, cognitive and general knowledge, and approaches to learning (Hustedt & Barnett, 2011).

Pre-K state programs allow various organizations to participate as service providers, such as for-profit, non-profit, private, and even some family childcare homes (Barnett, et al., 2010). This flexibility in settings and providers has allowed the program to quickly expand and increase participation (Hustedt & Barnett, 2011). During the 2009-2010 school year, 34 states required all pre-K teachers to have specialized training in early childhood education, and 17 states required teachers to hold a bachelor’s degree and some form of early childhood certification,
licensure, or endorsement. That same year, to sustain high quality teachers, 10 states, including Georgia, established pre-K initiatives requiring all lead teachers paid on the state public school salary scale. Higher degrees equated to higher salaries on the state salary scale, in turn, some private sectors reported high turnover rates due to their inability to match the salaries at state pre-K programs (Hustedt & Barnett, 2011).

The state of Georgia’s pre-K program is administered by Bright From the Start: Georgia Department of Early Care and Learning (DECAL) (Bright from the Start, 2013c; Henry et al., 2006). Georgia pre-K is a state lottery-funded educational program that includes local providers (42%), not for profit (12%), or private for profit (46%) (Henry et al., 2006). The program provides 180 full days (6.5 hours of instruction) of high quality services for all eligible four-year-old children including those eligible for special education services under the Individual with Disabilities Educational Act (IDEA). The overall objectives for the program include providing comprehensive services for health, child development, community resources, and kindergarten readiness initiatives. All lead teachers for the program must have a valid teaching certificate issued by the Professional Standards Commission (PSC) in either Early Childhood Education, Birth through Five, Elementary Education, Birth to Five Endorsement, or Special Education General Curriculum Consultative/ECE (P-5). In addition to a lead teacher, all Georgia pre-K classrooms must have an assistant teacher. Assistant teachers must hold a minimum of a Child Development Associate (CDA) credential. Annual professional training and multiple professional development opportunities are provided for all lead and assistant teachers in order to ensure qualified, knowledgeable staff in the field of early childhood education (Bright from the Start, 2013c).
The Georgia Pre-K Learning Standards (Bright from the Start, 2013b) are correlated to Georgia’s Early Learning Standards (Bright from the Start, 2013a) and Georgia’s Kindergarten Performance Standards (Georgia Department of Education, 2013). Georgia pre-K providers must use a Bright from the Start approved curriculum such as HighScope Curriculum, the Scholastic Early Childhood Program, Alpha Skills, Creative Curriculum, and Doors to Discovery (Bright from the Start, 2013c). The learning standards focus on language and literacy, math, science, social studies, creativity, health and physical activity, and social and emotional development. The social emotional standards target the development of positive peer and adult relationships, the development of cooperation in the classroom, and the ability to express emotions appropriately. In addition, the goals and learning objects for social competence address learning behaviors with their stated purpose of, “…helping children develop positive attitudes to learning such as initiative, curiosity, and persistence in performing tasks” (Bright from the Start, 2013b, p. 50). Georgia provides high quality pre-K education, with documented high degrees of access, and the program is ranked second in the nation (Henry et al., 2006).

A study by Georgia State University in 2011 found that students who had not been in Georgia pre-K, including those in private preschool, were more than twice as likely to repeat kindergarten. Furthermore, students without Georgia pre-K were 25 percent more likely to repeat first grade than children who completed a year of the program (Southern Education Foundation, 2011). Henry et al. (2004) found that children who attended Georgia pre-K and who performed in the below average range at the beginning of pre-K on standardized assessments significantly increased their scores by the end of kindergarten. The researchers reported that the students’ performance increases were impressive with gains ranging from 5.2 points in expressive language to 10 points in letter word recognition. Overall, kindergartners who
attended Georgia pre-K performed in the average to above average ranges on national norms when compared to same-aged peers on eight out of nine standardized assessments examining communication, academic, social behaviors, and a positive attitude towards school (Henry et al., 2004). Fitzpatrick (2008) found sustainable academic achievement benefits from students who had attended Georgia pre-K, especially those from disadvantaged backgrounds. Specifically, disadvantaged students living in small towns and rural areas who had attended the state program had increased reading and math test scores in the fourth grade, as well as increased probability that the students would be on grade level for their age.

A recent large-scale study into Georgia’s pre-K program by the Georgia Department of Early Care and Learning (DECAL) investigated participation in the program and students’ school readiness skills (Peisner-Feinberg, Schaaf, LaForett, Hildebrandt, & Sideris, 2014). The study included 1,181 children and utilized a regression discontinuity design for examining treatment effects on participation. Analysis also included regression of age on outcomes variables, adjusting for child characteristics, family characteristics, and setting type (e.g., local school system or private facility). Students were administered individual measures to assess language, literacy, and math skill from the Woodcock-Johnson III Tests of Achievement and general knowledge skills from the Social Awareness Tasks. The researchers reported that students participating in Georgia’s pre-K program made significant improvement in school readiness (e.g., basic self-knowledge, letter-word identification, phonological awareness, phonemic awareness, math problem solving, counting) and performed higher than students who had not participated. Students in the treatment groups (e.g., attended GA pre-K) performed half a standard deviation above the norm on most standardized means compared to the untreated group (e.g., did not attend GA pre-K), who scored at or slightly below the norm. Similar benefits
to participation in the program were noted for both girls and boys, as well as for students from low-income families. A positive effect in phonological awareness skills was found for students who were fluent in English, but no difference was found for students with no or limited English fluency. However, no other difference existed in regards to participation in the program based on a student’s level of English language proficiency. No effects were found for vocabulary or behavior skills (Peisner-Feinberg et al., 2014).

Peisner-Feinberg, Schaaf, and Laforett (2013) investigated student outcomes and found that students attending Georgia pre-K exhibited significant growth during the year across all readiness domains, including language and literacy, math, general knowledge, and behavioral skills. Assessment measures including individually administered assessments, as well as teacher rating scales and, specifically, letter knowledge, letter-word identification, phonological awareness, math problem solving, oral language, problem behaviors, and social skills. Spanish-speaking students were assessed in both English and Spanish throughout the year. Some additional findings worth noting included those students attending pre-K in a local school district had better outcomes compared to students attending the pre-K program in a private facility. Non-English-speaking children had notable growth rates in both English and Spanish proficiency.

Other states with universal programs have reported positive academic and social effects, including Oklahoma, where the largest gains in test scores were for Hispanics and African Americans. Significant improvements were found for all students in pre-reading (e.g., effect size of 0.846 of a standard deviation), pre-writing (0.52), and pre-math skills (0.38); however, students living in Spanish speaking homes or who were born in Mexico showed the most overall gains (Gormley, 2008; Gormley & Gayer, 2005). In a later study that investigated internalizing
behaviors, Gormley, Phillips, Newmark, Welti, & Adelstein (2011) found students participating in Oklahoma’s universal pre-K program demonstrated lower timidity and higher levels of attentiveness than students who had attended Head Start. These findings suggested that participating in a universal program could produce positive effects in regulatory behaviors such as executive functioning, timidity, and attention that encourage participation and engagement in the learning environment. Studies into New Jersey’s “Abbott” pre-K program, tracking student’s academic progress through the second grade, found that students who had attended the state program demonstrated significant improvements in early language, literacy, and math skills upon entry into kindergarten (Doggett & Watt, 2010). The program is open to all three and four year olds, and researchers found that participants continued to perform better in math, language comprehension, and vocabulary skills through the second grade and were 30 percent less likely to repeat a grade after one-year enrollment and 50 percent less likely after two-years enrollment (Doggett & Watt, 2010). Huang et al. (2012) investigated the differential and persistent effects of Virginia’s income targeted, state-funded pre-K program from data collected on over 60,000 students in approximately 1000 schools. Findings revealed lower kindergarten retention rates and increased literacy rates for all students attending the program. Effects were especially significant for Black disadvantaged males with a 9.3% probability of being retained without attending the program versus a 3.6% probability of retention having attending the state level program.

One compelling argument for disadvantaged peers attending universal state pre-K centers on peer influence. There is evidence to suggest that students who are in the classroom with peers who have more developed cognitive, pre-reading, and expressive language skills benefit from these influences and may develop higher functioning skills themselves (Henry & Rickman, 2007;
Hustedt & Barnett, 2011). Direct transmission from higher-level to lower-level peers can occur, which aids in increased learning improving behavior and academic skills. Students attending universal pre-K are likely to have greater effects versus other programs because eligibility is not tied to skill level and income status, and younger students are not likely to be in prekindergarten classrooms (Henry & Rickman, 2007; Henry et al., 2006).

**Approaches to Learning**

Approaches to learning, or a child’s observable behaviors when approaching routine, difficult, or new learning activities, has been an interest to researchers both in theory and in practice. These skills, attitudes, and behaviors have been deemed by researchers as keystone behaviors and academic enablers (Domínguez et al., 2011; Schaefer, 2004). The term “approaches to learning” was first introduced to the field of early childhood education for the National Education Goals Panel (NEGP) (1991) in its multidimensional definition of school readiness. Initially, researchers “weren’t exactly certain what this dimension included” (Bredekamp, 2008, p. ix), but understood the dimension to be critical to a child’s school success and capable of enhancing or detracting a child from learning (Chen & McNamee, 2011). In fact, positive approaches to learning is viewed as so influential in a child’s academic and behavior success, the National Association for the Education of Young Children (NAEYC) (2009) reported positive approaches to learning as an area of emphasis in all high-quality programs. The NAEYC (2009) stated, “readiness expectations should include all areas: physical, cognitive, social, emotional competence as well as positive attitudes towards learning” (p.1).

There is now a general consensus within the field of early childhood that approaches to learning skills include a child’s initiation in tasks, task persistence, attention and engagement, emotional regulation, monitoring time, strategy/planning application, goal orientation, flexibility,
cooperation with peers, organization, and competence motivation (Chen & McNamee, 2011; Dominguez, 2010; McDermott et al., 2001; McWayne et al., 2004; Schaefer, 2004). Approaches to learning comprise a variety of patterns, habits, and characteristic styles when engaging in and approaching educational activities and may be the most important readiness domain in preparing at-risk children for transition into elementary school (George & Greenfield, 2005). In fact, approaches to learning skills are considered “domain-general” (p.70) in that the skills (e.g., persistence, flexibility, motivation) are not confined to one specific pre-academic area (e.g., phonemic awareness for pre-literacy skills), but are important for attainment and influence all school readiness domains (George & Greenfield, 2005). The most recently identified school readiness domain by NEGP (1991), approaches to learning, may be the most malleable and instrumental readiness skill to target for intervention when assessing risk factors for young children (Dominguez et al., 2011; George & Greenfield, 2005).

For prevention and intervention, researchers and theorists have suggested identifying keystone variables and adopting an ecological approach in order to create the most widespread benefit (Barnett, Bauer, Ehrhardt, Lentz, & Stollar, 1996; Bronfenbrenner, 1977a, 1977b; Burns, 2011). Ecological consultation outlines potential variables (e.g., approaches to learning) that should be targeted for change because they produce long-term effects (Barnett et al., 1996; Dominguez et al., 2011). Keystone variables are variables or behaviors that have the greatest impact on other significant behaviors, attitudes, perceptions, and environment. They are efficient and effective to target for intervention and have the greatest beneficial impact with increased likelihood of generalizability. Keystone behaviors have the following elements: (a) pivotal behaviors or events that can positively influence other important behaviors, (b) variables that have the maximum positive collateral effects, and (c) foundational skills that are necessary for
subsequent adaptation to positive natural environment (Barnett et al., 1996). Approaches to learning are keystone behaviors because they are essential task-orientation skills needed to engage in classroom learning, modifiable, influence other important readiness domains, and are important in academic and nonacademic settings (Barnett et al., 1996; Dominguez et al., 2011; George & Greenfield, 2005; McDermott et al., 2001). An important component of ecobehavioral analysis is to examine physical and social environments (e.g., preschool settings) and target keystone behaviors, such as approaches to learning, when designing intervention (Barrett et al., 1996; Bronfenbrenner 1977a, 1977b; Burns, 2011).

Other descriptors noted in the literature regarding approaches to learning are the ability of the various skills to be causal-protective factors and promote resilience in at-risk students (Chen & McNamee, 2011; Dominguez et al., 2011; George & Greenfield, 2005). Researchers promoting approaches to learning report that, “few factors that could be termed causal have been discovered, especially protective factors” (George & Greenfield, 2005, p.70). Given that these skills are teachable and malleable, they can serve as causal-protective resilience factors and positively affect achievement trajectories and learning strategies. In addition, these task-orientation behaviors are independent of cognitive ability and intelligence, can account for increased school performance, and can support transition into elementary school (Daniels, 2014;George & Greenfield, 2005; Pagani, Fitzpatrick, & Parent, 2012; Schaefer & McDermott, 1999).

Successful transition to school is a challenging process, with approximately one in five children showing symptoms of developmental psychopathology during transition to formal schooling (Pagani et al., 2012). The transition to kindergarten is a major milestone and can be challenging for all children, even those with preschool experience. Transition is especially taxing on children from disadvantaged backgrounds (Daniels, 2014). Students who display
challenges with transition are at risk for dropout as well as other academic, social, and behavior difficulties (Erktin, Okcabol, & Ural, 2010). Approaches to learning skills are modifiable causal-protective factors that can help at risk students make resilient transition into public school and can alter life course outcomes (George & Greenfield, 2005; Pagani et al., 2012). The preventative features of these learning behaviors further highlight the need to investigate contextual and environmental characteristics that influence and heighten these skills, such as early preschool experiences (Mokrova, Brien, Calkins, Leerkes, & Marcovitch, 2013).

Approaches to learning have not been heavily researched, and current research is relatively recent and scarce (Bulotsky-Shearer, 2011; Chen & McNamee, 2011; Worrell et al., 2001). However, available research has added to the literature on the importance of these skills and the relationship between a child’s classroom attitude, enthusiasm for learning, and learning behaviors and their academic achievement and social competence. Denton & West (2002) found that kindergarten students who exhibited positive approaches to learning at the beginning of kindergarten performed higher in reading and math at the end of kindergarten and first grade. In addition, students with high positive approaches were more than twice as likely to score in the top 25 percent in reading and math in the spring of kindergarten and first grade. McClelland, Acock, and Morrison (2006) investigated the relationship of learning related skills to reading and math trajectories from kindergarten to sixth grade. They found that children with poor learning skills in kindergarten had lower reading and math scores throughout elementary school. Learning-related behaviors (e.g., self-regulation, social competence, attention) predicted math and reading skills even after controlling for background variables such as age, ethnicity, maternal education level, and IQ. The authors found that kindergarteners with low approaches to learning initially performed lower in reading and math and were unable to “catch up” (p.483) to their
higher learning behavior peers academically in kindergarten and second grade. Consequently, these students remained behind in the third through sixth grades. This study highlights noteworthy consistency across time in kindergarten leaning related skills to academic achievement across the elementary school years.

In another study, DiPerna, Lei, and Reid (2007) examined longitudinal predictive relationships between young students’ approaches to learning and their growth in mathematics skills in elementary school. Teacher ratings of classroom behaviors such as persistence, attention regulation, cooperation, assertion, and attitudes towards learning significantly predicted children’s growth in mathematics skills above general knowledge and age through the third grade. The researchers also examined externalizing (e.g., destructiveness and aggressiveness) and internalizing (e.g., anxiety and somatization) problematic behaviors, but did not find a direct predictive relationship to math growth in the primary grades. The authors concluded that, “The results from this study suggests that, among positive and negative classroom behaviors, approaches to learning may represent the most significant behavioral domain in promoting classroom learning” (p.378). This study demonstrates the importance of approaches to learning to current and future achievement success.

A more recent study by Li-Grining, Votruba-Drzal, and Maldonado-Carreno (2010) found that approaches to learning accounts for individual differences in academic trajectories. The study used data from the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K) (n=10,666) and examined reading and math data from kindergarten, first, third, and fifth grade and earlier parent and teacher ratings of approaches to learning. Using autoregressive techniques and individual growth modeling, the researchers found that early approaches to learning were a protectant for academic trajectories, especially for children with initially lower
levels of academic achievement. For example, students who had high levels of approaches to learning and low levels of academic performance at kindergarten entry outperformed their peers years later that had low levels of approaches to learning and low level of academic achievement at kindergarten entry. Overall, children with initially higher approaches to learning experienced greater growth than those with lower levels of approaches to learning across the elementary school years (Li-Grining et al., 2010).

Learning behaviors have been found to be intertwined with all areas of readiness and a good indicator of achievement, perhaps even over cognitive ability indicators. Studies have shown that assigned teacher grade variance can be explained by learning behaviors alone, just as cognitive variations can be explained in standardized achievement scores (Schaefer & McDermott, 1999). Attention and persistence, critical components of approaches to learning, in preschool students are mediators in the relationship between school readiness and cognitive flexibility. Cognitive flexibility is an intricate executive skill that involves “switching” between one or more response activities and is connected to academic school readiness (Vitiello et al., 2011). Dominguez et al. (2010) investigated changes in approaches to learning across the preschool year and found that the learning behaviors were not stable, but improved throughout the preschool year. In contrast, cognitive ability is recognized as being ubiquitous, relatively unchangeable, and therefore not as amendable to intervention implementation (McDermott et al., 2001; McDermott et al., 2006; Schaefer, 1998; Worrell et al., 2001).

Rhoades, Warren, Domitrovich, & Greenlee (2011) investigated the relationship between preschool social emotional competencies and kindergarten attention skills to later first grade academic competencies. The researchers found over half of the effect of academic competencies and emotional knowledge was explained by attention skills, suggesting that preschool emotional
knowledge is a significant predictor of future academic attainment. Attention skills and self-regulatory behaviors in preschool and kindergarten students were central mediators in facilitating later academic success and a prerequisite for cognitive processing resources for learning in the classroom.

**Competence Motivation**

Essential learning related behaviors that comprise approaches to learning include competence motivation, attitude towards learning, attention, persistence, and demonstrating appropriate strategy or flexibility in tasks and interactions with peers and teachers (Bulotsky-Shearer et al., 2012; McDermott et al., 2001; Rikoon et al., 2012; Worrell et al., 2001). These behaviors are not mutually exclusive, but each has unique mechanisms that comprise a child’s overall approaches to learning and are important to investigate in preventive science (Barnett et al., 1996; Daniels, 2014; Erktin et al., 2010). Literature investigating positive approaches to learning, including the imbedded process of motivation, have found that by age three, a child’s motivation is highly influenced by contextual factors and that tendencies to engage in activities are based on perceived competence (Dominguez et al., 2010; White, 1959).

Competence motivation is a child’s degree of mastery attempts or determination in performance tasks related to one’s sense of learning competence that involves exploratory behavior (White, 1959). Competence motivation is learning based and is different from the biologically driven motivation of hunger, thirst, and sleep. The motivation emerges when students view their actions as having consequences and the environment as changeable based on their interactions. Psychologist Robert White (1959) proposed that all children have an intrinsic need to interact with the environment and gain a feeling of efficacy, and once those associations are made “learning can proceed with every increasing swiftness and complexity” (p. 325). If
learning behaviors are not stable, but teachable and adaptive over time, they can be influenced by preschool experiences, acquired at a young age, and targeted for intervention (Vitiello et al., 2011). The classroom context can provide opportunities to foster competence motivation during the time when children are consolidating beliefs about their behaviors and developing self-determination (Gurland & Glowacky, 2011; Nissen & Hawkins, 2010).

According to motivational theorists, competence motivation is cultivated by how a child experiences or views an activity (e.g., interesting, enjoyable) and not whether or not they engaged in the activity (Gurland & Glowacky, 2011; Mokrova et al, 2013; White, 1959). The personal value children place on learning cannot be coerced, but develops out of a sense of “wanting to” (p. 2) and is the hallmark for self-determined competence motivation (Gurland & Glowacky, 2011). Children who exhibit strong competence motivation engage in tasks because they are intrinsically motivated, genuinely want to experience new activities, and desire to be autonomous. In addition, self-regulated and motivated students monitor their own behavior, environmental factors, and personal factors during the acquisition process and make changes to these factors using various strategies (Kadhiravan, 2012). On the other hand, children who display poor competence motivation demonstrate external self-regulation in that they perform tasks for the sake of rewards, to avoid consequences, or eliminate feelings of guilt.

Consequently, students with low competence motivation feel pressured and are disinterested, disengaged, and disaffected during learning tasks (Gurland & Glowacky, 2011). Therefore, it is imperative that early childhood programs’ utilize pedagogical techniques that capture children interest in participating in educational activities to support and develop the need for autonomy and self-determination. Teaching strategies that have proven to increase competence motivation and support self-determination are child-initiated activities that provide
choice to sustain interest and task engagement (Awwad, 2013; Guimaraes & McSherry, 2002; Gurland & Glowacky, 2011; Schweinhart & Weikart, 1998; Wambach et al., 2000).

Research supports that children with high levels of competence motivation at a young age, have higher academic skills and motivation in the short and long term (Bridgeman & Shipman, 1978; Mokrova et al., 2013). Bridgeman & Shipman (1978) reported that increased levels of motivation at ages four and five were positively related to academic achievement in the third grade. More recently, Mokrova et al. (2013) investigated preschoolers’ motivation and persistence in relation to later academic achievement. Using a path analysis model to investigate motivation, maternal education, ethnicity, gender, and language and math skills, the researchers found that motivation accounted for a significant portion of variance in both language skills and math skills. Children who had increased motivation and persistence in completing challenging tasks at age 3 had higher language and math skills at kindergarten. These findings were apparent two years later over and above demographic factors and cognitive-linguistic skills. The authors emphasized the importance of investigating motivation at an early age (e.g., preschool and kindergarten), child-rearing strategies, school entry practices, and contextual factors that could develop higher levels of motivation and increase academic skills (Mokrova et al., 2013).

**Attitude Toward Learning**

A student’s eagerness and willingness to engaging in learning activities has been deemed as their attitude toward learning (Worrell et al., 2001). Children develop feelings, or affective orientations, about school prior to entering school, and these orientations can predict their cooperative participation in classroom activities and later achievement outcomes (Daniels, 2014). Positive approaches or orientations can protect students from later academic and social difficulty and stimulate increased approach rather than avoidance behavior in the classroom (Bulotsky-
Shearer et al., 2011; McWayne, Green, & Fantuzzo, 2009). Similar to the other approaches to learning variables (e.g., competence motivation, attention, persistence, self-efficacy, and flexibility) attitude toward learning is interconnected and inclusive with the other learning behaviors (Daniels, 2014; Erktin et al., 2010). Early childhood is a crucial time to explore students school related attitudes and perceptions to ensure there is a match of expectations in the new academic environment. A “mismatch of expectations” (Daniels, 2014, p.257) during transition to kindergarten can affect a child’s positive attitude toward school, decrease interest in intrinsically interesting activities, and decrease motivation (Daniels, 2014). A negative attitude toward learning has long-term academic consequences as well such as an increased likelihood of school dropout and peer rejection (Bulotsky-Shear et al., 2011; Bulotsky-Shearer et al., 2010; Erktin et al., 2010; McClelland et al., 2006).

Research suggests that at risk preschoolers who adopt positive school related attitudes demonstrate increased competencies in kindergarten and first grade (Daniels 2014; McWayne et al., 2009). Healthy perceptions and attitudes towards learning can be a buffer against social and economic disadvantage at school entry especially at an early age (Kwon, Kim, & Sheridan, 2012; McWayne et al., 2009; Rikoon et al., 2012). Daniels (2014) investigated children’s affective orientations and school related perceptions in late preschool and then again several months after kindergarten entry. The research aimed at addressing whether preschool children’s affective orientations predict later attitudes and adjustments in kindergarten. In addition, the study examined whether established attitudes related to perceived competence, relationships with teachers, and classroom behavior. Findings revealed that preschool children’s attitude towards learning carries over to early kindergarten despite changes in classroom environments. Other notable results included: (a) students’ liking of kindergarten was based on whether they looked
forward to intrinsically interesting activities (71%), (b) children’s adjustment in kindergarten was significantly related to their affective orientations in preschool, and (c) enthusiastic children were overall more positively oriented toward school and better adjusted than the less enthusiastic students (e.g., engaged in class activities, mature, persistent with challenging tasks, and socially competent) (Daniels, 2014).

**Attention/Persistence**

Attention and persistence skills are integral components to approaches to learning and are the foundation of goal based self-control behavior (Pagani et al., 2012). These executive functioning skills are a result of rapid growth and development in frontal and prefrontal brain regions during early childhood and predict subsequent academic, cognitive, and behavioral performance (Kwon et al., 2012; Pagani et al., 2012; Trentacosta & Izard, 2007). The ability to sustain attention reaches maturity and become stable early in development (between the ages of 6 and 10), while behavioral persistence may change in either direction during the elementary school years. Early childhood is a critical time to increase intervention efforts towards improving attention and behavioral persistence given they have significant influence on academic and behavioral outcomes (Bulotsky-Shearer & Fernandez, 2011; Bulotsky-Shearer et al., 2010; McClelland et al., 2006; Zhou et al., 2007).

Pagani et al. (2012) investigated attention and persistence skill trajectories in disadvantaged urban kindergarten. Children with more developed attention skills and task persistence in kindergarten demonstrated more productive and task-oriented learning behaviors throughout elementary school. Trentacosta & Izard (2007) investigated multiple predictors (e.g., teacher-student relationship, peer acceptance, attention, and verbal ability) of academic competence in first graders. Attention was found to be a direct predictor of academic
competence and indirect relations between emotional regulation and academic competence through attention to academic task. They concluded, “...the results provide strong support for attention in the classroom as a key predictor of academic success” (p.77). Researchers investigating developmental outcomes from early to middle childhood found that students with increasing persistence trajectories were at a lower risk for externalizing problems over those with declining persistence. In addition, children from ages five to 10 with high and stable attention skills demonstrated low and stable externalizing problems (Zhou et al., 2007). Conversely, students with low attention skills were more likely to display moderate to high levels of externalizing problems.

**Strategy/Flexibility**

The ability to approach tasks in a compliant and positive way and interact appropriately with peers and teachers encompasses a child’s strategy/flexibility behavior in the classroom (Worrell et al., 2001). The environment of a classroom provides endless opportunities for students to interact with peers and adults, foster relationships, try new activities, and develop behavioral competence. Young children with appropriate emotional competence and strategy/flexibility behavior are open and malleable to new experiences, changes in routines, and unexpected events in the classroom. These students are positively engaged in the learning environment even when encountering obstacles, can adjust a goal or strategy accordingly, and are willing to take on challenges (George & Greenfield, 2005; Ziv, 2013). However, students with less adaptive social behavioral competence exhibit signs of distress, withdrawal, or even display aggression when presented with a new or challenging experience (Nissen & Hawkins, 2010). These maladaptive behaviors interfere with the learning process and can foreshadow a
child’s future academic and social problems (Bulotsky-Shearer & Fernandez, 2011; Bulotsky-Shearer et al., 2010; Kwon et al., 2012; Ziv, 2013).

George and Greenfield (2005) measured problem-solving flexibility in a group of kindergarteners to see if the behavior predicted academic achievement. The study found that problem-solving flexibility significantly predicted kindergarten and 1st grade achievement, even with other measures of approaches to learning. The findings indicate that although problem-solving flexibility is one aspect of approaches to learning, the specific ability of positively engaging and taking advantage of learning and social opportunities is crucially important to academic success (George & Greenfield, 2005). More recently, Kwon et al. (2012) studied students in grades kindergarten through 3rd with elevated externalizing behaviors (hyperactivity, aggression, conduct problems) and measured their behavioral competence (e.g., adaptability, cooperation, social skills) and academic functioning. The researchers hypothesized that behavior competence would be negatively related to academic problems and be a buffer against other risk factors (e.g., parental education) apparent in children with externalizing problems. Findings confirmed that learning related skills, such as adaptability and cooperation, in the learning environment are significant predictors of academic functioning over and above background characteristics, including externalizing problems. These studies added to current literature in support of behavior competence being a causal-protectant factor in at-risk students, including students who exhibit preexisting externalizing behavior problems (Bulotsky-Shearer & Fernandez, 2011; Bulotsky-Shearer et al., 2010; Chen & McNamee, 2011; Dominguez et al., 2011; George & Greenfield, 2005; Kwon et al., 2012).

Ziv (2013) investigated social competence and social information processing in preschool students (e.g., cooperation with peers, emotion-regulated behavior, motivation, and attention) in
relation to their overall school readiness skills. Children who approached social encounters in more competent ways and with less abrasive behaviors performed higher academically in school and had better attitude towards learning as reported by their teachers. Overall, “students’ motivation, focus, and sustain attention in the preschool classroom is associated with better social competence encounters” (p. 316). This literature supports the interconnectedness and inclusive variables of approaches to learning as well as their influence to other school readiness domains. The NAEYC (1996) reported, “because developmental domains are interrelated, educators should be aware of and use these interrelationships to organize children’s learning experiences in ways that help children develop optimally in all areas that make meaningful connections across domains” (p. 1).

For prevention and intervention purposes, it is important to focus on keystone learning related behaviors that are teachable and mutable, have the greatest beneficial short and long term impact on other important readiness skills, and can influence overall school success (Barnett et al., 1996; George & Greenfield, 2005).

**Role of Demographics in the Literature**

High quality pre-K attendance has academic, social, and behavioral benefits for all students, but may be especially advantageous for minorities, low-income students, and males, given that they often start school behind their female, white, and advantaged peers (Bulosky-Shearer et al., 2012). Studies have found decreased retention rates and increased literacy, math, and writing competencies for disadvantaged black and Hispanic students attending high quality state pre-K programs (Gormley, 2008; Gormley & Gayer, 2005; Huang et al., 2012). Children living in poverty are at a 30 percent increased risk of developing problem behavior and social and peer incompetencies, and boys typically exhibit more behavior problems than girls.
Numerous studies have documented the academic and behavior advantages of low-income children and boys attending a high quality preschool program (Barnett, 2008; Barnett, 2010; Henry et al., 2006; Huang et al., 2012; Magnuson et al., 2007). Taylor et al. (2000) examined students in Georgia who had attended a preschool program (public, Head Start, and private/church) versus students with no preschool experience and found that overall students who attended preschool had a higher score on the Georgia Kindergarten Assessment Program (GKAP). They found that girls performed higher on the Social measure compared to boys, but the effect size decreased when boys attended preschool. There was no statistical difference based on gender in the other four areas assessed on the GKAP that included communication, logical-mathematical, personal, and physical.

Prior studies investigating certain demographic characteristics with social, learning, and academic outcomes have found that females generally perform better in school, receive superior grades, are retained less frequently, and engage in higher positive peer interactions (Coolahan et al., 2000; Schaefer, 2004). In their research into demographic variables on approaches to learning, Dominguez et al. (2009) found that girls were rated higher in approaches to learning variables by their teachers, but ethnicity was not a significant predictor of positive learning behaviors. In a follow-up study (Dominguez et al., 2010), gender again was a significant predictor of learning behaviors with girls having higher rates of approaches to learning and more significant rates of increased learning behaviors throughout the year. Their findings suggested that girls start school with more adaptive learning behaviors and acquire and develop learning behaviors at a higher rate than boys. Child level predictors (e.g., gender) versus classroom level predictors produced the most variance among learning behaviors. Overall, demographic variables accounted for 11 percent of the inter-individual variance in approaches to learning. In
their study investigating behavior problems in learning activities, Bulosky-Shearer and Fernandez (2011) found that child demographics (age, gender, and ethnicity) accounted for 6 percent, 9 percent, and 5 percent of the variance in competence motivation, attention/persistence, and attitude to learning. The differences of demographic variable outcomes must be considered when examining early childhood experiences, school readiness, and learning behaviors and research should consider gender, race, and income variances when designing research and intervention.

**Summary**

There are significant differences in the quality of preschool programs, with state-funded pre-K programs producing long and short-term academic advantages (Barnett, 2010; Brown & Wright, 2011). The federal initiative of NCLB and the assembly of the National Education Goals Panel (NEGP) (1991) increased state accountability into closing achievement gaps and shifted attention towards quality, universal state-funded pre-K programs. Since the 1990s, attendance at state supported pre-K programs has increased dramatically with state level investment currently around 5.4 billion (Barnett et al., 2010; Bassok, 2012). While school readiness is often measured by cognitive and academic standards, the NEGP (1991) recognized approaches to learning as one of the five dimensions of development contributing to a child’s overall readiness skills (National Education Goals Panel, 2007). Quality preschool programs can shape social, learning, and developmental outcomes for children from diverse backgrounds and with diverse experiences and should be structured to facilitate the whole child, including positive learning behaviors (Aguilar & Tansini, 2012; Barnett, 2010; Gormley, 2008; Henry et al., 2006; Henry & Rickman, 2007; Huang et al, 2012; Loeb et al., 2007; Magnuson et al., 2007; Magnuson & Shager, 2010; Nelson, 2005). Approaches to learning are observable behaviors during
learning activities that have been identified as academic enablers, entwined with all areas of readiness, predictive indicators of academic trajectories, and have not been broadly researched (Bulosky-Shearer et al., 2010; Chen & McNamee, 2011; Li-Grining et al., 2010; Schaefer, 2004; Schaefer & McDermott, 1999). The following chapter will outline the research design that will contribute to literature on the differences in approaches to learning among kindergartners who attend a high quality state-funded pre-K versus other early childhood programs and experiences.
CHAPTER THREE: METHODOLOGY

Introduction

This causal-comparative study sought to determine if there were significant differences in the approaches to learning of kindergartners who attended state-funded pre-K and kindergartners who attended federally funded or private preschool programs or had no preschool experiences. This study examined three independent variable groups on four approaches to learning variables: competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility. The following chapter presents specific information on the overall design, participants, setting, instrumentation, procedures, and analysis of the data collection employed in this study.

Design

This study utilized a causal-comparative research design, a type of *ex post facto* design, because the researcher sought to identify a possible cause-and-effect relationship between three naturally occurring events among groups of individuals (students who attended state-funded pre-K, private or federally funded preschool programs, and no preschool) and to determine whether they differed on four dependent variables (competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility). This non-experimental research design was most appropriate because the phenomena of early childhood experiences occurred prior to the study; therefore, the researcher was unable to manipulate the independent variable groups and randomization was not possible (Gall et al., 2007). Previous studies utilized a similar design when investigating differences in early childhood education programs and academic and behavioral outcomes (Aguilar & Tansini, 2012; Gormley, 2008; Gormley et al., 2011; Huang et al., 2012; Henry et al., 2006; Magnuson et al., 2007; Taylor et al., 2000). The researcher selected participants from schools with similar demographics to increase the internal validity of the study.
and create equality of groups on the extraneous variables of race, gender, and socioeconomic status (Gall et al., 2007).

**Questions and Hypotheses**

The research questions for this study were:

**RQ₁**: Is there a statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**RQ₂**: Is there a statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**RQ₃**: Is there a statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**RQ₄**: Is there a statistically significant difference in kindergartners’ attention/persistence, as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**RQ₅**: Is there a statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus
children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

The research hypotheses for this study were:

**H₁**: There will be a statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₂**: There will be a statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₃**: There will be a statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₄**: There will be a statistically significant difference in kindergartners’ attention/persistence as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₅**: There will be a statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).
Alternatively, the following were the null hypotheses:

**H₀₁:** There will be no statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₂:** There will be no statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₃:** There will be no statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₄:** There will be no statistically significant difference in kindergartners’ attention/persistence as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₅:** There will be no statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).
Participants

This study used a convenience sample of kindergarten students from 10 classes enrolled in four Title I elementary schools during the 2013-2014 school year in a small school district in northeast Georgia. Schools residing in low-income areas receive assistance as part of the federal Elementary and Secondary Education Act of 1965 (ESEA) to target students who may be academically at risk. Schools qualify as a “Title I” school when at least 40 percent of their students qualify for free and reduced lunch (Gayl et al., 2010; Hustedt & Barnett, 2011). Ten kindergarten teachers from the four elementary schools were sent a letter detailing involvement in the study and requesting their participation. The sample size for this study was 187 kindergarten students, which exceeded the 30 participants per group recommendation for a causal-comparative study (Gall et al., 2007). Demographic data collected on the kindergarten students participating in this study included race, gender, and socioeconomic status.

Of the 187 students in this study, 96 (51.3%) were male and 91 (48.7%) were female. A majority of the students belong to the White ethnicity, with 134 students comprising 71.7% of the sample population. There were 20 (10.7%) Hispanic participants, 15 (8.0%) Black, 3 (1.6%) Asian, and 15 (8.0%) other. Forty-five or 24.1% of the students were not eligible to receive the free or reduced lunch status, 124 (66.3%) of the sample population were eligible for the free lunch status, and 18 (9.6%) of the students were eligible for reduced lunch status. Forty-two of the students did not attend preschool, 34 of the students attended a private preschool or a Head Start program, and 111 of the students attended a state-funded Pre-K. Table 1 presents the frequency table of the demographic variables of gender, race, and SES, disaggregated by the independent variable of preschool experience.
Table 1

*Frequency Table of Demographic Variables Disaggregated by Preschool Experience*

<table>
<thead>
<tr>
<th></th>
<th>Did not attend PS</th>
<th>Attended private PS or HS</th>
<th>Attended lottery funded Pre-K</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Total %</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
<td>59.5</td>
<td>13.4</td>
</tr>
<tr>
<td>Female</td>
<td>17</td>
<td>40.5</td>
<td>9.1</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>100</td>
<td>22.5</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>35</td>
<td>83.3</td>
<td>18.8</td>
</tr>
<tr>
<td>Black</td>
<td>1</td>
<td>2.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4</td>
<td>9.5</td>
<td>2.2</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>2.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>2.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>100</td>
<td>22.8</td>
</tr>
<tr>
<td><strong>SES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No FORLS</td>
<td>6</td>
<td>14.3</td>
<td>3.3</td>
</tr>
<tr>
<td>RLS</td>
<td>5</td>
<td>11.9</td>
<td>2.7</td>
</tr>
<tr>
<td>FLS</td>
<td>31</td>
<td>73.8</td>
<td>16.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>42</td>
<td>100</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
</tr>
</tbody>
</table>

*Note.* PS= Preschool; HS= Head Start; FORLS= free or reduced lunch status; RLS= reduced lunch status; FLS= free lunch status.
Setting

The setting for this study was a small rural school system located in northeast Georgia. The system has approximately 7,000 students. There are eight elementary schools, three middle schools, and two high schools, eight of which are Title I schools. Fifty percent of students receive free and reduced lunch. The student population is 80% White, 12% Hispanic, 5% Black, and 3% other (National Center on Education Statistics, 2012). According to the U.S. Census Bureau (2010), the county has a total population of 60,571 and a median annual household income of $52,883. The county demographic data indicate a general population that is 89% White, 7% Black, 6% Hispanic, and 1% Asian. The four Title I schools that participated in the study were comparable in demographics and size with approximately 55 kindergarten students. The schools are low income with each above the district’s average (51%) of students qualifying for free and reduced lunch.

The first school student population was comprised of 81% White, 10% Hispanic, 4% Black, 1% Asian, and 5% other, with 75% of the students qualifying for free and reduced lunch. The second school was 70% White, 18% Hispanic, 5% Black, 2% Asian, and 4% other with 73% of the students qualifying for free and reduced lunch. The third school was 77% White, 18% Hispanic, 1% Black, 0% Asian, and 5% other with 60% qualifying for free and reduced lunch. The fourth school student population was 81% White, 7% Black, 1% Asian, and 4% other with 53% of the students qualifying for free and reduced lunch (National Center on Education Statistics, 2012; U.S. Census Bureau, 2010). All four schools used the same standards-based kindergarten curriculum with common research-based instructional practices, curriculum maps, rubrics, pacing guides, and performance indicators. Kindergarten teams met periodically to
ensure consistency across the system in teaching the standards and to review standards, common assessments, instructional methods and pacing. 

Each school included in this study had one Georgia pre-class with 22 students. The school district is the provider of nine Georgia pre-K classrooms all located in elementary schools. In addition, the county has five other Georgia pre-K classrooms administered by private providers. There is one Head Start facility in the county with three 4-year-old classrooms. In addition, there are five other facilities in the area providing private preschool. The learning behavior observations conducted by the classroom teachers occurred in the kindergarten classrooms of the four participating schools. The researcher chose this setting because of accessibility and strong likelihood that consent for the study would be granted in the district.

**Instrumentation**

In order to assess approaches to learning, the Learning Behavior Scale (LBS), which is a 29-item teacher rating scale, was used to measure distinct behaviors associated with the learning process (McDermott et al., 2001). Test developers recommend teachers have two months to observe learning behaviors before completing the scale (McDermott, 1999). Some examples of the items include “accepts new tasks without fear or resistance” (p. 2), “cooperates in class activities sensibly” (p. 1) and “gets aggressive or hostile when frustrated or when work is corrected” (p. 2) (McDermott et al., 2001). The six positively worded and 23 negatively worded items are intended to measure behaviors in students from kindergarten through the twelfth grade with behaviors rated on a three-point Likert type scale (Most often applies, Sometimes applies, or Doesn’t apply). After the teachers completed the LBS, behaviors that were positively worded were scored $0 = \text{Doesn’t apply}, 1 = \text{Sometimes applies}, \text{and } 2 = \text{Most often applies}$. Negatively worded behavior items were scored $0 = \text{Most often applies}, 1 = \text{Sometimes applies}, \text{and } 2 =$
Doesn’t apply (McDermott et al., 2001). To score the LBS, the researcher totaled the raw scores for the four dimensions and converted them to t scores based on the LBS charts provided by the test publisher. The scale for the t scores on the LBS range from 65 to 1. High scores were assigned for effective learning behaviors and low scores for faulty learning behaviors (McDermott et al., 2001).

The developer of the LBS created the scale over a 15-year period. The scale contains four subscales and was initially standardized on a national sample of 1,500 students ranging from five to 17 years (McDermott, 1999; Worrell et al., 2001). The factors prove to demonstrate adequate reliability and generalizability across gender, age, and ethnicity. The LBS has remained stable and valid to date (Buchanan, McDermott, & Schefer, 1998; McDermott, 1999; Rikoon et al., 2012; Worrell et al., 2001). The LBS includes the following four domains: (a) competence motivation, (b) attitude toward learning, (c) attention/persistence, and (d) strategy/flexibility. Cronbach’s alpha for competence motivation was at .85, attitude toward learning at .84, attention/persistence was .85, and strategy /flexibility at .75. The average coefficient for preadolescents was .82, interclass correlation for the subscales at .82, and excellent interobserver agreement (McDermott, 1999; Worrell et al., 2001). Convergent and discriminate validity have been investigated with the LBS, Differential Ability Scale, the Basic Achievement Skills Individual Screener, TerraNova, Second Edition, teacher assigned grades, and the Adjustment Scales for Children and Adolescence. Findings between scores were appropriate and meaningful, and the LBS predicted variations in teacher assigned grades beyond contributions to demographic factors such gender and intelligence (McDermott, 1999). The LBS has demonstrated moderate and statistically significant associations between learning behaviors and academic achievement in both current and later school years (Buchanan et al., 1998;
McDermott, 1999; Rikoon et al., 2012; Worrell et al., 2001). After the validation of the LBS, McDermott (1999) reported on the capacity of the LBS and evidence supported the inclusion of the scale in assessment procedures for generation of individual interventions:

...it is not argued that good learning behaviors will necessarily overcome the effects of limited cognitive ability. Rather, it is suggested that, given roughly comparable levels of ability, students trained to optimize levels of learning will have distinct advantage over those not trained. (p. 289)

The Cronbach’s coefficient alpha was computed to examine reliability of the LBS for the sample population for this study. As can be observed from Table 2, the Cronbach’s alpha is 0.939, which indicated a high level of internal consistency of the Learning Behaviors Scale for this specific sample.
Table 2

*Cronbach’s Coefficient Alpha for Learning Behaviors Scale*

<table>
<thead>
<tr>
<th>Cronbach’s α</th>
<th>Cronbach’s α Based on SI</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>.939</td>
<td>.936</td>
<td>29</td>
</tr>
</tbody>
</table>

*Note.* SI= standardized items.

The information systems coordinator provided the demographic variables of gender, race, and SES as well as preschool experiences in an excel spreadsheet. For gender, “M” for male and “F” for female identified the variables. The variables of race were identified by “W” for White, “B” for Black, “H” for Hispanic, “A” for Asian, and” M” for other. For the variable of socioeconomic status, “S” identified students who did not obtain free or reduced lunch status, “R” identified reduced lunch status, and “F” identified free lunch status. For preschool experience, “1” was coded as did not attend, “2” was identified as attended private or a Head Start program, and “3” was attended state-funded pre-K.

**Procedures**

The study was submitted for IRB approval after receiving permission from the dissertation chair, committee members, and district superintendent. After receiving approval from Liberty University’s IRB, the researcher contacted building principals for permission to conduct the study in their elementary schools. Following school authorization, kindergarten teachers were contacted requesting voluntary consent to participate in the study and offered a $30 Visa gift card as compensation for their participation in the study. The gift cards were given out after all the surveys were completed. Parental consent was not required because the information was compiled and identifiers removed by the districts’ student information systems coordinator before the data was obtained by the researcher. A subscription to Survey Monkey
was obtained and questions from the Learning Behavior Scale (LBS) were entered. Data collection took place in February, 2014. The researcher scheduled time after school to instruct the teachers on completing the 29-item Learning Behavior Scale (McDermott et al., 2001). During the interactive and hands on training, teachers learned about the contents of the scale and procedures for endorsing the items. The training procedure ensured fidelity of treatment and consistency in ratings. After the training, teachers received access to the LBS via a link that was emailed to them. On the computer, teachers completed one survey for every student in their class. The survey required the teachers to input the student’s name, student ID number, and answer 29-items investigating the students’ learning behaviors.

The LBS is reflective because the observer rated the child’s typical classroom behavior during the past two months. The teachers completed the scale at their convenience and preferred location choice, including at school or at home. The raw scores from the LBS transferred into an Excel file and aligned by the students’ names and ID numbers. The student information systems coordinator exported the Excel file from Survey Monkey and removed all identifying information (names and ID numbers) replacing them with a randomly assigned number in order to allow for sorting according to variables. The information systems coordinator prepared an integrated Microsoft Excel File spreadsheet that included the following: (a) archived anonymous student data with disaggregating data based on ethnicity, gender, and SES, (b) preschool experiences during the 2012-2013 school year, and (c) LBS data points. The spreadsheet was returned to the researcher, and SPSS was used to calculate statistical results.

**Data Analysis**

Descriptive statistics were conducted prior to the statistical analysis to investigate the mean differences between the three independent variable groups, kindergartners’ overall
approaches to learning, and the four dependent variables. Chi-square tests of independence were conducted to determine if statistically significant associations between preschool attendance and the demographic variables existed and if demographic variables needed to be included in the analysis as covariates. For the first research question, a correlation matrix examined the central variables to determine if the measures were significantly correlated to warrant the use of a multivariate analysis. The variables were significantly correlated pairwise, with a significance value of less than 0.5 for all the pairs, indicating sufficiency for a multivariate analysis. A one-way multivariate analysis of variance (MANOVA) was used to analyze the linear combination of all of the variables, test the first null hypothesis, and determine whether groups differed on the combination of dependent variables (Warner, 2013). A MANOVA was appropriate because it tests the significance between two or more independent variable groups when there are four related and continuous dependent variables (Gall et al., 2007).

Assumption testing occurred prior to the analysis using boxplots to examine outliers and inspection of histograms of scores to assess normality of distribution. The Levene and Box’s tests assessed homogeneity of variance and covariance, also known as error variance, with a significance level of p<.001 indicating a violation exists (Tabacknick & Fidell, 2007; Warner, 2013). Box’s M test examined homogeneity of covariance and in order for the assumption to be upheld, the probability value should be greater than .05, indicating M is not significant (Warner, 2013). The Box’s test confirmed the assumption of homogeneity of variance-covariance indicating there was no violation of the assumption. The Levene test of equality provided evidence that the assumption of homogeneity of variance across groups was tenable in this study. A MANOVA analysis is typically robust in regards to normality when the sample size is at least 20; however, normality and multivariate normality were tested with histograms and a normality
statistic (Kolmogorov-Smirnov) for each dependent variable (Warner, 2013). Linearity was examined using a scatterplot with the assumption being met if there was an approximate straight line between variables (Warner, 2013). In this study, the scatterplots were distributed around a line, indicating that the assumption of linearity of the dependent variables were tenable. A matrix of scatterplots and correlation table assessed the assumptions of multicollinearity and singularity. The assumption of multicollinearity was upheld as no correlation coefficient value was above 0.8 for the dependent variables. Mahalanobis distance was calculated to test multivariate normality. Mahalanobis distance for each dependent variable for each respondent was computed with testing at $a = 0.001$ and did not exceed the critical value; therefore, the assumption of multivariate normality was not violated.

Pillai’s Trace was used to test the statistical significance of the difference between groups for the first null hypothesis. Based on Cohen’s $d=0.5$, power = 0.8, and alpha level $\alpha=0.05$, the minimum sample size for this study was to be 102 students, with 51 per group (Gall et al., 2007; Soper, 2011; Warner, 2013). A significance level of .05, or probability of making a Type I error, is generally accepted within social science research (Warner, 2013). Planned comparisons using ANOVAs tested the second through fifth null hypotheses using preschool attendance groups as the independent variable and the four approaches to learning variables as the dependent variable. An ANOVA was appropriate because it can compare the amount of between group variance with the amount of within group variance in individual students’ scores (Gall et al., 2007; Warner, 2013). If the ratio was high, then there is a greater difference between the groups on a variable then there is within groups (Warner, 2013). This statistical method was chosen because it can determine if the mean scores on different variables differ significantly and if various patterns are evident in the variables. A more stringent alpha was set using the Bonferroni correction to
control for Type I Familywise errors and determine if the null hypothesis could be rejected \((\alpha = 0.017 \times 0.05/3)\) (Warner, 2013).
CHAPTER FOUR: FINDINGS

Restatement of the Purpose

This chapter contains a summary of the results for each of the research questions for this study. The data presented in this chapter was used to determine the differences in approaches to learning among kindergarteners who attended state-funded pre-K. The purpose of this study was to test the developmental ecological theory that relates the importance of early childhood experiences to the critical school readiness domain of approaches to learning, controlling for kindergarten curriculum exposure at four Title I elementary schools located in rural northeast Georgia. Three groups of students comprised the total sample population of 187 students for this study. The first group consisted of kindergarten students who participated in Georgia’s high quality pre-K program. The second group contained kindergartners who participated in private preschools or federally funded preschool programs and the third group consisted of kindergarten students who have not participated in federal, state, private, or other early childhood preschool programs.

Descriptive statistics investigated the mean differences between the three independent variables and four dependent variables and examined associations between preschool attendance and the demographic variables. Data from the multivariate analysis of variance (MANOVA) was used to test the first hypothesis. Planned comparison ANOVAs were used to test the second through fifth null hypothesis. The study contributed to the current literature on the effects of quality early childhood education on the critical and relatively unexplored domain of approaches to learning.

Research Questions and Hypothesis

The following research questions were investigated:
**Research Question 1:** Is there a statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**Research Question 2:** Is there a statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**Research Question 3:** Is there a statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**Research Question 4:** Is there a statistically significant difference in kindergartners’ attention/persistence, as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

**Research Question 5:** Is there a statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)?

The following were the corresponding research hypotheses:

**H₁:** There will be a statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who...
attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

\(H_2\): There will be a statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

\(H_3\): There will be a statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

\(H_4\): There will be a statistically significant difference in kindergartners’ attention/persistence as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

\(H_5\): There will be a statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

Alternatively, the following are the null hypotheses:

\(H_{o1}\): There will be no statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).
**H₀₂:** There will be no statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₃:** There will be no statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₄:** There will be no statistically significant difference in kindergartners’ attention/persistence as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**H₀₅:** There will be no statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001).

**Descriptive Statistics**

Descriptive statistics for the rating scales and the dependent variables (Motive T Score, Attitude T Score, Attention/Persistence T Score, Strategy/Flexibility T Score, and Total T Score) by the independent variable groups (preschool experiences) are presented in Tables 3 and 4.
Table 3

*Pooled Statistics for Rating Scales (N=187)*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motive T Score</td>
<td>44.96</td>
<td>14.53</td>
</tr>
<tr>
<td>Attitude T Score</td>
<td>47.43</td>
<td>12.21</td>
</tr>
<tr>
<td>Attention/Persistence T Score</td>
<td>44.43</td>
<td>13.94</td>
</tr>
<tr>
<td>Strategy/Flexibility T Score</td>
<td>46.40</td>
<td>11.90</td>
</tr>
<tr>
<td>Total T Score</td>
<td>45.02</td>
<td>13.45</td>
</tr>
</tbody>
</table>
Chi-square tests of independence were conducted to ascertain if statistically significant associations between preschool attendance and the demographic variables existed and if demographic variables needed to be included in the analysis as covariates. For gender and preschool experience, the researcher found that $X^2(2) = 4.366, p = 0.113$, which indicated that there was no statistically significant association between gender and preschool experience. For race and preschool experience, the researcher determined that $X^2(8) = 7.783, p = 0.455$, indicating there was no statistically significant association between race and preschool experience. For SES and preschool experience, the researcher found that $X^2(8) = 5.814, p = 0.214$, which indicated that there was no statistically significant association between SES and preschool experience. The strength of association between the demographic variables and preschool experience was not significant; therefore, the variables were not considered as covariates.
Research Question One

Research question one was as follows: Is there a statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who Attended State-Funded Pre-K versus children who Did Not Attend Preschool or Attended Federally Funded or Private Preschool Programs? A correlation matrix examined whether the central variables were sufficiently related to warrant the use of a multivariate analysis. Table 5 shows the correlation table for the dependent variables of preschool experience, Motive T Score, Attitude T Score, Attention/Persistence T Score, and Strategy/Flexibility T Score. From Table 5, the researcher observed that all the dependent variables were significantly correlated pairwise, with \( p < 0.01 \) for all pairs providing sufficient evidence for the use of one way MANOVA to test the first null hypothesis. Before the one-way MANOVA test was carried out, assumption testing was performed.
Table 5

*Pearson Correlation Matrix of Central Variables*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Motive T Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Attitude T Score</td>
<td>.747**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. A/P T Score</td>
<td>.696**</td>
<td>.788**</td>
<td></td>
</tr>
<tr>
<td>4. S/F T Score</td>
<td>.528**</td>
<td>.705**</td>
<td>.717**</td>
</tr>
</tbody>
</table>

*Note.* A/P= Attention/Persistence; S/F= Strategy/Flexibility.
**Correlation is significant at the 0.01 level.

Assumption Testing

Assumption testing occurred prior to the analysis using boxplots to examine outliers, inspection of histograms of scores, and the Kolmogorov-Smirnov’s test for normality to assess normality of distribution and linearity of the relationships between variables. A scatterplot matrix and examination of a correlation table investigated the assumption of multicollinearity of the dependent variables. In addition, homogeneity of covariance and covariance of the dependent variables were examined with the Levene and Box’s tests. Equality of variance across groups, normality, and multivariate normality were also examined (Warner, 2013) and is discussed in the following section.

**Examining outliers.** To check for outliers in the data, boxplots were created for the dependent variables. Figure 1 shows the initial boxplots for the four dependent variables. The researcher found a few outliers within the data. The outliers, however, were not extreme and fell along the range of the rating scale’s scoring system which has been proved to be valid and reliable (Buchanan et al., 1998; McDermott, 1999; Rikoon et al., 2012; Worrel et al., 2001).
one-way MANOVA is quite tolerant to outliers, and given that the outliers were valid, they were not removed for the data analysis of the study (Tabachnick, & Fidell, 2007).
Normality testing. Kolmogorov-Smirnov’s test for normality was performed for the dependent variables and histograms were plotted to determine whether the data were normally distributed. Data for all dependent variables were not normally distributed \((p = .001\) which was less than \(\alpha = .05\)). The histograms of the rating scales supported non-normality as shown in Figure 2, where data for all five dependent variables are skewed to the right. MANOVA analysis, however, is robust in regards to normality with sample sizes of at least 20 (Tabachnick
& Fidell, 2007), and with the number of cases included in this study, the number far exceeds that.
Figure 2. Histograms of rating scale data.

Homogeneity of variance and covariance. Levene and Box’s tests were performed to assess the homogeneity of variance and covariance of the dependent variables. The results of Levene’s test of equality of error provided evidence that the assumption of homogeneity of variance across groups was met as observed in Table 6. The assumption of the homogeneity of variance-covariance was met based on the results of the Box’s test ($M = 41.207$, $F (20, 36708.892) = 1.973$, $p = 0.006$). The Box’s test results show $p = 0.006$; and according to Tabachnick & Fidell (2007), unless $p < 0.001$ and the sample sizes are unequal, this does not indicate violation of the assumption.
Table 6

**Levene’s Test for Homogeneity of Variance**

<table>
<thead>
<tr>
<th></th>
<th>Groups 1 and 2</th>
<th>Groups 1 and 3</th>
<th>Groups 2 and 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>p</td>
<td>F</td>
</tr>
<tr>
<td>Motive T Score</td>
<td>2.470</td>
<td>.120</td>
<td>6.409</td>
</tr>
<tr>
<td>Attitude T Score</td>
<td>1.755</td>
<td>.189</td>
<td>2.775</td>
</tr>
<tr>
<td>Attention/Persistance T Score</td>
<td>.002</td>
<td>.962</td>
<td>1.790</td>
</tr>
<tr>
<td>Strategy/Flexibility T Score</td>
<td>.060</td>
<td>.808</td>
<td>.150</td>
</tr>
<tr>
<td>Total T Score</td>
<td>.264</td>
<td>.609</td>
<td>3.412</td>
</tr>
</tbody>
</table>

**Testing for multivariate normality.** The Mahalanobis distance for each dependent variable for every respondent was computed to examine multivariate normality. With five variables and testing at \( a = 0.001 \), the critical value for Mahalanobis distance was 18.47. The Mahalanobis distance scores of the sample population for the variables did not exceed the critical value. As such, the assumption of multivariate normality was not violated.

**Linearity and multicollinearity of dependent variables.** Linearity and multicollinearity of the dependent variables were examined through a scatterplot matrix as shown in Figure 3. In the scatterplot matrix, the darker circles represent more data points at that area. As can be observed, the data for all scatterplots were distributed around a line, indicating that the assumption of linearity of the dependent variables was tenable. Referring to the correlation table in Table 5, multicollinearity was not an issue as no correlation coefficient value was above 0.8 for the dependent variables. The scatterplot matrix (Figure 3) below was observed to further examine multicollinearity of the dependent variables. Representation of the rows from top to
bottom are Motive T Score, Attitude T Score, Attention/Persistence T Score, Strategy/Flexibility T Score, and Total T Score, while the representation of the rows are in the same order, albeit from left to right. As observed, the relationships between all dependent variables seem to be moderately correlated in that one variable increases when the other does, but not too highly correlated in that the relationships form a line. As such, the assumption of no multicollinearity between dependent variables holds.
**Results and Analysis for Research Question One**

A one-way MANOVA was conducted to investigate if there were significant differences in kindergarten’s overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001). As a more robust, as well as being the recommended multivariate indicator for unequal sample sizes, as in the case of this study, Pillai’s Trace was considered the primary multivariate statistic. Results on
the MANOVA yielded no statistically significant differences between the groups of Preschool Experience and the combined dependent variables, Pillai’s Trace = 0.068, $F(10, 360) = 1.271, p = 0.245$, partial $\eta^2 = 0.034$. The observed power was moderate at 0.657, indicating that there was a 65.7% chance that the results were correct. Based on these results, evidence was lacking to reject the null hypothesis and conclude that there was no statistically significant difference in kindergartens’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs.

**Research Question Two**

Research question two was as follows: Is there a statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)? An individual ANOVA was conducted to test the hypothesis for this research question.

**Results and Analysis for Research Question Two**

An ANOVA test was used to analyse the second hypothesis. The ANOVA analysis revealed $F(2, 184) = 3.398, p = 0.036$. Based on the Bonferonni corrected alpha of 0.017, there was no statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale between groups as determined by the one-way ANOVA test. Given that there was no statistically significant difference found, no further analysis was conducted.
Research Question Three

Research question three was as follows: Is there a statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)? Individual ANOVA was conducted to test the hypothesis for this research question.

Results and Analysis for Research Question Three

An ANOVA test was used to analyse the third hypothesis. The ANOVA analysis revealed $F(2, 184) = 1.654, p = 0.194$. Based on the Bonferonni corrected alpha of 0.017, there was no statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale between groups and determined by the one-way ANOVA test. Since there was no statistically significant difference found in kindergartners’ attitude toward learning and preschool experience, no further analysis was conducted.

Research Question Four

Research question four was as follows: Is there a statistically significant difference in kindergartners’ attention/persistence as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)? An individual ANOVA was conducted to test the hypothesis for this research question.

Results and Analysis for Research Question Four

An ANOVA test was used to analyse the fourth hypothesis. The ANOVA analysis revealed $F(2, 183) = 1.232, p = 0.294$. Based on the Bonferonni corrected alpha of 0.017, there was no statistically significant difference in kindergartners’ attention/persistence as measured by
the Learning Behavior Scale between groups as determined by the one-way ANOVA test. Given that there was no statistically significant difference found, no further analysis was conducted.

**Research Question Five**

Research question five was as follows: Is there a statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)? An individual ANOVA was conducted to test the hypothesis for this research question.

**Results and Analysis for Research Question Five**

An ANOVA test was used to analyse the second hypothesis. The ANOVA analysis revealed $F(2, 184) = 1.657, p = 0.193$. Based on the Bonferonni corrected alpha of 0.017, there was no statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale between groups and determined by the one-way ANOVA test. Since no statistically significant difference found in kindergartners’ strategy/flexibility and preschool experience, no further analysis was conducted.

**Summary**

Five hypotheses were examined to determine whether there were significant differences in kindergartners’ approaches to learning who attended state-funded pre-K versus children who attended federal funded or private preschool programs or had no preschool experiences. A one-way MANOVA was conducted to address the first research question, while individual planned comparison ANOVAs were utilized to address research question two, three, four, and five. Based on statistically non-significant results for the five research questions, all of the null hypotheses failed to be rejected in this research study.

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CHAPTER FIVE: DISCUSSION

Introduction

This chapter will review the methodology for this causal-comparative research study and provide a summary of the results from the descriptive analysis, multivariate analysis of variance (MANOVA), and individual analysis of variance (ANOVA). This quantitative study will be discussed in relation to prior research and current limitations and the theoretical and practical implications will be reviewed. This chapter will provide recommendations for future research and an overall summary. The purpose of this study was to investigate the differences in approaches to learning among kindergartners who attended state-funded pre-k. There were three independent variable groups (students who attended state-funded pre-K, private or federally funded preschool programs, and no preschool) and four dependent variables (competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility). There were five research questions addressed in this study investigating students’ overall approaches to learning and their competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility skills in relation to their early childhood experiences.

Review of Methodology

This causal-comparative research study utilized a convenience sample of 187 kindergarten students enrolled in four Title I elementary schools in a small school district in northeast Georgia during the 2013-2014 school year. Ten kindergarten teachers completed the Learning Behavior Scale (LBS) on every student in their class to measure distinct behaviors associated with the learning process (McDermott et al., 2001). Data from the LBS was collected in the form of raw scores and converted to T scores ranging from 65 to 1. Archived data regarding prior preschool experiences, race, gender, and socioeconomic status (SES) was
provided by the school district. Descriptive statistics were used to investigate the mean differences between groups, kindergartners overall approaches to learning, and to provide information on demographic variables and preschool experience. The first research question was analyzed with a multivariate analysis of variance (MANOVA) to examine the linear combination of all of the variables and to determine whether the groups differed on the combination of dependent variables. Assumption testing was conducted prior to the analysis to ensure conformity to the assumptions of normality, outliers, homogeneity of variance-covariance, linearity, singularity, and multicollinearity. There were no major violations to any of the assumptions that would indicate that a MANOVA should not be used. The second through fifth research questions were examined with planned comparison ANOVAs to compare the amount of between group variance with the amount of within the group variance in individual students’ scores.

**Summary of Results**

Descriptive statistics were used to investigate the mean differences between groups, kindergartners overall approaches to learning, and information regarding ethnicity, gender, and socioeconomic status. Findings indicated that students who attended Georgia’s state-funded pre-K had higher mean scores in overall approaches to learning skills (Total T Score mean 46.69) compared to students with no preschool experience (Total T Score mean 42.88) or private or Head Start preschool experiences (Total T Score mean 42.23). Likewise, Georgia state-funded pre-K attendees had higher mean scores on all of the dependent variables (competence motivation, attitude to learning, attention/persistence, and strategy flexibility) compared to students with no preschool experience or private or Head Start preschool experiences. Chi-square tests of independence were conducted to ascertain if statistically significant associations
between preschool attendance and the demographic variables existed and if demographic variables needed to be included as covariates in the analysis since research has indicated that gender, SES, and race may influence preschool experience outcomes. There were no statistically significant associations between the demographic variables and preschool experience; therefore, the variables were not considered as covariates.

**Findings for Research Question One**

A MANOVA was used to investigate research question one: Is there a statistically significant difference in kindergartners’ overall approaches to learning skills as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)? The results showed statistical support for the positive effects on all learning related behaviors for students who attended high quality pre-K programs. Findings indicated that students who attended state-funded pre-K had the highest T scores in all areas on the Learning Behavior Scale (approaches to learning, competence motivation, attitude to learning, attention/persistence, and strategy/flexibility). The results, however, were not statistically significant at the 0.017 level (Pillai’s Trace = 0.068, F (10, 360) = 1.271, p = 0.245, partial η² = 0.034), and the decision was made to fail to reject the null hypothesis.

**Findings for Research Question Two**

An ANOVA was used to analyze the results of research questions two: Is there a statistically significant difference in kindergartners’ competence motivation as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)? There was no statistically significant difference in kindergartners’ competence
motivation and preschool experience ($p = .036$); therefore, the null hypothesis failed to be rejected.

**Findings for Research Question Three**

Research question three was as follows: Is there a statistically significant difference in kindergartners’ attitude toward learning as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)? There was no statistically significant difference in kindergartners’ attitude toward learning as determined by a one-way ANOVA ($p = 0.194$); in turn, the null hypothesis failed to be rejected.

**Findings for Research Question Four**

An ANOVA investigated the fourth research question: Is there a statistically significant difference in kindergartners’ attention/persistence, as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)? There was no statistically significant difference found ($p = 0.294$) in attention/persistence of kindergartners based on their preschool experiences, and the decision was made to fail to reject the null hypothesis.

**Findings for Research Question Five**

An ANOVA was used to analyse the results of research question five: Is there a statistically significant difference in kindergartners’ strategy/flexibility as measured by the Learning Behavior Scale for children who attended state-funded pre-K versus children who did not attend preschool or attended federally funded or private preschool programs (McDermott et al., 2001)? The null hypothesis failed to be rejected because no statistically significant
difference was found ($p = 0.193$).

**Relationship to Prior Research**

This study expanded research on participation in a high quality state-funded pre-K program and its effects on the readiness domain of approaches to learning, including the distinct variables of competence motivation, attitude towards learning, attention/persistence, and strategy/flexibility. This study supported similar studies into Georgia’s pre-K program that found increases in school readiness skills after completion of the program (Fitzpatrick, 2008; Henry et al., 2006; Henry et al., 2004; Henry et al., 2003; Peisner-Feinberg, Schaaf, & Lafoiret, 2013; Peisner-Feinberg et al., 2014). This study did not support other studies that have found statistically significant results when investigating short-term school readiness outcomes after participation in a high quality universal pre-K program (Aguilar & Tansini, 2012; Gormley, 2008; Gormley et al., 2011; Henry & Barnett, 2011; Huang et al., 2012).

Approaches to learning is one of the least understood and researched domains; therefore, research is not available for comparison when investigating approaches to learning and high quality pre-K attendance (Bulotsky-Shearer & Fernandez, 2011; Chen & McNamee, 2011; Dominguez et al., 2011; Vitiello, Greenfield, Munis, & George, 2011; Ziv, 2013).

**Theoretical and Practical Implications**

The results of this study provide support for the developmental ecological theory that children’s early learning behaviors are influenced by early childhood settings and interactions (Bronfenbrenner, 1977a, 1977b). Although there were not statistically significant differences in this study based on preschool experiences, there were mean score differences that cannot be discarded when discussing theoretical implications and considering intervention practices. The developmental ecological theory suggests that children are an inseparable part of the system and
that interventions should focus on how to make the system more effective. A quality program can create barriers to dismal social and economic conditions that children encounter. The theory encourages educators and interventionists to consider an environmental approach when working with students and not a within child problem approach (Burns, 2011).

In this study, kindergarten students who attended Georgia’s state-funded pre-K had higher mean scores in overall approaches to learning skills and on all of the dependent variables (competence motivation, attitude to learning, attention/persistence, and strategy flexibility) compared to students with other experiences prior to kindergarten. Based on those results, emphasis on preschool programs should be placed on “quality”. High quality programs provide strong curriculum guidelines with a comprehensive set of academic, language, communication, social-emotional, and approaches to learning goals (Barnett, 2010; Southern Education Foundation, 2011). In addition, these high quality facilities are open to all four year olds regardless of income and require rigorous teacher standards and lower child-to-staff ratios (Hustedt & Barnett, 2011). An unexpected result of this study was that students who had no pre-K experience performed higher in most learning related variables than students who attended private or Head Start programs. There was no way to ensure that the programs attended by students in a private or Head Start program had similar personnel credentials, training, instructional days requirements, class-size ratio requirements (e.g., 1:11), and high curriculum standards set by the DECAL for Georgia pre-K. In fact, some of these private centers may have been more of a daycare setting.

Given that this population consisted of primarily low-income students, it is unlikely that the private facilities they attended were monitored in the same way as a facility located in a high-income area. An investigation by the Cost, Quality, and Child Outcomes Study found that 10%
of programs in lower income areas were rated as being poor quality with positive child-caregiver interactions observed in less than half of the facilities (NICHD Early Childcare Research Network, 2002). Only twenty-four percent of low-income facilities have been identified as having good or developmentally appropriate care (Magnuson, Meyers, Ruhm, & Waldfogel, 2004). Head Start funding is contingent on meeting specific guidelines set up by the government; however, lower pay and lower levels of provider education have raised quality concerns among early childcare proponents in recent years (Magnuson et al., 2004).

Researchers investigating inequality in preschool education have reported that distribution in early childhood quality care is skewed, and disadvantaged children are less likely to attend a cognitively stimulating preschool environment (Fuller & Liang, 1996; Shonkoff & Phillips, 2000). In addition, 40 percent of the association between low socioeconomic status and poor academic performance can be explained by the lower quality of home learning environments (Smith, Brooks-Gunn, & Klebanov, 1997). This has led to the coined term in research regarding low-income children as being “doubly disadvantaged” (Magnuson et al., 2004, p.118) in that they are not in stimulating home environments or enrolled in quality preschool programs. A developmental ecological theorist would likely argue that the focus should not be on whether a child is exposed to preschool prior to entering kindergarten, but that the child had a high quality preschool or home experience with access to appropriate settings, interactions, and learning opportunities. A preschool experience with negative peer influence could increase inappropriate behavior due to direct transmission (Henry & Rickman, 2007; Henry et al., 2006). The feedback that children receive in an ecological context can influence behavioral and academic outcomes (Brown & Gasko, 2012), providing a key to why students
attending Georgia high quality pre-K have better overall outcomes (Peisner-Feinberg et al., 2014).

The literature reviewed in this study on approaches to learning behaviors (e.g., competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility) presented several significant implications for early childhood educators and interventionists. Learning behaviors should be targeted for early intervention because students who approach learning in more adaptive ways will most likely attain higher achievement scores (McDermott et al., 2001; Rhoades et al., 2011; Schaefer, 1998; Vitiello et al., 2011; Worrell et al., 2001). There needs to be increased attention to attitudes toward learning and facilitating early school adjustment, especially in preschool. Educators and parents need to support effective transitional and early school adjustment practices (e.g., high quality preschool experiences, child-initiated activities) to foster enthusiastic learners, create affective orientations, and promote school success (Dominguez et al., 2011). In addition, attention and persistence skills have the potential to increase academic competence and decrease externalizing behaviors in children (Trentacosta & Izard, 2007; Zhou et al., 2007).

**Assumptions and Limitations**

There were several assumptions in this study, including that students participating in Georgia’s high quality universal pre-K program were exposed to all of the high standards required by the Georgia Department of Early Child and Learning (DECAL). In their operating guidelines, Bright from the Start (2013c) requires providers follow a similar calendar, complete a set number of days and hours in the program, utilize a high quality pre-approved curriculum and comprehensive learning standards, employ lead and assistant teachers with high credentials and early childhood certificates, and follow the set child-to-staff ratios. It was also assumed that
students attending pre-K did not have excessive absences during the school year. This is important because studies have shown that increased exposure during the preschool year is associated with increased positive social interactions, motoric activity, and greater academic benefits (Loeb et al., 2007; Vlietstra; 1981). This was ensured by only categorizing students in the Georgia pre-K group who had completed the program. Bright from the Start (2013b) considers disenrollment for students who are chronically absent and those who are late arrival or early departure more than once a week. In addition, students who do not attend for ten consecutive days without medical reason are removed from the program (Bright from the Start, 2013c). It was assumed that all kindergarten teachers completed the Learning Behavior Scales (McDermott et al., 2001), observed the target students for the recommended time of at least 60 days (Worrell et al., 2001), understood the item questions and rating procedures, and exhibited no bias in their ratings. The researcher trained the kindergarten teachers on the scale to avoid any confusion and to help to establish consistency in ratings.

This causal-comparative study conducted on kindergarten students in a small rural district in northeast Georgia made every effort to limit the threats to internal and external validity. The sample for this population was relatively ethnically and economically homogenous. Appropriately 72 percent of the children were white and 76 percent of the students qualified for government assistance with meal eligibility, indicating the participants were primarily low-income. Therefore, external validity is restricted to this population. Only students who attended Georgia pre-K were included in the universal pre-K sample, and generalizing the effectiveness of other high quality state-funded pre-K programs in other areas may be limited.

There were several threats to internal validity that needed to be controlled in this study. History was a possible threat, given that students’ learning behaviors may be affected by natural
development, exposure to kindergarten curriculum, and other environmental factors instead of primarily by pre-K attendance. This threat was controlled for in that students participating in the study attended schools in the same district and with similar student demographics, used the same research based curriculum guidelines, and were exposed to a similar pace of curriculum implementation. The researcher controlled kindergarten instruction and curriculum by only including students in the sample who had been enrolled the entire school year. Selection validity could also have been a threat. Research has found that males, ethnic and racial minority groups, and low-income students have decreased learning, social engagement, and social emotional skills at the end of preschool that is predicted of similar problems at the end of kindergarten (Bulotsky-Shearer et al., 2012; Bulotsky-Shearer et al., 2010; Magnuson & Shager, 2010). This threat was controlled for by selecting participants from schools with similar demographics that created equality of groups on the extraneous variables of race, gender, and socioeconomic status (Gall et al., 2007). Finally, this study used teacher report measures; therefore, it was difficult to know how a range of individual biases could have affected the rating or potential omission of unobserved variables. The researcher trained the teachers on the precise, measureable, and objective rating system of the Learning Behavior Scale (McDermott et al., 2001) in hopes of avoiding any rater biases.

**Recommendations for Future Research**

This study revealed several recommendations for future research in regard to preschool experiences, approaches to learning, and overall school readiness. Approaches to learning may represent the most significant behavior domain in relation to classroom learning (DiPerna, 2014) and overall school readiness skills (Bulotsky-Shearer et al., 2010; George & Greenfield, 2005); therefore, predictive relationships across academic domains should be investigated (Daniels,
Future research into preschool experiences and approaches to learning should investigate other ecological and broader context variables such as home support for learning, school, and community and the moderating effects these factors have on larger, more diverse populations of children (e.g., low income) (Bulotsky-Shearer et al., 2011; Daniels, 2014; Diperna et al., 2007; McWayne et al., 2009; Mokrova, 2013). Longitudinal studies could provide information on the influence of kindergartners’ approaches to learning skills on academic, learning, and behavioral outcomes throughout the elementary years and if these competencies remain relatively stable across time (McWayne et al., 2009). This study employed teacher-rating scales to investigate kindergartners’ approaches to learning skills; however, future research should include multiple informants and direct assessments of skills (Dominguez et al., 2011; George & Greenfield, 2005). One advantage of direct assessment is that it can be utilized without a prior relationship to the child. The developers of the Learning Behavior Scale recommend teachers have two months to observe learning behaviors prior to completing the scale (McDermott, 1999). Direct assessment could allow for earlier identification of needs to implement intervention at the start of kindergarten (George & Greenfield, 2005). This current research represented a step towards understanding the influence of preschool experiences on approaches to learning skills. However, additional research is needed to increase attention to approaches to learning when designing and implementing early childhood programs, interventions, and classroom instructional practices.

**Summary and Conclusions**

The purpose of this study was to test the developmental ecological theory that relates the importance of early childhood experiences to the critical readiness domain of approaches to learning. Results found no statistically significant results; however, statistical variations were apparent among preschool groups and discussed in light of the current literature. Overall,
students that participated in Georgia’s universal pre-K program performed higher in overall approaches to learning, competence motivation, attitude toward learning, attention/persistence, and strategy/flexibility skills. This study, with its supporting literature, upholds the notion that students are highly influenced by setting and interactions (Bronfenbrenner, 1977a; 1977b), and a quality early childhood experience will likely increase school readiness skills and enable preschool students to make a successful transition to kindergarten. Participation in a high quality program may be especially advantageous for traditional marginalized students who may not have access at home or in other childcare settings to stimulating learning environments (Magnuson et al., 2004). Georgia’s state-funded pre-K program has continually ranked high in quality with its school-year model (e.g., 160 days for 6.5 hours), adult-child ratio (1:11), highly qualified teachers (e.g., college degree in early childhood), annual trainings for staff, and child-centered curriculums focused on addressing all areas of developmental needs (Bright from the Start, 2013c; Peisner-Feinberg, Schaaf, & Laforett, 2013).

A major implication of the findings of this study for educational policy and prevention science is the issue of attendance because some states do not offer state funded pre-K. In the states that offer the high quality programs, there are not always enough slots for the students who wish to attend (Magnuson et al., 2010). In a recent executive summary (2013) of their pre-K enrollment process, Georgia Department of Early Child and Learning (DECAL) found that the biggest barrier to recruiting and serving families in the program was the availability of slots. The study found substantial numbers of students on waitlists (Peisner-Feinberg, LaForett, Schaaf & Hildebrandt, 2013). Current economic conditions have posed new challenges for expanding state funding of universal pre-K programs (Doggett & Wat, 2010). Financial support at the federal level continues to target primarily income eligible programs (e.g., Head Start) despite evidence
that these programs only serve about half of the eligible children and program quality is often
deficient compared to universal programs (Bassok, 2012; Wrobel, 2012). Policy makers and the
educational community should integrate early learning initiatives into their school reform
strategies and states should solidify pre-K as an essential part of public education. School
district leaders need to make pre-K programs a priority in their system-wide improvement plans
and ensure stronger pre-K through third grade alignment to close the achievement gap (Doggett
& Wat, 2010).

In addition to increasing high quality pre-K attendance, the keystone and domain-general
behaviors of approaches to learning should be assessed in young students as a part of an
ecological approach. Approach to learning is one of five dimensions of development recognized
by the NAEYC (2009) as being essential to school readiness and apparent in all high quality
programs. These skills are teachable and malleable, influence achievement and behavior
trajectories, and should be targeted for intervention to promote school success (Barnett et al.,
1996; Daniels, 2014; Erktin, Okcabol, & Ural, 2010).
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Appendix A: Dr. McDermott Approval Letter

Edumetric and Clinical Science

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August 7, 2013

Kristin Mobbs
Liberty University

This letter is to grant Kristin Mobbs limited permission to use and/or adapt the Learning Behaviors Scale (LBS). Specifically, the publisher and copyright holder (Edumetric and Clinical Science) grants to Kristin Mobbs permission to use and/or adapt LBS items during years 2013-2014 for her Liberty University dissertation project involving no more than 350 administrations of LBS items. Kristin Mobbs agrees to display the following notice with all printed, electronic, or other media reproducing LBS items:

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Cordially,

I agree with the terms of this letter

Paul A. McDermott, Ph.D.
President

Kristin Mobbs               Date
Doctoral Student
Curriculum and Instruction
Liberty University
Appendix B: IRB Approval Letter

January 30, 2014

Kristin Mobbs
IRB Exemption 1784.013014: The Differences in Approaches to Learning among Kindergartners Who Attended State Funded Pre-K

Dear Kristin,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and that no further IRB oversight is required.

Your study falls under exemption category 46.101 (b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

(i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) Any disclosure of the human subjects’ responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects’ financial standing, employability, or reputation.

Please note that this exemption only applies to your current research application, and that any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption, or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Please retain this letter for your records. Also, if you are conducting research as part of the requirements for a master's thesis or doctoral dissertation, this approval letter should be included as an appendix to your completed thesis or dissertation.

Sincerely,

[Signature]

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