Preschool and the Literacy Achievement Gap in One Rural School Division in Virginia

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ABSTRACT

As the number of public school students identified as living in poverty increases, so does the number of children entering kindergarten with inadequate pre-literacy skills. This lack of preparation creates a gap in literacy achievement that is persistent and grows throughout a child's K-12 experience. One rural Virginia school division has begun offering a full-day prekindergarten program for the most at-risk three year-old children. The purpose of this study was to examine the efficacy of the three year-old preschool program in this one rural school division in eastern Virginia. This study examined the literacy achievement data for the first five cohorts of these students, and determined what difference, if any, exists in achievement as measured by the Virginia Phonemic Awareness Literacy Screening (PALS), the Scholastic Reading Inventory (SRI), Get Ready to Read – Revised (GRTR-R) and teacher-generated student growth assessments. A two-tailed t-test was used to identify potential differences in mean scores on the appropriate achievement measures between those students who received the three year-old preschool intervention and those that did not. For each of the first five cohorts of students, no significant difference was identified in literacy achievement on the four assessments administered where such difference may be assumed to occur, indicating that early intervention may make a difference in closing the literacy achievement gap for students in poverty.

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GENERAL AUDIENCE ABSTRACT

As the number of public school students identified as living in poverty increases, so does the number of children entering kindergarten with inadequate pre-literacy skills. This lack of preparation creates a gap in literacy achievement that is persistent and grows throughout a child's K-12 experience. One rural Virginia school division has begun offering a full-day prekindergarten program for the most at-risk three year-old children. The purpose of this study was to examine the efficacy of the three year-old preschool program in this one rural school division in eastern Virginia. This study examined the literacy achievement data for the first five cohorts of these students, to determine what difference, if any, exists in literacy achievement as measured by various assessments. For each of the first five cohorts of students, no significant difference was identified in literacy achievement on the assessments administered, where one may be assumed to occur, indicating that early intervention may make a difference in closing the literacy achievement gap for students in poverty.

DEDICATION

This study is dedicated, first and foremost, to the amazing teachers of early childhood. You set the foundation for a lifetime of learning for some of our most fragile, and often marginalized, children, and you have my undying admiration, respect and appreciation.

And to Mrs. Truman, my fifth grade teacher, who saw more than a timid ten-year old in his fourth different school, and told me that I could be more than I ever believed I could be. Although she has since passed, her words of encouragement and her belief in the possible have continued to inspire me these many years.

And finally to my family, without whose support, encouragement and occasional kick, I would not have been able to complete this study. For all the time we've missed together, all the sacrifices you have made, this is for you!

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Not only does it take a village to raise a child, it takes one to make a doctor. There are a number of people to whom I owe a debt of gratitude.

Without the assistance and encouragement of my dissertation committee, none of this would have been possible. Dr. Ted Price taught me how to relax and put things into perspective in his own inimitable way. Dr. Michael Kelly modeled for me that it is possible to find a balance of work and life, and gave me the confidence to pursue both with a passion. Dr. Sandra Mitchell has been one of my mentors for nearly two decades, and she honored me when she agreed to be a part of this journey. I have always said that when I grow up, I want to be just like her! And finally, Dr. Carol Cash, who inspired not only me, but our entire cohort, with her wit, wisdom, boundless energy, and genuine passion for her craft. When the going got rough and the future was uncertain, I knew I could count on her to help me wade through the struggles.

I am grateful for the considerable time and effort of my "critical friend," Dr. Mary Cay Bradley, who validated my data and analyses, and provided a critical eye to keep me on-point. And for my dear friend and mentor, Dr. David Martin, who counseled me to live my plan, don't work my plan. I'm keeping the main thing the main thing.

The vision and drive of Mrs. Cynthia Bishop made the program evaluated in this study possible. As a primary school teacher, Cynthia saw a need to provide early intervention for children who began school with a distinct deficit, and she had the courage to find a way to fill the need. And to the Nettie Lokey and Charles L. Wiley Foundation, who made Cynthia's vision a reality, as well as provided their unlimited support to this study, both morally and financially. And to the Kids First Foundation, whose generosity expanded the program to meet more of the need in the community.

And finally, I would like to acknowledge the amazing cohort with whom this odyssey began in 2015. The bonds that we have made, the walls that we scaled, will always have a special place in my heart, and I treasure the time we spent together and the inspiration each of you shared with me.

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CHAPTER 1
INTRODUCTION

The purpose of this study was to examine the efficacy of the three year-old preschool program in one rural school division in eastern Virginia. Preschool has long been recognized as a means of closing the achievement gap, especially for economically disadvantaged children (Barnett, 2011; Buckingham, Beaman, & Wheldall, 2014; Burger, 2010; Cook, 2010; Duncan & Magnuson, 2013; Zane, 2009). In fact, research into expanding early learning opportunities suggests that early intervention "provides society with a return on investment of $8.60 for every $1 spent" (U.S. Department of Education, 2015, p. 2). Frede and Barnett (2011) estimate that high quality preschool could close the achievement gap by 20 percent (p. 9).

Overview

High school dropouts come with a significant cost (The Annie E. Casey Foundation, 2010; Sum, Khatiwada, McLaughlin, & Palma, 2009). The Annie E. Casey Foundation (2010) estimates that each high school dropout costs U.S. taxpayers $260,000 in lost wages, tax revenue and productivity, not including the social cost of teen pregnancy and involvement with law enforcement.

Literacy has been identified as an early indicator of high school graduation. As early as 1972, Lloyd and Bleach (1972) extended previous research into the correlation of several factors that could be used to predict high school graduation by examining data beginning in the 3rd grade. The authors found that the reading level of 3rd grade students was second only to grade retention in the primary grades in correlating to dropping out of high school, and that "between 60% and 70% [of dropouts] showed difficulties as early as 3rd grade" (p. 19).

The process of learning to read is complex, multi-faceted and cumulative. Children must first understand that letters represent sounds, these letter sounds connect to create words, words combine to make sentences, and then be readily able to recognize patterns and understand exceptions to these patterns (Harlaar, Dale, & Plomin, 2007). Much of this learning occurs very early in the child's development, and depends a great deal on the child's exposure to rich, child centered vocabulary (Hindman, Wasik, & Snell, 2016).

Isaacs (2012) analyzed data from the Early Childhood Longitudinal Study – Birth Cohort (ECLS-BC) concerning school readiness. Isaacs found that 48% of children in poverty, as measured by coming from households at or below the federal poverty guidelines, were prepared for kindergarten at age 5, compared to 75% of children coming from households with moderate or high earnings. Furthermore, 30% of children from low socio-economic status (SES) families score very low on early reading skills compared to only 7% of their peers from mid- to high-income households (p. 10). Isaacs' data suggest that "children who attend some form of preschool program at age four are 9 percentage points more likely to be school ready than other children" (p 11). These data suggest that preschool attendance mitigates the effects of poverty on school readiness.

Historical Perspective

Publicly funded preschool began in 1965 with passage of Title I of the Elementary and Secondary Schools Act, and the initiation of Head Start, which remains today the largest Federally funded preschool initiative, funded to serve one million children in 2014 (U.S. Department of Health and Human Services, 2015). Individual states have made preschool a focus of readying children for kindergarten. In Virginia, the Virginia Preschool Initiative, available to all divisions in Virginia, but not mandatory, provides publicly funded preschool for four year-old children meeting certain criteria of risk (Virginia Department of Education, 2015). Some localities have taken this a step further and are providing an additional year of preschool for their three-year-old population of at-risk students (Preschool Program, 2017; Rappahannock Record, 2017), making the study of the efficacy of these programs critical for future funding considerations.

Purpose and Significance of the Study

The purpose of this study was to examine the efficacy of the three year-old preschool program in one rural school division in eastern Virginia. This study examined the efficacy of one three-year-old preschool program in closing the gap in literacy achievement between those students from the lowest SES (socio-economic status) households and their more affluent peers. Locally, the results of the study will assist the school board and board of supervisors (funding authority) in making budgetary decisions. More globally, the results of this study will extend the

existing research on early childhood interventions to include an additional year of public preschool education to the traditional, publicly funded year of 4-year-old preschool. At a time when increased accountability for student achievement is placed on public schools, while resources to meet the needs of a growing population of students in poverty are diminishing, analyzing the effectiveness of publicly funded preschool is imperative.

Research Question

Examining the effectiveness of the preschool intervention led to the following research question: What, if any, difference is found in literacy achievement, as measured by Virginia Phonemic Awareness Literacy Screening (PALS), Scholastic Reading Inventory (SRI), student growth assessments (SGA) and Get Ready to Read – Revised (GRTR-R), between the students who received the three-year-old preschool intervention and those that did not?

Conceptual Framework

The following is the conceptual framework within which the study will be undertaken.

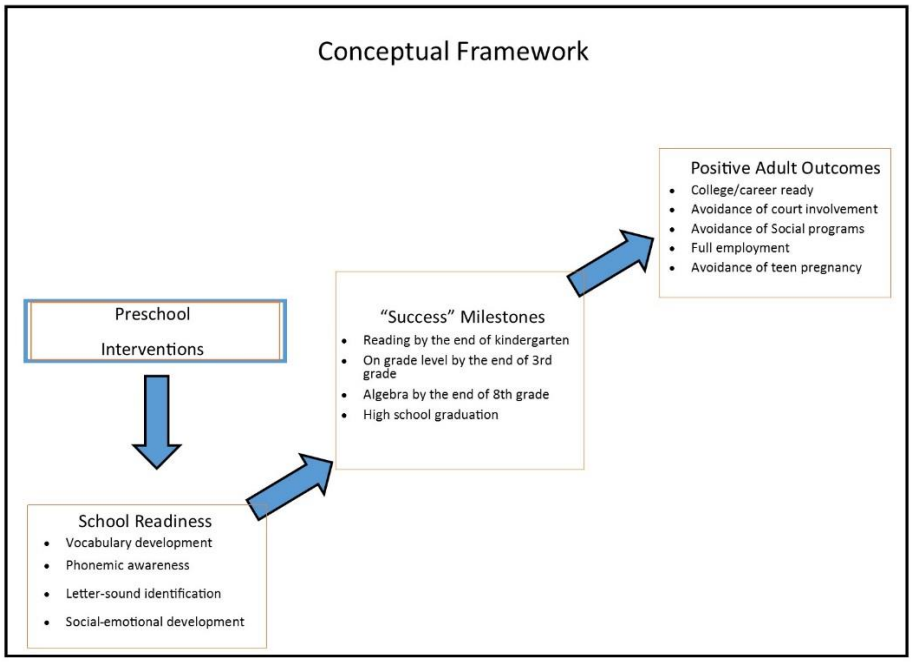

Figure 1 – Conceptual Framework

Conceptually, early intervention, in this case preschool at age three, improves school readiness for children in poverty. In turn, students are more likely to reach traditional success

milestones, including high school graduation. Reaching these milestones improves the probability of positive adult outcomes.

Definition of Terms

GRTR-R. Get Ready to Read! Revised is a 25-question screening tool published by Pearson that provides an assessment of the readiness of children aged 3-5 in print knowledge, book knowledge, phonological awareness, and phonics (Pearson, 2017).

PALS. The Virginia Phonemic Awareness Literacy Screening, a state provided literacy screening for the Virginia Early Intervention Reading Initiative.

> PALS consists of two screening instruments, PALS-K (for students in kindergarten) and PALS 1-3 (for students in grades one through three), which measure young children's knowledge of important literacy fundamentals, including phonological awareness, alphabet knowledge, knowledge of letter sounds, spelling, concept of word, word recognition in isolation, and oral passage reading (Virginia Department of Education, 2017).

Scholastic Reading Inventory (SRI). SRI is an interactive, computer-based assessment developed by Scholastic, Inc. The SRI is "designed to measure how well students read literature and expository texts of varying difficulties" (Scholastic, Inc., 2017)

SES. Socioeconomic status, most commonly measured by family income. It may also include educational attainment and occupation (American Psychological Association, 2017).

Student Growth Assessment (SGA). An assessment developed by a grade-level teaching team, based on Virginia Standards of Learning Objectives, upon which the need for instructional interventions are based.

Limitations/Delimitations

Delimitations for this study, those limitations that have been placed on the study by the researcher, include the following.

- The study is limited to one small rural school division and does not consider other programs that might be available in other divisions. Therefore, the findings may not be generalizable to larger or more urban settings.
- The study is limited to an evaluation of the success of the three-year old initiative, and does not consider the results of other literacy efforts beyond the program.

Limitations for this study are those areas that cannot be controlled and include the size of the treatment group. Because a small division was identified for the study, the associated student population is small. Additionally, because the researcher is also the Superintendent of the school division, a potential bias exists. The type of research methodology, as well as a review of the data and analysis by a critical peer, will mitigate this potential bias.

Organization of the Study

Chapter 2 will provide a comprehensive, but not exhaustive, review of relevant literature. Chapter 3 will outline the methodology of the study, to include data sources and analysis methods. Chapter 4 will present the results of the study and an analysis of the data. Chapter 5 will include a summary of the findings, discussion of the implications for practice, suggestions for further study and researcher reflection.

CHAPTER 2
REVIEW OF THE LITERATURE

Search Process

A search of scholarly literature was conducted using the keywords preschool, early childhood intervention, graduation and literacy using the Virginia Polytechnic Institute and State University online library Summons search engine. These searches returned over 200,000 results, which were further refined to include only peer-reviewed journal articles. The searches were then filtered to limit results to those published since 2000, with the exception of those of historical significance. Specifically, studies regarding early research on predictions of high school graduation and preschool efficacy in Head Start, the Abecedarian Project and the High/Scope Perry Preschool Project, which form the basis for subsequent research on early childhood intervention, were included.

Further sources were identified through subscriptions to the National Institute of Early Education Research and The Frank Porter Graham Child Development Institute at the University of North Carolina. Additionally, those references cited in applicable studies were retrieved to complete an ongoing, comprehensive but not exhaustive, list of literature for review.

Organization of the Literature Review

Preschool has long been recognized as a means of closing the achievement gap, especially for economically disadvantaged children (Barnett, 2011; Buckingham, Beaman, & Wheldall, 2014; Burger, 2010; Cook, 2010; Duncan & Magnuson, 2013; Zane, 2009). In fact, research into expanding early learning opportunities suggests that early intervention "provides society with a return on investment of $8.60 for every $1 spent" (U.S. Department of Education, 2015, p. 2). Frede and Barnett (2011) estimate that high quality preschool could close the achievement gap by 20 percent (p. 9).

The first section of this literature review focuses on the importance of literacy as a predictor of high school graduation. The second section includes an in-depth review of studies into the effectiveness of two early models of early intervention, the Perry Preschool Project and the Abecedarian Project. While both projects provided preschool interventions for at-risk children, they differed in both the intensity and duration of the intervention, as well as the

demographic characteristics of the participants (Barnett, 2007). Both, however, provided relevant and essential data for evaluating the effectiveness of early childhood interventions, and are often cited by current researchers in the field of early childhood education. The third section reviews more recent studies concerning the effectiveness of preschool interventions. The fourth section outlines the state of preschool education at the national and state levels, particularly in Virginia, and the final section addresses the effectiveness of early childhood intervention efforts.

Literacy and High School Graduation

In the United States, high school graduation is key to higher employment, and lower risk of incarceration, which lowers the need for public assistance (The Annie E. Casey Foundation, 2010; Sum, Khatiwada, McLaughlin, & Palma, 2009). The Annie E Casey Foundation (2010) estimates that each high school dropout costs U.S. taxpayers $260,000 in lost wages, tax revenue and productivity, not including the social cost of teen pregnancy and involvement with law enforcement. In January, 2017, the unemployment rate for those who without a high school diploma was 7.7%, compared to 5.3% for high school graduates, and 2.5% for those with a bachelor's degree or more (Bureau of Labor Statistics, 2017). Furthermore, Sum, et al (2009) found that between 2006 and 2007, 1.4% of Americans between 16 and 24 years of age were institutionalized, 93% in local, state or federal correctional facilities and 7% in psychiatric or nursing facilities (Sum, et al, 2009, p. 9). This percentage represents individuals with varying levels of education, and 6.3% of high school dropouts were incarcerated compared to 1% of high school graduates and 0.1% of college graduates. In other words, "the institutionalization problem among young high school dropouts was more than 63 times higher than among young four-year college graduates" (p. 9). The data suggest that high school graduation is a factor in both employment and avoiding incarceration.

Literacy has been identified as an early indicator of high school graduation. In a 1972 study, Lloyd and Bleach extended previous research into the correlation of several factors that could be used to predict high school graduation by examining data beginning in the 3rd grade. The authors found that the reading level of 3rd grade students was second only to grade retention in the primary grades in correlating to dropping out of high school, and that "between 60% and 70% [of dropouts] showed difficulties as early as 3rd grade." (p. 19)

Until the end of the 3rd grade, students are learning to read. Beginning in the 4th grade, students are reading to learn (Zakariya, 2015). "Up to half of the printed fourth-grade curriculum is incomprehensible to students who read below that grade level…and three quarters of students who are poor readers in third grade will remain poor readers in high school." (The Annie E. Casey Foundation, 2010, p. 9)

Despite what is known about the importance of literacy achievement for high school graduation, "between 35 and 45 percent of first-time kindergartners are ill-prepared to succeed in school" (Barnett, 2011, p. 975). Thus, the data suggest the importance of early intervention to prepare our at-risk students for a successful school experience.

Early Studies

High/Scope Perry preschool project. Begun in 1962, the High/Scope Perry Preschool Project in Ypsilanti, Michigan, examined the effects of preschool intervention on five "waves" of students born each year between 1958 and 1962. In all, 123 students were divided into experimental and control groups in each wave, with those born in 1958 designated wave zero. Wave zero students were provided one year of preschool, and students in subsequent waves received two years of preschool beginning at age three (Berrueta-Clement, Schweinhart, Barnett, Epstein, & Weikart, 1984). Students were selected for the study by virtue of their socioeconomic status and low IQ scores as measured by the Stanford-Binet Intelligence Test. Only children who were severely economically disadvantaged and scored between 60 and 90 on the IQ test were selected. Assignments to treatment or control groups were randomly determined after paired students exhibiting similar demographic and intelligence characteristics were separated into unassigned groups. Students in the treatment group received two and a half hours of preschool per day for seven and a half months per year. Additionally, the teacher made home visits of an hour and a half per week (Berrueta-Clement, et al., 1984).

In summary, Berrueta-Clement et al (1984) reported that by age 15, treatment group participants had a significantly higher grade point average in high school and a significantly lower number of failing grades per year of high school (p. 41). Of note is the fact that students in the treatment group spent significantly fewer years in special education settings (5.5 vs. 7.5) and were significantly less likely (15% vs. 35%) to be identified as "mentally retarded," even though

both the treatment and control group participants were selected based on their relatively low IQ scores (p. 42).

Barnett and Masse (2007) compared the cost and benefits of the Perry Preschool Project based on the same benefits as those used for the Abecedarian Project, previously stated. Additionally, based on the crime rate in Ypsilanti during the 1960s, the researchers identified a significant crime avoidance benefit that contributed to a return on investment of 9:1 (p. 120).

Abecedarian project. Undertaken in Chapel Hill, North Carolina, beginning in 1972, the Abecedarian Project investigated the effects of early childhood intervention on cognitive functioning and academic achievement. Campbell and Ramey (1994) examined the effects of preschool and school age treatments on 111 children for the period of 4 to 7 years after the treatment. Preschool treatments, which began at a mean age of 4.4 months (p. 687) consisted of "an infant curriculum to enhance cognitive, language, perceptual-motor, and social development. In the later preschool years, emphasis was placed on language development and preliteracy skills" (p. 687). School age treatment included a full day of preschool and involvement of the family in providing support for learning in the home. Families had biweekly visits from a Home School Resource Teacher, who provided curriculum packets for parents, primarily focused on math and literacy practice based on teacher-identified needs. All treatment students received on-site pediatric care from a physician.

Students were randomly placed into one of four treatment categories: those who received the experimental preschool and school age treatment (EE), those who were in a control group preschool and received a school age treatment (CE), those who received only a preschool treatment (EC) and those who received neither a preschool nor a school age treatment (CC). Due to attrition, of the original 111 students in the experimental and control groups, 96 remained after the third year of school, following the completion of the second grade, and 93 were available for follow-up at age 12, or following what should have been grade 6 (p. 687).

The researchers hypothesized that students who received both the preschool and school age experimental treatments (EE) would have higher cognitive functioning, as measured by the Wechsler Intelligence Scale for Children – Revised (WISC-R) and greater academic achievement as measured by the Woodcock-Johnson Psycho-educational Battery, Part 2, Tests of Academic Achievement (p. 688). Furthermore, the EC group, by virtue of having five years of experimental treatment would have the next highest functioning and achievement, followed by

the CE group with three years of treatment, and finally the CC group with no treatment (p. 688). For the longitudinal study, the four groups were further compared to a local population sample (LPS) of 56 adolescents of the same age and completing the same grade.

A multivariate analysis of variance for academic achievement proved significant in the ordering of the duration and intensity of treatment, as hypothesized (p 690). However, in cognitive functioning, the results were mixed between subject tests on the WISC-R, with Verbal IQ, but not performance IQ, showing a significant linear trend, (p. 692). Furthermore, when the treatment and control groups were compared to the LPS, the percentage of students who were retained in a grade or received special education services increased significantly as the duration and intensity of treatments decreased (p. 691). Important to note in this study is that while both cognitive functioning and academic achievement showed a rapid increase initially, both declined in years 4-7 of school, and neither the control groups nor the experimental groups scored as high in either measure as the LPS (p. 690).

In a follow up study in 2001, Campbell, Pungello, Miller-Johnson, Burchinal and Ramey found that when assessed again at ages 15 and 21, both the control and treatment groups from the original study maintained the significant difference in cognitive ability and achievement, although both groups declined relative to national norms (p. 238). The persistence of this measured difference in cognitive functioning and achievement is important to the analysis of the long-term benefits of early childhood intervention.

Barnett and Masse completed a cost-benefit study in 2007 as a follow up to the 2001 study cited above. Benefits used to determine the value of the treatments were participant earnings, earnings of future generations, the costs of elementary and secondary education of the participants, smoking and health choices, maternal labor supply and earnings, the cost of higher education, and a reduction in welfare benefits paid to participants at age 21 (pp. 117-119) The researchers noted that, discounted at 3%, the Abecedarian Project had a return on investment of 2.5:1, or $2.50 were returned to the economy for every dollar invested into the project. They further noted that this is a conservative estimate, and could be attributed, in part, to the high program cost due to the intensity and duration of the treatment, the provision for medical care for participants and the lack of data concerning crime resistance benefit (pp. 120-121). Early studies, then, provide evidence of the success of preschool intervention on creating positive adult outcomes.

Recent Studies

The process of learning to read is complex, multi-faceted and cumulative. Children must first understand that letters represent sounds, these letter sounds connect to create words, words combine to make sentences, and then be readily able to recognize patterns and understand exceptions to these patterns (Harlaar, Dale, & Plomin, 2007). Much of this learning occurs very early in the child's development, and depends a great deal on the child's exposure to rich, child centered vocabulary (Hindman, Wasik, & Snell, 2016).

Poverty and literacy. In an early study investigating the relationship between socio-economic status (SES) and vocabulary development, Hart and Risely (1995) studied 42 families with one year-old children over a two-year period. The researchers visited each home monthly, recording interactions between family members and the children as the children's vocabulary developed. The longitudinal study continued to follow the subject children to age 7, testing reading proficiency at intervals. The data suggest that children of professional families (high SES) had learned as many words as the parents of families on welfare (low SES) had used with their children (pg. 234). While the quantity of words heard by children of professional families by the age of three was significantly greater than those from families on welfare – 30 million versus 10 million – the quality of the vocabulary was also significantly different (pg. 132). Children in families of means heard several times more encouraging words than those in poverty, and the opposite was true for words of discouragement (pg. 177). Of the 42 families in the initial cohort, 29 were followed into the 3rd grade. By preschool, children of means had twice the measured vocabulary as their peers in poverty. Vocabulary measures at the age of 3 were found to be indicative of reading achievement into the elementary school age (pp. 160-161). However, Hart and Risley, in extrapolating their data, concluded that:

> To ensure that an average welfare child had a weekly amount of experience equal to that of the average child in a working-class family, merely in terms of hours of language experience of any kind (words heard), 41 hours per week of out-of-home experience as rich in words addressed to the child as that in an average professional home would be required (pg. 205).

This suggests that a year of traditional preschool, at age 4, may not be adequate to compensate for the inadequacies in vocabulary development for children in poverty.

In support of these conclusions, Isaacs (2012) analyzed data from the Early Childhood Longitudinal Study – Birth Cohort (ECLS-BC) concerning school readiness. Isaacs found that 48% of children in poverty, defined as coming from households at or below the federal poverty guidelines, were prepared for kindergarten at age 5, compared to 75% of children coming from households with moderate or high earnings. Furthermore, 30% of children from low SES families scored very low on early reading skills compared to only 7% of their peers from mid- to high-income households (p. 10). Isaacs found that "children who attend some form of preschool program at age four are 9 percentage points more likely to be school ready than other children" (p 11).

School readiness. In the most recent report from the U.S. Department of Education, Kena, Hussar, McFarland, de Brey, Musu-Gillette, Wang, Zhang, Rathbun, Wilkinson- Flicker, Diliberti, Barmer, Bullock Mann, and Dunlop Velez (2016) reported the findings of the Early Childhood Longitudinal Study, Kindergarten Class of 2010-11 (ECLS-K:2011). In this study, teachers rated first year kindergarten students "on seven approaches to learning behaviors: paying attention in class, persisting in completing tasks, showing eagerness to learn new things, working independently, adapting easily to changes in routine, keeping belongings organized, and following classroom rules" (p. 42). Ratings were on a scale from 1-4, with 1 representing never, 2 sometimes, 3 often and 4 always. Students from low SES households, representing the bottom 20%, scored an average of 2.8, while those from the mid-SES households, 21-80th percentile, averaged 3.0 and those from the top 20% of SES households scored an average of 3.2. "For each additional point in students' fall kindergarten approaches to learning score, average gains from kindergarten to second grade were 3.4 points higher for reading, 1.9 points higher for mathematics, and 1.3 points higher for science" (p. 42). Barnett (2011) estimated that between 35 and 45% of first-time kindergarten students are "ill-prepared to succeed in school" (p. 975). Kuhl (2011) reported that by age 5, "prior to formal schooling, our studies show that brain activation in brain areas related to language and literacy are strongly correlated with the socioeconomic status (SES) of the children's families. The implication of these findings is that children's learning trajectories regarding language are influenced by their experiences well before the start of school" (p. 128). Therefore, children from the lowest SES homes need additional time to prepare for K-12 schooling.

Melhuish (2011) reported the findings of a study conducted on the effects of the Child-Parent Center Education Program, a publicly funded preschool program in Chicago, Illinois, over a 25-year period. "Consistent and enduring" benefits in "educational achievement, socioeconomic status, health, and crime" are enjoyed by preschool participants, especially males and children of high school dropouts. "In particular, by age 28, the former preschool students had higher educational levels, incomes, socioeconomic status, and rates of health insurance coverage—and lower rates of substance abuse and legal problems— than the kindergarten students" (p. 299).

Pianta (2007) reported that nearly 70% of American 3- and 4-year olds are enrolled in early education programs, but the disparity in the quality of these programs is dramatic. Furthermore, "too few of the students who are in the greatest need of high-quality early education experiences receive them, and the few that do are unlikely to receive them consistently once they enter the K-12 system" (p. 44).

Tucker-Drob (2012) studied pairs of monozygostic and dizygostic twins in an effort to replicate shared familial influences and mitigate the extent to which achievement differences could be attributed to parenting. Among her findings, Tucker-Drob reported that for four-year olds enrolled in a preschool program, "shared environmental influences accounted for 47% of the variance in math scores and 43% of the variance in reading scores at age 5. In contrast, among children who did not attend preschool at age 4, shared environmental influences accounted for 72% of the variance in math scores and 73% of the variance in reading scores at age 5" (p. 316). This suggests that preschool attendance mitigates familial environmental factors that may negatively influence academic success. Furthermore, she found that SES was a significant predictor of participation in a preschool program at age 4, "a fact suggesting that the very children who would benefit most from preschools are those who are least likely to be enrolled in preschools" (p. 316).

History of Public Preschool

Publicly funded preschool began in 1965 with passage of Title I of the Elementary and Secondary Schools Act, and the initiation of Head Start, which remains today the largest Federally funded preschool initiative, funded to serve one million children in 2014 (U.S. Department of Health and Human Services, 2015). Individual states have made preschool a

focus of readying children for kindergarten. In Virginia, the Virginia Preschool Initiative, available to all divisions in Virginia, but not mandatory, provides publicly funded preschool for four year-old children meeting certain criteria of risk (Virginia Department of Education, 2015). Some localities have taken this a step further and are providing an additional year of preschool for their three-year-old population of at-risk students (Preschool Program, 2017; Rappahannock Record, 2017), making the study of the efficacy of these programs critical for future funding considerations.

Federal programs. The Elementary and Secondary Education act of 1965 established Title I as a federal entitlement to ensure the equity of public education in the nation's schools without regard to race, ethnicity or income. This entitlement has been used to provide preschool education to 4 year-old children, traditionally in schools that serve low-income, at-risk students. Also in 1965, the nation undertook to provide preschool services to underprivileged 4 year-olds with the implementation of Head Start. Since its inception, Head Start has served more than 32 million students in poverty (U.S. Department of Health and Human Services, 2015). However, federal programs have not been effective in reaching all of the students in economic need (Barnett & Hustedt, 2005). While the percentage of 3- to 5-year old children in preschool has increased dramatically between 1990 and 2014, from 34% to 49%, all of that growth was experienced between the years 1990 and 2000 (Kena, et al., 2016), prior to the increase in the percentage of children in poverty from 19% in 2005 to nearly 24% in 2012 (Kids Count Databook, 2014). Further, the percentage of children enrolled in preschool education whose parents have a high school credential (32%) or less than a high school credential (28%), therefore placing them at greater risk for low achievement, is considerably less than the national average (Kena, et al., 2016).

State programs. To fill this gap, many states have undertaken to provide preschool services for economically disadvantaged students, or to provide universal preschool to all 4 year-old children. In the decade between 2002 and 2012, the number of students served in state-funded preschool programs has increased dramatically, from just under 691,000 to nearly 1,333,000, representing 28% of 4-year olds and 4% of 3-year olds. Additionally, for the first time, 4-year old children served in state-funded preschool outnumbered children of all ages served in Head Start nationwide (Barnett & Carolan, 2013). However, the growth in the number

of 3-year olds being served in state-funded programs increased by only 68,455 (Barnett & Carolan, 2013, p. 3).

As of 2012, 40 states and the District of Columbia offered state funded prekindergarten programs (Barnett & Carolan, 2013, p. 3). Georgia become one of the first states to offer universal preschool to its 4 year-olds in 1995, and in 2012-2013, this program served 87,000 children (Peisner-Feinberg, Schaaf, Hildebrandt, & Pan, 2015, p 6). Other states have followed suit. Also in 1995, Virginia passed the Omnibus Education Act (HB2542), establishing the Virginia Preschool Initiative (VPI) to serve 4 year-old children between 100% and 350% of the federal poverty level – children who are not eligible for Head Start (Virginia Department of Education, 2015). The goal of VPI was to provide preschool services for 100% of economically disadvantaged children, however this program is serving fewer than 17,000 students state-wide, and more than 106,000 eligible children are not attending preschool (National Institute for Early Education Research, 2012; Kids Count Data Book, 2014), suggesting that Virginia is not meeting its objective of providing universal preschool. Furthermore, VPI requires a local match contribution of up to 50%, depending on the calculated local ability to pay (Virginia Department of Education, 2015), further limiting access, especially in localities with high poverty and inadequate funding. Thus localities will be required to fill the void in preschool preparation.

Program Effectiveness

Short term effectiveness. Barnett (1998), in his review of studies related to the effectiveness of model and public preschool programs, reported a general immediate increase in measured IQ of about 8 points, or 0.5 standard deviations, students at age five who had attended preschool (p. 204). Goldstein, Warde, and Peluso (2013) found that on the developmental assessment of young children (DAYC), an analysis of pre- and post-test data indicated significant differences among pre and posttest results on the cognitive domain, $t(85) = 5.036$, $p = .021$, with a moderate effect size (.54) (p. 515). Pertinent to this study, Goldstein, et al., also noted no increase in standard scores for three year-old children participating in a school-based preschool program (p. 519). This, in isolation, would appear to indicate that the effectiveness of the additional year of preschool would not have an immediate, short term, effect on school readiness. However, one should question whether or not these children benefited from the continuation of their preschool preparation for kindergarten, given that their pre and posttest

results were still significantly (at least 1.0 standard deviation) below national norms (Goldstein, et al., p 519).

In an evaluation study of the Georgia PreK program, Peisner-Feinberg et al. (2015) found that "children's scores tended to be at or slightly below the population mean at the beginning of the year and slightly above the mean by the end of the year" (p 13). Further, in their study of a model preschool program in Salinas, California, Slaby, Loucks and Stelwagon (2005) found that the effects of preschool intervention for children in poverty lasted well into the third grade. Specifically, on a measure of English/Language Arts achievement, students who attended preschool were nearly twice as likely to demonstrate proficiency as children in poverty who did not attend preschool, 18% and 10% respectively (p 54). In an analysis of North Carolina preschool initiatives, Ladd, Muschkin and Dodge (2014) estimated that public school based preschool added the equivalent of two to four months of instruction in the third grade (p. 184).

Long term effectiveness. There are fewer studies that investigate longitudinal data regarding the long term effectiveness of preschool on closing the achievement gap. Deming (2009) found that for students who attended Head Start, initial test score gains (at age five) of 0.15 standard deviations dwindled to less than half of that by age 14 (p. 112), a phenomenon commonly referred to as fade out. Deming further described this fade out as particularly notable in African Americans and in "very disadvantaged children" (p 130), although his analysis suggested that these populations experience the largest long-term gains in educational outcomes such as grade retention, learning disability diagnosis, high school graduation, and college attendance (p 126).

Dynarski, Hyman and Schanzenback (2011) suggested that preschool interventions, because of the multi-dimensional nature of the interventions (home visits, parental coaching and intervention, vaccinations), cannot be causally linked to college attendance and completion (p 24). Further, Kay and Pennucci (2014) report that, because of the small number of studies regarding the long term effectiveness of early childhood education, there is a great deal of uncertainty about the effects of early intervention on such measures as high school graduation, grade retention, special education services, teen births and criminal activity (p 7).

Summary

A review of the literature pertinent to this study indicated that high school graduation is a significant factor in avoiding adverse adult situations, and that literacy is an accurate predictor of high school graduation. Furthermore, children in poverty are ill-prepared to begin school with the pre-literacy skills necessary to achieve at the levels of their more advantaged peers, placing them at risk of not completing high school. Finally, early intervention, in the form of preschool, is an effective means of improving outcomes for at risk children.

CHAPTER 3
METHODOLOGY

Purpose of the Study

The purpose of this study was to examine the efficacy of the three-year-old preschool program in one rural school division in eastern Virginia. Specifically, it will attempt to determine whether the additional year of preschool makes a difference in literacy achievement for the low SES, high risk students for whom the intervention was provided.

Research Question

Examining the effectiveness of the preschool intervention led to the following research question: What difference, if any, exists in literacy achievement, as measured by the Virginia Phonemic Awareness Literacy Screening (PALS), the Scholastic Reading Inventory, student growth assessments (SGA) and Get Ready to Read – Revised (GRTR-R), between the students who received the three year-old preschool intervention and those that did not?

Research Design

This study is a quantitative study using assessment data by cohort. This methodology was used due to the amount of data, so the findings will be generalizable, and to reduce the subjectivity of the findings (Virginia Polytechnic Institute and State University, 2014). Each set of data was analyzed on JMP using a two-tailed t-test to identify differences in assessment results. This methodological approach allowed an objective comparison of the treatment group achievement to that of their peers in the same cohort, at the same school and with the same teachers (Howell, 2011, pp 178-179). The students who received the three year-old preschool differ from the peers in the same cohort because of their lower SES, placing them at greater risk for poor early literacy skills. Because of the ethical constraints of withholding intervention, there is no control group. Instead, based on the work of Hart and Risely (1995), Isaacs (2012), Kena, et.al (2016), Barnett (2011), Kuhl (2011), and Melhuish (2011), an assumption is made that the achievement of students in the treatment group would have been lower than that of their more affluent peers had the intervention not been provided.

Site Selection and Population

In 2012, one small, rural, high-poverty school division in Eastern Virginia, with the assistance of a local charitable foundation, began a locally-funded three year-old preschool program for 12 of its lowest SES students to further improve the readiness of these students for kindergarten. Under the funding model developed by the foundation, the school division would agree to take over the full cost of the program at the end of three years. In 2014, a second foundation funded a second three year-old classroom with the same funding model as the first, thus obligating the local school division to pay for the preschool education of 24 low-income, high-risk, three year-old students. In this small school division, this represented an immediate 2% increase in operational expenses.

The school division serves 1,271 students attending three schools: a PK-3 primary school, a 4-8 combined/middle school, and a 9-12 high school. Students are 57% African American, 39% Caucasian, and 4% other race. Sixty-eight percent (68%) of students receive meal subsidies and 12% are identified for special education services. This is one of only two known school divisions in Virginia to provide locally-funded public preschool to three year-old children, and was chosen due to the availability of data and the request of the local school board to examine the effectiveness of the program. Longitudinal assessment data are readily accessible and available since the inception of the program in 2012.

The sample size will vary according to cohort. Initially, Cohort 1 (C1) and Cohort 2 (C2) consisted of 12 students, and Cohorts 3, 4 and 5 (C3, C4 and C5) consisted of 24 students, each in a typical class size of 80 to 100 students (see Table 1). Due to the transient nature of families in poverty, each intervention cohort has been slightly diminished as the cohort has moved through school. None of the program participants has been retained or has otherwise joined a different cohort.

Data Collection

Assessment data are available for each assessment given to every cohort, and are currently used to by the division to identify students in need of tier-two and tier-three instructional interventions. Due to the differences in assessments given at each grade level, the data within each cohort was compared for each year literacy achievement was assessed. The researcher used beginning and end of year assessments, as appropriate, for each grade level. At

least one assessment has been administered per year to each of the four cohorts that have completed the four year-old preschool year. Cohort 1 (C1) has data for the following assessments: PALS PK (in the fall of the PK year), PALS 1 (pre- and post-test), first grade SGA (pre- and post-test), PALS 2 (pre- and post-test), and second grade SGA (pre- and post-test). Cohort 2 (C2), has all the data from C1, with the exception of second grade assessments, and so on for C3, C4 and C5 (see Table 1). Each assessment will be measured, comparing achievement between the two groups of students in a cohort. The cohorts, their size, and the associated assessments are listed in Table 1.

Table 1

Cohort/Class Size and Assessment

Cohort	Treatment students	Total Students	Assessments
1	9	77	PALS, SGA, SRI
2	12	93	PALS, SGA, SRI
3	24	85	PALS, GRTR-R, SGA
4	24	99	PALS, GRTR-R
5	24	51	PALS, GRTR-R

GRTR-R. Get Ready to Read! Revised is a 25-question screening tool published by Pearson that provides an assessment of the readiness of children aged 3-5 in print knowledge, book knowledge, phonological awareness, and phonics (Pearson, 2017). This screening assessment has been used by the subject school division since 2015 for students in kindergarten and preK to identify students for early literacy intervention. The reliability and validity data below are reported for the first edition of Getting Ready to Read.

Reliability refers to the consistency a test measures the construct in question; validity is the degree to which one can be confident that a given test measures what it is intended to measure (Center for Innovation in Research and Teaching, 2017). Both reliability and validity of GRTR-R were tested by Whitehurst in 2000 against the Developing Skills Checklist (DSC). A Cronbach Alpha coefficient of $\alpha=0.78$, and a split-half reliability of 0.80 ($p<0.001$, $n=342$)

provide evidence of reliability. A correlation of 0.69 ($r=0.69$, $p<0.001$, $n=342$) with the DSC is indicative of the validity of the assessment (Whitehurst, 2001).

PALS. The Virginia Phonemic Awareness Literacy Screening is a state provided literacy screening for the Virginia Early Intervention Reading Initiative. The studied school uses PALS PreK, PALS K, PALS 1 and PALS 2.

PALS Pre K. The complete PALS Pre K consists of 6 subtests: name writing, alphabet recognition and letter sounds, beginning sound awareness, print and word awareness, rhyme awareness and knowledge of nursery rhymes. The school division being studied employs three of the subtests: beginning sound awareness, print and word awareness and rhyme awareness. The PALS Pre K has been tested for reliability and validity by the University of Virginia Curry School of Education and a review panel established by the Virginia Department of Education (Invernizzi, Sullivan, Meier, & Swank, 2005).

PALS PreK was tested for reliability using inter-rater reliability and internal consistency. In three separate pilots, inter-rater reliability was measured at 0.99, and internal consistency, measured by Cronbach's Alpha, resulted in values between 0.75 and 0.93, indicating a high degree of reliability (Invernizzi et. al, 2005).

PALS PreK has been proved valid in content, construct and criterion-relation. Content validity has been assured by review "by an advisory panel composed of experts in early literacy development" (Invernizzi, et.al, 2005, pg. 58). Construct validity has been determined based on a "factor analysis for the entire sample of the spring pilot yielded one factor with an eigenvalue of 2.9. The single factor solution suggests that PALS-PreK measures a unitary trait: emergent literacy" (Invernizzi, et.al, 2005, pg. 59). Criterion-related validity has been established by correlation to existing criterion-referenced measures. The correlation to *The Test of Awareness of Language Segments* is mid-low, but significant ($r=0.41$, $p<.01$; $n = 87$); to *The Child Observation Record* medium–high and significant ($r = 0.71$, $p < .01$; $n = 70$), and; to *The Test of Early Reading Ability* medium-high and significant ($r = 0.67$, $p < .01$; $n = 73$) (Invernizzi, et.al, 2005, pp. 59-60). All measures indicate at high degree of validity.

PALS K. PALS K consists of 6 subtests, and is reported as a summed score of all subtests. Subtests include: rhyme awareness, beginning sound awareness, alphabet recognition, letter sounds, spelling and concept of word.

> The reliability of individual subtasks is supported through the use of Cronbach's alpha. Reliability coefficients for individual tasks range from .79 to .89 and demonstrate the adequacy of their internal consistency. Interrater reliabilities, expressed as Pearson correlation coefficients, have ranged from .96 to .99, indicating that PALS-K tasks can be scored consistently across individuals… Data analyses also support the content, construct, and criterion-related validity of PALS-K. Principal components analyses, discriminant function analyses, receiver-operating characteristic curve analyses, and intercorrelations among tasks provide evidence of the construct validity of PALS-K. Regression analyses have shown the predictive relationship between PALS-K Summed Scores in the fall and Stanford-9 scores in the spring. Coefficients of determination have demonstrated that a significant proportion of the variability in spring Stanford-9 scores can be explained by the PALS-K Summed Score from nine months earlier. (Invernizzi, Juel, Swank, & Meier, 2015, pg. 34).

PALS 1-3. Originally designed for students in grades 1-3, PALS was extended, in 2012, to provide screening of students still exhibiting reading difficulties in grades 4-8, and is now known as PALS Plus (Invernizzi, 2014). The studied division uses PALS screening only through the second grade.

> The reliability of individual subtasks has been documented through the use of Cronbach's alpha, item-to-total correlations, difficulty indices, and discrimination indices. Reliability coefficients for individual Entry Level tasks on PALS 1–3 have ranged from .81 to .96 and demonstrate the adequacy of their internal consistency. Differential item function analyses (DIF) using ETS classification demonstrate negligible evidence of bias for or against reference groups based on gender and race. Inter-rater reliabilities expressed as Pearson correlation coefficients have ranged from .94 to .99, demonstrating that PALS 1–3 tasks can be scored consistently across individuals… Further analyses have also supported the content, construct, and criterion-related validity of PALS 1–3. Principal components analyses, discriminant function analyses, and intercorrelations among tasks support the construct validity of PALS 1–3. Regression analyses have demonstrated the predictive relationship between PALS 1–3 Entry Level Summed Scores in the fall and Stanford-9 and SOL reading scores in the spring. Coefficients of determination have demonstrated that a significant proportion of the variability in spring Stanford-9 and SOL

reading scores can be explained by the PALS 1–3 Entry Level Summed Score from nine months earlier (Invernizzi, Meier, & Juel, 2015a, pg. 50).

Scholastic Reading Inventory (SRI). SRI is an interactive, computer-based assessment developed by Scholastic, Inc. The SRI is "designed to measure how well students read literature and expository texts of varying difficulties" (Scholastic, Inc., 2017, p 1). Reliability for the SRI has been established by alternate forms, namely the SRI print version. By grade level, at grade three (r=0.72, n=226), grade 4 (r=0.74, n=104), grade 5 (r=0.73, n=93), and grade 7 (r=0.62, n=102) (Scholastic Reading Inventory Technical Guide, 2007, p. 58). Levels of significance were not reported.

Validity has been established by correlation with other criterion-referenced assessments. Correlation with the Pinellas Instructional Assessment Program at 3rd grade was moderately high (r=0.62, n=107). Correlations with the Comprehensive Test of Basic Skills were high in grade 5 (r=0.74, n=110) and moderate in grade 7 (r=0.56, n=117) (Scholastic Reading Inventory Technical Guide, 2007, p 58). Again, levels of significance were not reported.

Student Growth Assessments (SGA). Student growth assessments are teacher-developed common assessments provided to collect pre- and post-instruction indicators of student growth in grades 1-12 in the subject school division. These assessments are authored each academic year by grade-level teacher teams based on the Virginia Standards of Learning Objectives (SOL), the Virginia SOL blueprint and local pacing guides, therefore no reliability or validity data are available for this data source.

Data Treatment and Management

All data are maintained on the researcher's password protected computer in strict confidence. All identifying student information has been removed prior to saving files. Sanitized data have been copied to, and maintained on, a removable storage device for security. Data will be maintained, in their sanitized form, for a period of three years from the completion of the study, in accordance with institutional policy. The researcher has completed training on human subject investigation through Virginia Polytechnic Institute and State University (see Appendix A). Individual student information has been removed from the data, and the study proposal was reviewed and determined to be exempt by the Institutional Review Board. A statement certifying the exempt status is included at Appendix B.

Assumption

Withholding an intervention that is assumed to improve academic outcomes for a specific population of students would be unethical. Therefore, for the purpose of this study, an assumption has been made that the achievement scores of the most at-risk population of students in each cohort, those that received the three year-old preschool intervention, would have been significantly lower than those of their more affluent peers in the same cohort without the provided intervention.

Summary

A two-tailed t-test was used to identify differences, if any, in measured literacy achievement between students who received the three-year-old preschool intervention and those who did not receive the intervention. Achievement was measured by the Virginia PALS, SRI, GRTR-R and teacher-created SGA. The data, and subsequent analysis, have been reviewed by a critical peer to mitigate potential bias.

CHAPTER 4
DATA ANALYSIS

Introduction

The purpose of this study was to examine the efficacy of the three-year-old preschool program in one rural school division in eastern Virginia. Examining the effectiveness of the preschool intervention led to the following research question: What difference, if any, exists in literacy achievement, as measured by the Virginia Phonemic Awareness Literacy Screening (PALS), the Scholastic Reading Inventory, student growth assessments (SGA) and Get Ready to Read – Revised (GRTR-R), between the students who received the three year-old preschool intervention and those that did not? Therefore, a two-tailed t-test was used on each set of assessment data to test the null hypothesis, H_0, that no difference exists between the mean scores of the students who received the intervention and those who did not.

First Cohort

The first cohort to attend the three year-old prekindergarten class is currently attending the third grade. The students who received the three year-old preschool intervention were chosen based on their household income, their experience in daycare settings, the employment status of parent(s), and a family history of incarceration, homelessness, teen pregnancy and transience, among other adverse childhood experiences. Additionally, a brief screening was administered to determine whether the children could identify five colors, six animals, four simple shapes and five body parts. The application used for screening these students can be found at Appendix C. Based on these criteria, an assumption is made that without the three year-old preschool intervention, these students would score significantly lower on literacy assessments than their more affluent peers. In third grade, this cohort, and their peers, have been assessed on the teacher-generated Student Growth Assessment (SGA), the Scholastic Reading Inventory (SRI) at the beginning of the school year, and the SRI at mid-year. The data are summarized in Table 2.

Table 2

Cohort 1 (C1) Third Grade Assessments

Assessment	Intervention	Mean Score	N	Standard Deviation	95% Confidence	*t* value	*p* value
SGA	Yes	34.29	7	21.78	-23.15<μ<8.26	*t*(72)= -0.115	*p*=0.909
	No	35.01	67	15.12			
SRI #1	Yes	336.86	7	290.26	-253.12<μ<180.24	*t*(73)= -0.335	*p*=0.739
	No	373.29	68	272.38			
SRI #2	Yes	369.57	7	319.88	-226.37<μ<185.19	*t*(73)= -0.199	*p*=0.843
	No	390.16	68	254.08			

The seven students who attended the three year-old prekindergarten program and the 67 students who did not were assessed using teacher-generated SGA. The results indicated that those students receiving the intervention scored 34.29 and those who did not scored 35.01, for a mean difference of 0.721. The two standard deviations were15.12 and 21.78, respectively. A t-test comparing the two was statistically insignificant (t(72)= -0.115, p=0.909). In addition, the 95% confidence interval for the difference was -23.15<μ<8.26, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The seven students who attended the three year-old prekindergarten program and the 68 students who did not were assessed at the beginning of the year using SRI. The results indicated that those students receiving the intervention scored 336.86 and those who did not scored 373.29, for a mean difference of 36.43. The two standard deviations were 290.26 and 272.38, respectively. A t-test comparing the two was statistically insignificant (t(73)= -0.335, p=0.739). In addition, the 95% confidence interval for the difference was -253.12<μ<180.24, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The seven students who attended the three year-old prekindergarten program and the 68 students who did not were assessed at mid-year using SRI. The results indicated that those students receiving the intervention scored 369.57 and those who did not scored 390.16, for a mean difference of 20.59. The two standard deviations were 319.88 and 254.08, respectively. A t-test comparing the two was statistically insignificant (t(73)= -0.199, p=0.843). In addition, the

95% confidence interval for the difference was -226.37<μ<185.19, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The data for the first cohort second grade assessments are summarized in Table 3.

Table 3

C1 Second Grade Assessments

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
SGA (Fall)	Yes	30.00	7	14.72	-7.93<μ<11.83	*t*(69)= 0.394	*p*=0.695
	No	28.05	64	12.20			
SGA (Spring)	Yes	51.36	7	17.41	-13.85<μ<16.31	*t*(73)= 0.163	*p*=0.871
	No	50.13	68	19.20			
PALS(Fall)	Yes	27.00	7	15.94	-23.93<μ<6.81	*t*(71)= -1.111	*p*=0.270
	No	35.56	66	19.68			
PALS (Spring)	Yes	49.86	7	19.44	-18.35<μ<3.74	*t*(73)= -1.318	*p*=0.192
	No	57.16	68	13.36			

The seven students who attended the three year-old prekindergarten program and the 64 students who did not were assessed at the beginning of the year using an SGA. The results showed that those students receiving the intervention scored 30.00 and those who did not scored 28.05, for a mean difference of 1.95. The two standard deviations were 14.72 and 12.20, respectively. A t-test comparing the two was statistically insignificant (t(69)= 0.394, p=0.695). In addition, the 95% confidence interval for the difference was -7.93<μ<11.83, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The seven students who attended the three year-old prekindergarten program and the 68 students who did not were assessed at the end of the year using an SGA. The results showed that those students receiving the intervention scored 51.36 and those who did not scored 50.13, for a mean difference of 1.23. The two standard deviations were 17.41 and 19.20, respectively. A t-test comparing the two was statistically insignificant (t(73)= 0.163, p=0.871). In addition, the 95% confidence interval for the difference was -13.85<μ<16.31, demonstrating that there is no

statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The seven students who attended the three year-old prekindergarten program and the 66 students who did not were assessed at the beginning of the year using PALS. The results showed that those students receiving the intervention scored 27.00 and those who did not scored 35.56, for a mean difference of 8.56. The two standard deviations were 15.94 and 19.68, respectively. A t-test comparing the two was statistically insignificant ($t(71)= -1.111$, $p=0.270$). In addition, the 95% confidence interval for the difference was $-23.93<\mu<6.81$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The seven students who attended the three year-old prekindergarten program and the 68 students who did not were assessed at the end of the year using PALS. The results showed that those students receiving the intervention scored 49.86 and those who did not scored 57.16, for a mean difference of 7.30. The two standard deviations were 19.44 and 13.36, respectively. A t-test comparing the two was statistically insignificant ($t(73)= -1.318$, $p=0.192$). In addition, the 95% confidence interval for the difference was $-18.35<\mu<3.74$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The data for the first cohort first grade assessments are summarized in Table 4.

Table 4

C1 First Grade Assessments

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
PALS (Fall)	Yes	45.86	7	17.27	-9.04<μ<16.14	*t*(67)= 0.563	*p*=0.575
	No	42.31	62	15.67			
PALS (Spring)	Yes	35.29	7	17.15	-9.03<μ<11.41	*t*(73)= 0.233	*p*=0.817
	No	34.09	64	12.39			

The seven students who attended the three year-old prekindergarten program and the 62 students who did not were assessed at the beginning of the year using PALS. The results showed

that those students receiving the intervention scored 45.86 and those who did not scored 42.31, for a mean difference of 3.55. The two standard deviations were 17.27 and 15.67, respectively. A t-test comparing the two was statistically insignificant ($t(67)= 0.563$, $p=0.575$). In addition, the 95% confidence interval for the difference was $-9.04<\mu<16.14$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The seven students who attended the three year-old prekindergarten program and the 64 students who did not were assessed at the end of the year using PALS. The results showed that those students receiving the intervention scored 35.29 and those who did not scored 34.09, for a mean difference of 1.20. The two standard deviations were 17.15 and 12.39, respectively. A t-test comparing the two was statistically insignificant ($t(73)= 0.233$, $p=0.817$). In addition, the 95% confidence interval for the difference was $-9.03<\mu<11.41$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The data for the first cohort kindergarten assessment are summarized in Table 5.

Table 5

C1 Kindergarten Assessment

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
PALS (Spring)	Yes	82.71	7	19.59	$-10.85<\mu<15.84$	$t(73)=$ 0.373	$p=0.710$
	No	80.22	59	16.38			

The seven students who attended the three year-old prekindergarten program and the 59 students who did not were assessed at the end of the year using PALS. The results showed that those students receiving the intervention scored 82.71 and those who did not scored 80.22, for a mean difference of 2.59. The two standard deviations were 19.59 and 16.38, respectively. A t-test comparing the two was statistically insignificant ($t(64)= 0.373$, $p=0.710$). In addition, the 95% confidence interval for the difference was $-10.85<\mu<15.84$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The data for the first cohort prekindergarten assessments are summarized in Table 6.

Table 6

C1 Prekindergarten Assessments

Assessment	Intervention	Mean Score	N	Standard Deviation	95% Confidence	*t* value	*p* value
PALS Beginning sound (Spring)	Yes	7.20	5	4.38	-3.76<μ<2.04	*t*(51)= -0.597	*p*=0.553
	No	8.06	48	2.93			
PALS Print & word awareness (Spring)	Yes	7.60	5	1.67	-2.22<μ<1.92	*t*(51)= -0.145	*p*=0.885
	No	7.75	48	2.24			
PALS Rhyme awareness (Spring)	Yes	5.60	5	2.97	-4.41<μ<1.06	*t*(51)= -1.226	*p*=0.226
	No	7.27	48	2.89			

The five students who attended the three year-old prekindergarten program and the 48 students who did not were assessed at the end of the year using PALS beginning sound assessment. The results showed that those students receiving the intervention scored 7.20 and those who did not scored 8.06, for a mean difference of 0.86. The two standard deviations were 4.38 and 2.93, respectively. A t-test comparing the two was statistically insignificant (t(51)= -0.597, p=0.553). In addition, the 95% confidence interval for the difference was -3.76<μ<2.04, demonstrating that there is no statistical difference between the achievement of the two groups, therefore the null hypothesis is accepted.

The five students who attended the three year-old prekindergarten program and the 48 students who did not were assessed at the end of the year using PALS print and word awareness assessment. The results showed that those students receiving the intervention scored 7.60 and those who did not scored 7.75, for a mean difference of 0.15. The two standard deviations were 1.67 and 2.24, respectively. A t-test comparing the two was statistically insignificant (t(51)= -0.145, p=0.885). In addition, the 95% confidence interval for the difference was -2.22<μ<1.92, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The five students who attended the three year-old prekindergarten program and the 48 students who did not were assessed at the end of the year using PALS rhyme awareness

assessment. The results showed that those students receiving the intervention scored 5.60 and those who did not scored 7.27, for a mean difference of 1.67. The two standard deviations were 2.97 and 2.89, respectively. A t-test comparing the two was statistically insignificant ($t(51)= -1.226$, $p=0.226$). In addition, the 95% confidence interval for the difference was $-4.41<\mu<1.06$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

Second Cohort

The second cohort to attend the three year-old prekindergarten class is currently attending the second grade. As with the first cohort, the students who received the three year-old preschool intervention were chosen based on their household income, their experience in daycare settings, the employment status of parent(s), and a family history of incarceration, homelessness, teen pregnancy and transience, among other adverse childhood experiences. Additionally, a brief screening was administered to determine whether the children could identify five colors, six animals, four simple shapes and five body parts. Based on these criteria, an assumption is made that without the three year-old preschool intervention, these students would score significantly lower on literacy assessments than their more affluent peers. Data for the second cohort second grade assessments are summarized in Table 7.

Table 7

Cohort 2 (C2) Second Grade Assessments

Assessment	Intervention	Mean Score	N	Standard Deviation	95% Confidence	*t* value	*p* value
SRI (Fall)	Yes	85.50	10	47.73	-278.38<μ<-4.98	*t*(81)= -2.062	*p*=0.042*
	No	227.18	73	24.51			
SRI (Mid Year)	Yes	233.60	10	213.51	-233.72<μ<59.77	*t*(81)= -1.179	*p*=0.242
	No	320.56	73	219.37			
PALS(Fall)	Yes	43.33	9	13.41	-12.70<μ<5.65	*t*(72)= -0.767	*p*=0.446
	No	46.86	65	12.88			
SGA (Fall)	Yes	27.50	5	6.61	-20.38<μ<6.23	*t*(59)= -1.064	*p*=0.2919
	No	34.57	56	14.65			

The 10 students who attended the three year-old prekindergarten program and the 73 who did not were administered the SRI at the beginning of the year. The results showed that those students receiving the intervention scored 85.50 and those who did not scored 227.18, for a mean difference of 141.68. The two standard deviations were 47.73 and 24.51, respectively. A t-test comparing the two scores was statistically significant (t(81)=-2.062, p=0.042). The measure of effect size based on the intervention SD of 47.73, d=2.97, indicating that those students who did not receive the intervention scored 2.97 standard deviations higher than those who did receive the intervention. In addition, the 95% confidence interval for the difference was -278.38<μ<-4.98. The results demonstrate that those students who did not receive the intervention scored significantly higher than those who did receive the intervention on the beginning of the year SRI.

The 10 students who attended the three year-old prekindergarten program and the 73 students who did not were assessed at mid-year using SRI. The results showed that those students receiving the intervention scored 233.60 and those who did not scored 320.56, for a mean difference of 86.96. The two standard deviations were 213.51 and 219.37, respectively. A t-test comparing the two was statistically insignificant (t(81)= -1.179, p=0.242). In addition, the 95% confidence interval for the difference was -233.72<μ<59.77, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The nine students who attended the three year-old prekindergarten program and the 65 students who did not were assessed at the beginning of the year using PALS. The results showed that those students receiving the intervention scored 43.33 and those who did not scored 46.86, for a mean difference of 3.53. The two standard deviations were 13.41 and 12.88, respectively. A t-test comparing the two was statistically insignificant ($t(72)= -0.767$, $p=0.446$). In addition, the 95% confidence interval for the difference was $-12.70<\mu<5.65$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The five students who attended the three year-old prekindergarten program and the 56 students who did not were assessed at the beginning of the year using a SGA. The results showed that those students receiving the intervention scored 27.50 and those who did not scored 34.57, for a mean difference of 7.07. The two standard deviations were 6.61 and 14.65, respectively. A t-test comparing the two was statistically insignificant ($t(59)= -1.064$, $p=0.292$). In addition, the 95% confidence interval for the difference was $-20.38<\mu<6.23$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

Data for the second cohort first grade assessments are summarized in Table 8.

Table 8

C2 First Grade Assessments

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
SGA (Fall)	Yes	35.55	11	15.25	-11.28<μ<6.81	*t*(84)= -0.490	*p*=0.625
	No	35.79	75	13.92			
SGA (Spring)	Yes	53.78	11	19.33	-17.66<μ<6.27	*t*(85)= -0.947	*p*=0.346
	No	59.48	76	18.56			
PALS(Fall)	Yes	59.55	11	10.71	-9.87<μ<7.92	*t*(84)= -0.218	*p*=0.828
	No	60.52	75	14.22			
PALS (Spring)	Yes	43.27	11	12.00	-11.86<μ<5.48	*t*(89)= -0.731	*p*=0.467
	No	46.46	80	13.75			

The 11 students who attended the three year-old prekindergarten program and the 75 students who did not were assessed at the beginning of the year using a SGA. The results showed that those students receiving the intervention scored 35.55 and those who did not scored 35.79, for a mean difference of 0.24. The two standard deviations were 15.25 and 13.92, respectively. A t-test comparing the two was statistically insignificant ($t(84)= -0.490$, $p=0.625$). In addition, the 95% confidence interval for the difference was $-11.28<\mu<6.81$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 11 students who attended the three year-old prekindergarten program and the 76 students who did not were assessed at the end of the year using a SGA. The results showed that those students receiving the intervention scored 53.78 and those who did not scored 59.48, for a mean difference of 5.60. The two standard deviations were 19.33 and 18.56, respectively. A t-test comparing the two was statistically insignificant ($t(85)= -0.947$, $p=0.346$). In addition, the 95% confidence interval for the difference was $-17.66<\mu<6.27$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 11 students who attended the three year-old prekindergarten program and the 75 students who did not were assessed at the beginning of the year using PALS. The results showed that those students receiving the intervention scored 59.55 and those who did not scored 60.52, for a mean difference of 0.97. The two standard deviations were 10.71 and 14.22, respectively. A t-test comparing the two was statistically insignificant ($t(84)= -0.218$, $p=0.828$). In addition, the 95% confidence interval for the difference was $-9.87<\mu<7.92$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 11 students who attended the three year-old prekindergarten program and the 80 students who did not were assessed at the end of the year using PALS. The results showed that those students receiving the intervention scored 43.27 and those who did not scored 46.46, for a mean difference of 3.19. The two standard deviations were 12.00 and 13.75, respectively. A t-test comparing the two was statistically insignificant ($t(89)= -0.731$, $p=0.467$). In addition, the 95% confidence interval for the difference was $-11.86<\mu<5.48$, demonstrating that there is no

statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

Data for the second cohort kindergarten assessments are summarized in Table 9.

Table 9

C2 Kindergarten Assessments

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
PALS(Fall)	Yes	64.55	11	16.45	-13.46<μ<13.05	*t*(78)= -0.031	*p*=0.975
	No	64.75	69	21.04			
PALS (Spring)	Yes	93.64	11	9.05	-7.49<μ<2.65	*t*(78)= -0.951	*p*=0.345
	No	96.06	69	7.65			

The 11 students who attended the three year-old prekindergarten program and the 69 students who did not were assessed at the beginning of the year using PALS. The results showed that those students receiving the intervention scored 64.55 and those who did not scored 64.75, for a mean difference of 0.20. The two standard deviations were 16.45 and 21.04, respectively. A t-test comparing the two was statistically insignificant (t(78)= -0.031, p=0.975). In addition, the 95% confidence interval for the difference was -13.46<μ<13.05, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 11 students who attended the three year-old prekindergarten program and the 69 students who did not were assessed at the end of the year using PALS. The results showed that those students receiving the intervention scored 93.64 and those who did not scored 96.06, for a mean difference of 2.42. The two standard deviations were 9.05 and 7.65, respectively. A t-test comparing the two was statistically insignificant (t(78)= -0.951, p=0.345). In addition, the 95% confidence interval for the difference was -7.49<μ<2.65, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

Data for the second cohort pre-kindergarten assessments are summarized in Table 10.

Table 10

C2 Prekindergarten Assessments

Assessment	Intervention	Mean Score	N	Standard Deviation	95% Confidence	*t* value	*p* value
PALS Beginning sound (Spring)	Yes	9.73	11	0.65	-0.94<μ<1.75	*t*(55)= 0.597	*p*=0.553
	No	9.33	46	2.19			
PALS Print & word awareness (Spring)	Yes	9.00	11	0.77	-0.96<μ<1.14	*t*(55)= 0.167	*p*=0.869
	No	8.91	46	1.68			
PALS Rhyme awareness (Spring)	Yes	8.73	11	2.24	-1.39<μ<1.50	*t*(55)= 0.074	*p*=0.941
	No	8.67	46	2.13			

The 11 students who attended the three year-old prekindergarten program and the 46 students who did not were assessed at the end of the year using PALS beginning sound assessment. The results showed that those students receiving the intervention scored 9.73 and those who did not scored 9.33, for a mean difference of 0.40. The two standard deviations were 0.65 and 2.19, respectively. A t-test comparing the two was statistically insignificant (t(55)= 0.597, p=0.553). In addition, the 95% confidence interval for the difference was -0.94<μ<1.75, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 11 students who attended the three year-old prekindergarten program and the 46 students who did not were assessed at the end of the year using PALS print and word awareness assessment. The results showed that those students receiving the intervention scored 9.00 and those who did not scored 8.91, for a mean difference of 0.09. The two standard deviations were 0.77 and 1.68, respectively. A t-test comparing the two was statistically insignificant (t(55)= 0.167, p=0.869). In addition, the 95% confidence interval for the difference was -0.96<μ<1.14, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 11 students who attended the three year-old prekindergarten program and the 46 students who did not were assessed at the end of the year using PALS rhyme awareness assessment. The results showed that those students receiving the intervention scored 8.73 and those who did not scored 8.67, for a mean difference of 0.06. The two standard deviations were 2.24 and 2.13, respectively. A t-test comparing the two was statistically insignificant ($t(55)= 0.074$, $p=0.941$). In addition, the 95% confidence interval for the difference was $-1.39<\mu<1.50$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

Third Cohort

The third cohort to receive the three year-old prekindergarten intervention is currently in the first grade. For this cohort, the number of students attending the three year-old prekindergarten program increased to 24. As with previous cohorts, the students who received the three year-old preschool intervention were chosen based on their household income, their experience in daycare settings, the employment status of parent(s), and a family history of incarceration, homelessness, teen pregnancy and transience, among other adverse childhood experiences. Additionally, a brief screening was administered to determine whether the children could identify five colors, six animals, four simple shapes and five body parts. Based on these criteria, an assumption is made that without the three year-old preschool intervention, these students would score significantly lower on literacy assessments than their more affluent peers. The data for the third cohort's first grade assessments are summarized in Table 11.

Table 11

Cohort 3 (C3) First Grade Assessments

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
SGA (Fall)	Yes	25.58	17	6.26	$-12.43<\mu<-2.60$	$t(62.2)= -3.058$	$p=0.003$*
	No	33.09	56	14.46			
PALS(Fall)	Yes	54.17	12	15.83	$-17.64<\mu<3.84$	$t(56)= -1.287$	$p=0.203$
	No	61.07	46	16.70			

The 17 students who attended the three year-old prekindergarten program and the 56 students who did not were assessed at the beginning of the year using a SGA. The results showed that those students receiving the intervention scored 25.58 and those who did not scored 33.09, for a mean difference of 7.51. The two standard deviations were 6.26 and 14.46, respectively. Testing for equal variances yielded a Levene p-value of p=0.017, therefore the variances are unequal. A t-test comparing the two was statistically significant (t(62.2)= -3.058, p=0.003). The measure of effect size based on the standard deviation of those who received the intervention, 6.26, is d= 1.20, indicating that those who did not receive the intervention scored 1.20 standard deviations higher than those who did. In addition, the 95% confidence interval for the difference was $-12.43<\mu<-2.60$. The results demonstrated that those students who did not receive the intervention scored significantly higher than those who did on the beginning of the year SGA, and the null hypothesis is rejected.

The 12 students who attended the three year-old prekindergarten program and the 46 students who did not were assessed at the beginning of the year using PALS. The results showed that those students receiving the intervention scored 54.17 and those who did not scored 61.07, for a mean difference of 6.90. The two standard deviations were 15.83 and 16.70, respectively. A t-test comparing the two was statistically insignificant (t(56)= -1.287, p=0.203). In addition, the 95% confidence interval for the difference was $-17.64<\mu<3.84$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The data for the third cohort's kindergarten assessments are summarized in Table 12.

Table 12

C3 Kindergarten Assessments

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
GRTR-R (Fall)	Yes	103.47	17	11.18	-2.90<μ<15.02	*t*(64)= 1.352	*p*=0.181
	No	97.41	49	17.23			
PALS(Fall)	Yes	67.78	18	17.94	-8.91<μ<16.33	*t*(75)= 0.586	*p*=0.560
	No	64.07	59	24.93			
PALS (Spring)	Yes	88.63	19	15.36	-10.58<μ<3.12	*t*(78)= -1.083	*p*=0.282
	No	92.36	61	12.37			

The 17 students who attended the three year-old prekindergarten program and the 49 students who did not were assessed at the beginning of the year using GRTR-R. The results showed that those students receiving the intervention scored 103.47 and those who did not scored 97.41, for a mean difference of 6.06. The two standard deviations were 11.18 and 17.23, respectively. A t-test comparing the two was statistically insignificant ($t(64)= 1.352$, $p=0.181$). In addition, the 95% confidence interval for the difference was $-2.90<\mu<15.02$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 19 students who attended the three year-old prekindergarten program and the 61 students who did not were assessed at the end of the year using PALS. The results showed that those students receiving the intervention scored 67.78 and those who did not scored 64.07, for a mean difference of 3.71. The two standard deviations were 17.94 and 24.93, respectively. A t-test comparing the two was statistically insignificant ($t(75)= 0.586$, $p=0.560$). In addition, the 95% confidence interval for the difference was $-8.91<\mu<16.33$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 18 students who attended the three year-old prekindergarten program and the 59 students who did not were assessed at the beginning of the year using PALS. The results showed that those students receiving the intervention scored 88.63 and those who did not scored 92.36, for a mean difference of 3.73. The two standard deviations were 15.36 and 12.37, respectively. A t-test comparing the two was statistically insignificant ($t(78)= -1.083$, $p=0.282$). In addition, the 95% confidence interval for the difference was $-10.58<\mu<3.12$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The assessment data for the third cohort's prekindergarten assessments are summarized in Table 13.

Table 13

C3 Prekindergarten Assessments

Assessment	Intervention	Mean Score	N	Standard Deviation	95% Confidence	*t* value	*p* value
PALS Beginning sound (Spring)	Yes	9.79	19	0.92	-0.67<μ<0.74	*t*(45)= 0.113	*p*=0.911
	No	9.75	28	1.32			
PALS Print & word awareness (Spring)	Yes	8.58	19	1.12	-0.90<μ<0.70	*t*(45)= -0.250	*p*=0.804
	No	8.68	28	1.47			
PALS Rhyme awareness (Spring)	Yes	8.84	19	1.71	-1.55<μ<0.38	*t*(45)= -1.222	*p*=0.228
	No	9.43	28	1.55			

The 19 students who attended the three year-old prekindergarten program and the 28 students who did not were assessed at the end of the year using PALS beginning sound assessment. The results showed that those students receiving the intervention scored 9.79 and those who did not scored 9.75, for a mean difference of 0.04. The two standard deviations were 0.92 and 1.32, respectively. A t-test comparing the two was statistically insignificant (t(45)= 0.113, p=0.911). In addition, the 95% confidence interval for the difference was -0.67<μ<0.74, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 19 students who attended the three year-old prekindergarten program and the 28 students who did not were assessed at the end of the year using PALS print and word awareness assessment. The results showed that those students receiving the intervention scored 8.58 and those who did not scored 8.68, for a mean difference of 0.10. The two standard deviations were 1.12 and 1.47, respectively. A t-test comparing the two was statistically insignificant (t(45)= -0.250, p=0.804). In addition, the 95% confidence interval for the difference was -0.90<μ<0.70, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 19 students who attended the three year-old prekindergarten program and the 28 students who did not were assessed at the end of the year using PALS rhyme awareness

assessment. The results showed that those students receiving the intervention scored 8.84 and those who did not scored 9.43, for a mean difference of 0.59. The two standard deviations were 1.71 and 1.55, respectively. A t-test comparing the two was statistically insignificant (t(45)= -1.222, p=0.228). In addition, the 95% confidence interval for the difference was $-1.55<\mu<0.38$, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

Fourth Cohort

The fourth cohort of students to receive the three year-old prekindergarten intervention is currently in kindergarten. Again, the students who received the three year-old preschool intervention were chosen based on their household income, their experience in daycare settings, the employment status of parent(s), and a family history of incarceration, homelessness, teen pregnancy and transience, among other adverse childhood experiences. Additionally, a brief screening was administered to determine whether the children could identify five colors, six animals, four simple shapes and five body parts. Based on these criteria, an assumption is made that without the three year-old preschool intervention, these students would score significantly lower on literacy assessments than their more affluent peers. The data for the fourth cohort's kindergarten assessments are summarized in Table 14.

Table 14

Cohort 4 (C4) Kindergarten Assessments

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
GRTR-R (Fall)	Yes	102.59	17	14.56	$-10.59<\mu<7.32$	$t(47)= -0.366$	$p=0.716$
	No	104.22	32	14.97			
PALS(Fall)	Yes	66.10	21	21.97	$-11.22<\mu<15.36$	$t(63)= 0.312$	$p=0.756$
	No	64.02	44	26.40			

The 17 students who attended the three year-old prekindergarten program and the 32 students who did not were assessed at the beginning of the year using GRTR-R. The results showed that those students receiving the intervention scored 102.59 and those who did not scored 104.22, for a mean difference of 1.63. The two standard deviations were 14.56 and 14.97, respectively. A t-test comparing the two was statistically insignificant (t(47)= -0.366, p=0.716).

In addition, the 95% confidence interval for the difference was -10.59<μ<7.32, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 21 students who attended the three year-old prekindergarten program and the 44 students who did not were assessed at the beginning of the year using PALS. The results showed that those students receiving the intervention scored 66.10 and those who did not scored 64.02, for a mean difference of 2.08. The two standard deviations were 21.97 and 26.40, respectively. A t-test comparing the two was statistically insignificant (t(63)= 0.312, p=0.756). In addition, the 95% confidence interval for the difference was -11.22<μ<15.36, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The data for the fourth cohort's prekindergarten assessments are summarized in Table 15.

Table 15

C4 Prekindergarten Assessments

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
PALS Beginning sound (Spring)	Yes	9.96	24	0.20	-0.38<μ<1.22	*t*(25.6)= 1.084	*p*=0.289
	No	9.54	26	1.96			
PALS Print & word awareness (Spring)	Yes	8.91	24	0.97	-0.71<μ<0.40	*t*(49)= -0.569	*p*=0.572
	No	9.07	27	1.00			
PALS Rhyme awareness (Spring)	Yes	9.58	24	1.02	-0.42<μ<1.22	*t*(41.7)= 0.978	*p*=0.334
	No	9.19	27	1.82			

The 24 students who attended the three year-old prekindergarten program and the 26 students who did not were assessed at the end of the year using PALS beginning sound assessment. The results showed that those students receiving the intervention scored 9.96 and those who did not scored 9.54, for a mean difference of 0.42. The two standard deviations were 0.20 and 1.96, respectively. Testing for equal variances yielded a Levene p-value of p=0.049, therefore the variances are unequal. A t-test comparing the two was statistically insignificant

(t(25.6)= 1.084, p=0.289). In addition, the 95% confidence interval for the difference was -0.38<μ<1.22, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 24 students who attended the three year-old prekindergarten program and the 27 students who did not were assessed at the end of the year using PALS print and word awareness assessment. The results showed that those students receiving the intervention scored 8.91 and those who did not scored 9.07, for a mean difference of 0.16. The two standard deviations were 0.97 and 1.00, respectively. A t-test comparing the two was statistically insignificant (t(49)= -0.569, p=0.572). In addition, the 95% confidence interval for the difference was -0.71<μ<0.40, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 24 students who attended the three year-old prekindergarten program and the 27 students who did not were assessed at the end of the year using PALS rhyme awareness assessment. The results showed that those students receiving the intervention scored 9.58 and those who did not scored 9.19, for a mean difference of 0.39. The two standard deviations were 1.02 and 1.82, respectively. Testing for equal variances yielded a Levene p-value of p=0.048, therefore the variances are unequal. A t-test comparing the two was statistically insignificant (t(41.7)= 0.978, p=0.334). In addition, the 95% confidence interval for the difference was -0.42<μ<1.22, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

Fifth Cohort

The fifth cohort to receive the three year-old prekindergarten intervention is currently in four year-old prekindergarten. Again, the students who received the three year-old preschool intervention were chosen based on their household income, their experience in daycare settings, the employment status of parent(s), and a family history of incarceration, homelessness, teen pregnancy and transience, among other adverse childhood experiences. Additionally, a brief screening was administered to determine whether the children could identify five colors, six animals, four simple shapes and five body parts. Based on these criteria, an assumption is made that without the three year-old preschool intervention, these students would score significantly

lower on literacy assessments than their more affluent peers. The data for the fifth cohort prekindergarten assessments is summarized in Table 16.

Table 16

Cohort 5 (C5) Prekindergarten Assessments

Assessment	**Intervention**	**Mean Score**	**N**	**Standard Deviation**	**95% Confidence**	***t* value**	***p* value**
PALS Beginning sound (Fall)	Yes	5.18	22	4.19	-0.65<μ<3.98	*t*(49)= 1.442	*p*=0.156
	No	3.52	29	4.00			
PALS Print & word awareness (Fall)	Yes	5.68	22	2.38	-0.41<μ<2.53	*t*(49)= 1.452	*p*=0.153
	No	4.62	29	2.73			
PALS Rhyme awareness (Fall)	Yes	4.14	22	3.24	-0.79<μ<2.38	*t*(49)= 1.004	*p*=0.320
	No	3.34	29	2.39			
GRTR-R (Fall)	Yes	17.64	22	4.86	0.46<μ<6.33	*t*(49)= 2.327	*p*=0.024*
	No	14.24	29	5.38			

The 22 students who attended the three year-old prekindergarten program and the 29 students who did not were assessed at the beginning of the year using PALS beginning sound assessment. The results showed that those students receiving the intervention scored 5.18 and those who did not scored 3.52, for a mean difference of 1.66. The two standard deviations were 4.19 and 4.00, respectively. A t-test comparing the two was statistically insignificant (t(49)= 1.442, p=0.156). In addition, the 95% confidence interval for the difference was -0.65<μ<3.98, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 22 students who attended the three year-old prekindergarten program and the 29 students who did not were assessed at the beginning of the year using PALS print and word awareness assessment. The results showed that those students receiving the intervention scored 5.68 and those who did not scored 4.62, for a mean difference of 1.06. The two standard deviations were 2.38 and 2.73, respectively. A t-test comparing the two was statistically

insignificant (t(49)= 1.452, p=0.153). In addition, the 95% confidence interval for the difference was -0.41<μ<2.53, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 22 students who attended the three year-old prekindergarten program and the 29 students who did not were assessed at the beginning of the year using PALS rhyme awareness assessment. The results showed that those students receiving the intervention scored 4.14 and those who did not scored 3.34, for a mean difference of 0.80. The two standard deviations were 3.24 and 2.39, respectively. A t-test comparing the two was statistically insignificant (t(49)= 1.004, p=0.320). In addition, the 95% confidence interval for the difference was -0.79<μ<2.38, demonstrating that there is no statistical difference between the achievement of the two groups; therefore, the null hypothesis is accepted.

The 22 students who attended the three year-old prekindergarten program and the 29 students who did not were assessed at the beginning of the year using GRTR-R. The results showed that those students receiving the intervention scored 17.64 and those who did not scored 14.24, for a mean difference of 3.40. The two standard deviations were 4.86 and 5.38, respectively. A t-test comparing the two was statistically significant (t(49)= 2.327, p=0.024). The measure of effect size based on the standard deviation of those who received the intervention, 4.86, is d= 0.70, indicating that those who received the intervention scored 0.70 standard deviations higher than those who did not. In addition, the 95% confidence interval for the difference was 0.46<μ<6.33. The results demonstrated that those students who received the intervention scored significantly higher than those who did not on the GRTR-R, and the null hypothesis is rejected.

Summary

The students who received the three year-old preschool intervention in the first five cohorts of the program were those deemed to be most at-risk based on screening criteria of poverty, adverse childhood experiences and a lack of quality daycare. Although, based on these criteria, the assumption is that these students would have scored significantly lower on literacy assessments than their more affluent peers, the data indicate that on the 43 assessments studied, a significant difference was identified on only two, and on one of these, the students who received the intervention actually scored higher than their more affluent peers.

CHAPTER 5
FINDINGS, SUMMARY AND CONCLUSIONS

Introduction

The purpose of this study was to examine the efficacy of the three-year-old preschool program in one rural school division in eastern Virginia. Examining the effectiveness of the preschool intervention led to the following research question: What difference, if any, exists in literacy achievement, as measured by the Virginia Phonemic Awareness Literacy Screening (PALS), the Scholastic Reading Inventory, student growth assessments (SGA) and Get Ready to Read – Revised (GRTR-R), between the students who received the three year-old preschool intervention and those that did not?

Summary and Discussion of Findings

An analysis of the data, using independent sample t-tailed t-test for each assessment administered, resulted in the researcher identifying the following findings, presented by cohort. Prior research related to the findings will be shared following the report of findings.

Finding one. In the first cohort, there was no significant difference in achievement between students who received the intervention and those who did not. In the third grade, the current grade level of this cohort, there was no significant difference in achievement on the beginning of the year Student Growth Assessment (SGA), the beginning of the year Scholastic Reading Inventory (SRI), nor the mid-year SRI between those students who received the intervention and those who did not. Likewise, during their second grade year, there was no significant difference in achievement on either the beginning or end of year SGA or the beginning of the year or end of year Phonemic Awareness Literacy Screening (PALS) between those students who received the intervention and those who did not.

The analysis of the first grade achievement results indicated no significant difference in beginning of the year nor end of year PALS between those students who received the intervention and those who did not. During their kindergarten year, there was no significant difference in achievement on the end of year PALS between those students who received the intervention and those who did not. Finally, on prekindergarten PALS, there was no significant difference in achievement on beginning sound assessment, print and word awareness assessment

or rhyme awareness assessment between those students who received the intervention and those who did not.

Finding two. In the second cohort, there was no significant difference in achievement between students who received the intervention and those who did not. Although a significant difference was identified on one assessment, in its totality, the data indicate no significant difference in achievement. When assessed at the beginning of their second grade year, the current school year for this cohort, there was no significant difference in achievement on either the beginning of the year PALS nor the beginning of the year SGA between the students who received the intervention and those who did not. There was, however, a significant difference identified on the beginning of the year SRI ($t(81)= -2.062$, $p=0.042$*), between the achievement of those students who received the intervention and those who did not, with those who did not receive the intervention scoring significantly higher. This difference may be attributed to the difference between the construct of this assessment and others administered to this cohort to this point. The SRI is a vocabulary-focused, contextual assessment which is computer-adapted to match student ability. To support this assertion, when administered the SRI at mid-year, there was no significant difference in achievement ($t(81)= -1.179$, $p=0.242$) between those students who received the intervention and those who did not.

During the first grade year for the second cohort, there was no significant difference in achievement on either the beginning of the year or end of year SGA, nor on beginning of the year or end of year PALS between those students who received the intervention and those who did not. Similarly, during their kindergarten year, there was no significant difference in achievement on either the beginning of the year or end of year PALS between those students who received the intervention and those who did not. On the PALS administered at the end of the prekindergarten school year, there was not significant difference in achievement on the beginning sound, print and word awareness or rhyme awareness assessments between those students who received the intervention and those who did not.

Finding three. In the third cohort, there was no significant difference in achievement between students who received the intervention and those who did not. Although a significant difference was identified on one assessment, in its totality, the data indicate no significant difference in achievement. On the beginning of the year PALS, there was no significant difference in achievement between those students who received the intervention

and those who did not. On the beginning of the year SGA, there was a significant difference ($t(62.2)= -3.058$, $p=0.003$*) between the achievement of those students who received the intervention and those who did not, with those who did not receive the intervention scoring significantly higher. This difference may be due to the construct and content of the assessment. The SGA is a teacher-generated assessment of current year Virginia Standards of Learning objectives designed to measure student growth of curriculum mastery throughout the year, and this is the first exposure to this type of assessment for these students.

During their kindergarten year, there was no difference in achievement on the Get Ready to Read! Revised (GRTR-R) between those students who received the intervention and those who did not. Similarly, there was no difference in achievement on either the beginning of the year or end of year PALS between those students who received the intervention and those who did not. During the prekindergarten year, there was no significant difference in achievement on the PALS beginning sound, print and word awareness or rhyme awareness assessments between those students who received the intervention and those who did not.

Finding four. In the fourth cohort, there was no significant difference in achievement between students who received the intervention and those who did not. During their kindergarten year, the current school year, there was no significant difference in achievement on either the GRTR-R or the beginning of the year PALS between the students who received the intervention and those who did not. On the prekindergarten PALS, there was no significant difference in achievement on the beginning sound, print and word awareness or rhyme awareness assessments between those students who received the intervention and those who did not.

Finding five. In the fifth cohort, there was no significant difference in achievement between students who received the intervention and those who did not. Although a significant difference was identified on one assessment, in its totality, the data indicate no significant difference in achievement. On the beginning of the year PALS, there was no significant difference in achievement on the beginning sound, print and word awareness or rhyme awareness assessments between those students who received the intervention and those who did not.

There was a significant difference in achievement identified on the GRTR-R administered at the beginning of the year ($t(49)= 2.327$, $p=0.024$*) between those students who

received the intervention and those who did not, with those students who attended the three year-old preschool program scoring significantly higher than their more affluent peers who did not. This difference may be the result of the familiarity of the students who attended the three year-old preschool with the school environment and the number of their peers who did not attend preschool, either public or private, prior to entering the prekindergarten program.

Discussion. The assumption made during for this study, that the literacy achievement of children in poverty would be significantly lower than that of their more affluent peers of greater means, is supported by the work of Hart and Risely (1995), Isaacs (2012), Kena, et.al (2016), Barnett (2011), Kuhl (2011), and Melhuish (2011), among others. Each of these researchers has indicated that early intervention in the form of quality prekindergarten is an effective means of addressing the pre-literacy gap in the school readiness of children in poverty.

Specifically, the work of Hart and Risely (1995) suggests that:

> To ensure that an average welfare child had a weekly amount of experience equal to that of the average child in a working-class family, merely in terms of hours of language experience of any kind (words heard), 41 hours per week of out-of-home experience as rich in words addressed to the child as that in an average professional home would be required (pg. 205).

Further, the process of learning to read is multi-faceted, complex and cumulative, and dependent on the child's ability to recognize and understand that letters represent sounds, then connect to create words, which combine to make sentences, and so on (Harlaar, et.al, 2007). Much of this learning occurs very early in a child's development, and depends to a large extent on the child's exposure to rich, child-centered vocabulary (Hindman, et.al, 2016).

The findings of this study support this previous research. The beginning of the complex process of learning to read, as suggested by Harlaar, et.al, (2007) is accomplished in the three year-old preschool setting. Further, the setting also provides exposure to rich, child-centered vocabulary as indicated by the work of Hindman, et.al. (2016). Finally, children who received the three year-old preschool intervention were provided approximately 35 hours of a literacy- and vocabulary-rich environment, consistent with the findings of Hart and Risely (1995). Therefore, the findings summarized above are not surprising, and are supported by the previous research on early childhood intervention, especially quality preschool programs.

Implications of Findings

School administrators should consider the findings of this study when deciding to invest in early intervention programs as a means to reduce the literacy achievement gap and provide a long-term solution to improving adult outcomes for children in poverty. The data suggest that early intervention in the form of publically-funded three year-old preschool may close the persistent literacy achievement gap for children of very low socioeconomic status, providing the foundation for future academic success and ultimately high school graduation. This, in turn, portends more positive outcomes in early adulthood, such as the avoidance of teen pregnancy and encounters with the justice system, higher employment and wages, and the attainment of post-secondary education (The Annie E. Casey Foundation, 2010; Sum, et.al, 2009).

State legislatures should consider the findings of this study to provide comprehensive funding for schools and school divisions to meet the literacy needs of children in poverty through early intervention. The data suggest that investment in early childhood intervention, such as this three year-old preschool program, will return future savings on social programs associated with positive adult outcomes, as cited above.

Suggestions for Further Studies

Use of a control group. Further research into the efficacy of this intervention may include a control group of similar demography and school setting, in a school division that does not provide, nor has no plans to provide, a three year-old preschool program. This may provide a better indicator of the advocacy of such a program.

Social-emotional learning. One indicator of school readiness is the ability of the child to adjust to the school environment and the concept of "school." Anecdotally, there is evidence to suggest that this social-emotional learning is as important to the findings of this study as the child-centered vocabulary-rich environment, there were no measures of social-emotional learning emplaced at this school. This is one area in which the researcher believes further study is warranted.

Quality of the preschool program. This study was conducted using a three year-old preschool program provided in a public school setting, with experienced teachers who possessed graduate degrees in early childhood education and using a prescribed curriculum. One

suggestion for further study is to examine these results in comparison to other programs, provided in private settings, with varying levels of teacher experience and education.

Longitudinal study. Finally, a longitudinal study of these cohorts would provide a clearer picture regarding the persistence of the intervention. The first of the study cohorts is currently attending the third grade, and demonstrates no significant difference in literacy achievement between those who received the intervention and those who did not. It would be interesting to examine, as the cohort matriculates through the public school system, whether this continues to be true.

Reflections

As a practitioner with significant influence on the expenditure of funding for public education, I undertook this study with a keen interest in attempting find a solution for the very real achievement gap in the school division; a gap that exists most predominantly along SES lines. I have long believed, even as a classroom teacher, that the earlier we, as educators, could intervene, the better outcomes students would experience. I am terribly excited about the findings of this study, as well as the wealth of existing research to support my assertions to this point, and I am pleased that I have been able to add to the growing body of knowledge on the subject of early intervention.

Furthermore, I am grateful that I have the opportunity to now share with the community the value of their investment in the three year-old preschool program. Both classrooms of three year-old preschool students were initially underwritten by community foundations; the first by the Nettie Lokie and Charles L. Wiley Foundation, and the second by the Kids First Foundation, both of which provided significant financial resources to start the classrooms, with the understanding and agreement that after a three-year period, the school division would begin paying for the program in full. The findings of this study provide the data to suggest that this investment will provide a significant return in the form of student success.

Finally, I firmly believe that this study provides evidence that public schools, by providing publically-funded, quality early intervention, can be instrumental in mitigating the effects of generational poverty and provide truly equitable outcomes for all students.

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APPENDIX A

CERTIFICATE OF COMPLETION

APPENDIX B

IRB APPROVAL LETTER

VirginiaTech

Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website http://www.irb.vt.edu

MEMORANDUM

DATE:	February 1, 2018
TO:	Carol S Cash, Steven Daniel Parker
FROM:	Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)
PROTOCOL TITLE:	Preschool and the Literacy Achievement Gap in one school division in Virgini
IRB NUMBER:	**17-1243**

Effective February 1, 2018, the Virginia Tech Institution Review Board (IRB) approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As:	**Exempt, under 45 CFR 46.110 category(ies) 4**
Protocol Approval Date:	**February 1, 2018**
Protocol Expiration Date:	**N/A**
Continuing Review Due Date*:	**N/A**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

APPENDIX C

APPLICATION FOR THREE YEAR-OLD PROGRAM

PRIMARY SCHOOL EARLY CHILDHOOD 3-YEAR OLD PRE-SCHOOL APPLICATION

I. Child Information		
Child's Name: (Last, First, Middle)		
Sex: ☐M ☐F **Birth Date:**	**Ethnicity:** ☐American Indian ☐Asian ☐Black ☐Hispanic ☐White ☐Other	
Child's Address (if different from parent/guardian below):		Zip:
Emergency Contact (IF parent/guardian cannot be reached) :		
1.		
2.		
3.		

II. Parent/Guardian Information:			
Mother's/Guardian's Name:		Father's/Guardian's Name:	
911 Address:		911 Address:	
Mailing Address:		Mailing Address:	
Cell phone:		Cell phone:	
Work phone:		Work phone:	
E-mail:		E-mail:	
Date of birth:		Date of birth:	
Are you employed? Yes or No Employer's Name:	** ATTACH PROOF OF INCOME	Are you employed? Yes or No Employer's Name:	** ATTACH PROOF OF INCOME
Last grade completed/Diploma/GED:		Last grade completed/Diploma/GED:	
What is the language usually spoken at home by parents: _____ by child: _____			
Child lives with : ☐ Mother ☐ Father ☐ Both Parents ☐ Other (Please List) : **If "Other", does this person have legal custody?** ☐ Yes ☐ No			

List EVERYONE living in the home with the child (parents, grandparents, aunts, uncles, and ALL children):

Last Name	First Name	Date of Birth	Sex	Grade Level	Relationship to child
		/ /	M / F		
		/ /	M / F		
		/ /	M / F		
		/ /	M / F		
		/ /	M / F		

PRIMARY SCHOOL EARLY CHILDHOOD 3-YEAR OLD PRE-SCHOOL APPLICATION

List all siblings NOT living in the home

Last Name	First Name	Date of Birth	Sex	Grade	Location
		/ /	M / F		
		/ /	M / F		

III. Please check the services you or your child receives:

☐ TANF ☐ WIC ☐ SNAP ☐ Social Security

IV. Child History

Is your child toilet trained?	☐ Yes ☐ No	Explain:
Has your child been in a preschool or childcare?	☐ Yes ☐ No	Explain: (When, where, how long?)
Are there any problems with your child's speech?	☐ Yes ☐ No	Explain:
Do others have difficulty understanding what your child says?	☐ Yes ☐ No	Explain:
Does your child have any diagnosed emotional or behavioral problems?	☐ Yes ☐ No	Explain:
Does your child have any medical conditions, such as asthma, allergies, diabetes or seizures?	☐ Yes ☐ No	Explain:
Have you been told by a teacher, doctor, or nurse that your child has a disability?	☐ Yes ☐ No	Explain:
Does your child use any medical device (i.e. wheelchair, hearing aid, glasses)?	☐ Yes ☐ No	Specify:
Has your child been found eligible for special education or speech services?	☐ Yes ☐ No	Explain:

List any additional concerns you have about your child: _____

_____

V. Family History - Please check any of the following factors that apply to your immediate family:

Currently we ☐ Rent ☐ Own ☐ Share a Home						
Were you a teen parent when any of your children were born?	☐ Yes	☐ No (If Yes, how old were you?)				
Is anyone in the family in jail or on probation (current or past)?	☐ Yes	☐ No				
Do/Did you have learning problems or difficulty reading?	☐ Yes	☐ No	(Your child's siblings?)	☐ Yes	☐ No	
Have you been a victim of violence?	☐ Yes	☐ No	(Your child's siblings?)	☐ Yes	☐ No	
Do you have a serious physical condition that requires ongoing medical care?	☐ Yes	☐ No	(Your child's siblings?)	☐ Yes	☐ No	
Are you homeless or do you currently live in a shelter?	☐ Yes	☐ No	(Your child's siblings?)	☐ Yes	☐ No	
Has the child/ family moved two or more times in the past year?	☐ Yes	☐ No				
Have you ever received mental health services?	☐ Yes	☐ No	(Your child's siblings?)	☐ Yes	☐ No	

_____

Parent/Guardian Signature Date

Nondiscrimination Notice

County Schools does not discriminate on the basis of race, color, national origin, sexual orientation, sex, disability or age in its programs or activities.

Screening for Early Childhood 3-yr. old Program

Child's name _____

Colors	Red	Yellow	Blue	Orange	green		
Animals	Horse	Cow	Pig	Chicken	Rabbit	dog	
Shapes	Circle	Square	Triangle	rectangle			
Body Parts	Nose	Ears	Eyes	Head	fingers		
Total							