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The Impact of Full and Half-Day Head Start Programs on Kindergarten Readiness

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A Dissertation Submitted to

The Faculty of
The Annsley Frazier Thornton School of Education
Bellarmine University
In partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Education and Social Change

April 29, 2016

Dissertation directed by

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Bellarmine University

The Annsley Frazier Thornton School of Education of Bellarmine University certifies that Amanda R. McMullan has successfully defended her dissertation for the degree of Doctor of Philosophy in Education and Social Change as of April 29, 2016. This is the final and approved form of the dissertation.

The Impact of Full and Half-Day Head Start Programs on Kindergarten Readiness

Amanda R. McMullan

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Dedication

I dedicated this dissertation to the Head Start and Preschool teachers who have helped inspire a love of learning for my children. Ms. Vickie, who taught both my daughter and I. Ms. Rita, Ms. Melissa, Ms. Ashley, and Ms. Stacey who made Early Head Start an amazing experience for my youngest three. Ms. Tracy who survived Preschool with my munchkins three years in a row. These ladies helped to prepare my children for kindergarten, I am forever grateful.

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To the members of my Ph.D. cohort, thank you. Throughout this program you have always been there to provide support and feedback. I wouldn't have wanted to do this without each of you. I would also like to thank my friends, family, and co-workers (both past and present) who have supported me on this journey.

Abstract of the Dissertation

The 2013-2014 school year brought mandated school readiness screenings to 173 school districts across the state of Kentucky. According to the Governor's Task Force on early childhood development and education (2012), school readiness is defined as: each child enters school ready to engage in and benefit from early learning experiences that best promote the child's success. To assess whether students were school ready the use of the Brigance© Screens III was implemented across the state. This study investigated the impact of enrollment in half and full-day Head Start programs on kindergarten readiness for students in Kentucky as measured by the Brigance© Screens III. The Brigance© scores were analyzed using the composite score and subdomain scores which are reported as ready, not ready, or ready with supports. A multivariate analysis of variance, or MANOVA, was utilized to examine if there was a significant difference in full or half-day readiness outcomes

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Chapter 1:

Introduction

In 1991 national attention became focused on school readiness after the release of the Education Goals Panel Report (United States, 1991). The Educational Goals Panel Report set a goal that all children enter school ready to learn (Fram, Kim, & Sinha, 2012). School readiness includes physical well-being, social and emotional development, language usage, cognition and general knowledge, and approaches to learning (including curiosity, eagerness, and self-direction). Children who are school ready take advantage of learning opportunities in reading, math, and other academic areas (Fram, et al., 2012).

School readiness has been the goal of the federally funded Head Start program since its inception (Early Childhood Learning and Knowledge Center, 2015). The Head Start program promotes school readiness of young children from low-income families by supporting the mental, social, and emotional development of children birth to age 5. These services are offered through agencies that receive grants from the U.S. Department of Health and Human Services (Early Childhood Learning and Knowledge Center, 2015). When children attend educational programs prior to kindergarten, they begin school with a shared background of common educational experiences that better prepare them for academic success (Barnett, Brown, Finn-Stevenson, & Henrich, 2007).

Importance of the Study

In a meeting regarding kindergarten readiness for students in the state of Kentucky, Department of Education Commissioner Terry Holiday reported that only about a quarter of the students coming to kindergarten are academically ready (Kentucky Education, 2012). During the

2013–2014 school year a kindergarten readiness screener, the Brigance© Screens III, was mandated for implementation in all 173 Kentucky school districts. In 2012-2013, more than 100 school districts piloted the Brigance©, administering it to approximately 34,500 of the 53,988 kindergarten students in Kentucky. The Brigance© is considered an easily administered screen of a student's developmental abilities at school entry (Kentucky Education, 2014). Results of the pilot study using a sample of Kentucky children revealed that only 1 of 4 students were prepared for kindergarten (Kentucky Education, 2012). The Brigance© findings provide information to kindergarten teachers, which helps them plan instruction based on what students know and are able to do, as well as to help schools and communities to plan ways to improve school readiness (Kentucky Education, 2014).

During the 2013-2014 school year, Brigance© screener scores in Kentucky kindergarten classrooms indicated that 49% of students started the year ready to learn and succeed. The jump from the 25% of the previous year students prepared in 2012-2013 to 49% of students prepared in 2013-2014 is notable; the large gains can possibly be attributed to the smaller sample size of the pilot, the sharing of the contents of the assessment by teachers from the pilot year, or other unknown factors. Notwithstanding, of the 51,556 Kentucky kindergarten students screened in 2013-2014 nearly 26,000 entered school unprepared (Office of the Governor, 2014). Placing these children in remedial, pullout, compensatory programs, or requiring them to repeat grades typically does not sufficiently help them to catch up and achieve at grade level (Ramey & Ramey, 2004). These children are most likely to drop out of school early; engage in irresponsible, dangerous, and illegal behaviors; become teen parents; and depend on welfare and numerous public assistance programs for survival (Ramey & Ramey, 2004).

Kindergarten readiness is considered the key to student's future academic success (Kentucky Education, 2012). Increasing teacher and student accountability in both primary and secondary schools have led to higher academic expectations for kindergarteners with a larger percentage of students experiencing kindergarten failure (Pagani, Jalbert, Lapointe, & Hebert, 2006). How to best prepare the preschool children of Kentucky for school success is increasingly the subject of concern, debate and research.

According to the Governor's Task Force on early childhood development and education (2012), Kentucky's definition of school readiness is: each child enters school ready to engage in and benefit from early learning experiences that best promote the child's success (p. 1). The education accountability movement has led states to develop child outcome measures for early care and education programs for skills children should know and be able to do upon kindergarten entry (Muenchow & Marsland, 2007). In order to assess whether these measures are met it becomes necessary to evaluate the programs responsible for their implementation. Currently there is a lack of research that examines the impact of program length of Head Start on student achievement. According to Frisvold and Lumeng (2011), no research has compared the impact of full-day attendance to half-day attendance in Head Start.

Overview of the Study

15,960 Kentucky children were enrolled in full- or half-day Head Start programs in Kentucky in the 2013-2014 school year. This study used statewide data collected in 2014 to investigate the impact of enrollment in half and full-day Head Start programs on kindergarten readiness as measured by the Brigance© Screens III. The Brigance© scores were analyzed using the composite score and subdomain scores which are reported as ready, not ready, or ready with supports. A multivariate analysis of variance, or MANOVA, to examine whether there was a

significant difference in full or half-day kindergarten readiness outcomes will be utilized. The study results will assist in discerning if the length of the programming day in Head Start programs impacts Brigance© readiness composite or subdomain scores.

Problem Statement

The goal of the Head Start program is to prepare children for school (Early Childhood Learning and Knowledge Center, 2015). 51% of Kentucky kindergarten children are not ready for Kindergarten as measured by the Brigance©. With a high percentage of children not ready for kindergarten it becomes necessary to evaluate the programs that are designed to prepare them for school. In addition does length of program play in role in how prepared children are for kindergarten? Does the length of school day – full-day or half-day - in a Head Start program significantly impact kindergarten readiness?

Research Questions

The research questions guiding this study were:

1. How does the daily program length of Head Start – full-day or half-day - impact Brigance© composite scores for previously enrolled children at the school level?
2. How does the daily program length of Head Start -full-day or half-day- impact Brigance© subdomain scores for previously enrolled children at the school level?

It was hypothesized that children who attended full-day Head Start programs would have significantly higher Brigance© readiness composite and/or subdomain scores than those who attended half-day Head Start programs.

Theoretical Framework

This study considered the length of daily experience in a Head Start program as a possible predictor of outcome variations. Using the theoretical framework of Lev Vygotsky, this study considered that being in the company of more competent others enhances an individual's skills. Vygotsky (1997) theorized that the formation of individual abilities takes place through relations with others: it is socially meaningful activity that shapes an individual. The fundamental way in which a child's higher mental functions are formed is the use of "psychological tools" in "mediated activities" shared with an adult or a more competent peer. It would logically be expected that a child given more exposure - time - with a teacher or more competent peers would gain more skills.

As a student of Vygotsky, Urie Bronfenbrenner introduced the Ecological Systems Theory, or EST, which considers development as a process that unfolds over time and is impacted by interactions within different environmental contexts (Lee, Zhai, Brooks-Gunn, Han, & Waldfogel, 2014). The Ecological Systems Theory helps to explain the importance of interdependent and multilevel systems on individual development (Neal & Neal, 2013). According to Bronfenbrenner (1979) ecological systems at different levels are nested within each other, much like a set of Russian dolls. The original EST identified four systems: the microsystem, mesosystem, exosystem, and macrosystem. Bronfenbrenner later expanded the EST to include the chronosystem (Neal & Neal, 2013). These systems interact with each other and help explain individual development.

Data Collection

The Kentucky Department of Education established the use of a common readiness screen for incoming kindergarten students with state regulation 704 KAR 5:070 (Kentucky

Education, 2014). The Brigance© Screens III is used to screen incoming kindergarten students no more than 15 calendar days prior to school starting and no later than the 30th instructional day of the school year (Kentucky Education, 2014). The Brigance© provides schools and parents with scores that are nationally normed (Rodriguez, 2012). The results indicate whether students are ready with supports (or below average), ready (or average), or ready with enrichments (or advanced). The resulting data is publically available through the Online Management System (OMS), and provided by local school districts to the state in the fall of each school year. For the purposes of this study, an analysis of 2014-2015 Brigance© results by program were conducted. Programs will be sorted into two groups: full-day Head Start programs and half-day Head Start programs.

Assumptions

It is assumed that for the purposes of this study that the programs followed Head Start enrollment and curricular guidelines. These include federal income guidelines as well as 10% of the enrollment reserved for children with special needs (Love, et al., 2007). The Head Start program is available for students' ages 3 to 4 for half or full day sessions. Local Head Start programs receive grants from the U.S. Department of Health and Human Services (Early Childhood Learning and Knowledge Center, 2015). Local Head Start agencies design services, including the length of program, for children and families based on community need. In some situations, cities, states, and federal programs offer funding to expand Head Start programs to serve more children within communities (Early Childhood Learning and Knowledge Center, 2015).

Key Terms

In this study the term Brigance© refers to the Brigance© Screener III. The composite score reflects a child's performance along a normative scale. The Brigance© composite score is derived from a total score and three subdomain scores. The academic/cognitive, language, and physical development subdomain scores are summed to create a total score. The total score is converted into the composite score. Composite scores are normalized standard scores with a mean of 100 and a standard deviation of 15. A score of 100 indicates that the child's performance for the skill area is at the mean or average within the normal distribution (French, 2013). Interpretation of composite scores is shown in Table 1.

Table 1: *Composite score interpretation*

Composite score interpretation	
<70	Very weak
70 – 79	Weak
80-89	Below Average
90- 110	Average
111-120	Above average
121-130	Strong
>130	Very strong

Subdomains scores are based on scores associated with each core assessment or raw score. These include: physical development, language development, and academic skills/cognitive development (French, 2013). These scores are used by teachers and administrators to identify areas of apparent weakness and make appropriate curricular decisions. Parents and caregivers are provided suggestions to help their child overcome identified weaknesses (French, 2013).

Within this study the term Head Start applied specifically to the Head Start program funded by the federal government. The term preschool applies to any structured educational program children attend prior to entering kindergarten.

Summary

Conducting a statistical evaluation of Brigance© scores Head Start programs can provide insight into the differing impacts of Head Start in full or half-day programs on kindergarten readiness. Student Brigance© scores were analyzed using a multivariate analysis of variance (MANOVA). This study considered whether there are significant readiness differences for full or half-day Head Start programs on kindergarten readiness as measured on the Brigance©.

Chapter 2:

Review of the Literature

Research indicates that the cognitive development of preschool aged children can be improved by attending high quality preschools (Hall, Sylva, Melhuish, Sammons, Siraj-Blatchford & Taggart, 2009). According to Pagani, Fitzpatrick, Archambault, and Janosz (2010), school readiness skills help children achieve greater academic gains in the primary grades. Student achievement in first and third grade can be improved with early skill development in preschool (Pagani, et al., 2010). According to Heckman (2013), early mastery of cognitive, social, and emotional skills makes learning at later ages more efficient, which in turn makes learning more likely to continue. "Skill begets skills and capabilities foster future capabilities" (Heckman, 2013, p. 32).

Head Start

The Head Start program promotes school readiness for children from low-income families by offering educational nutritional, health, and social services (Office of Head Start, 2015). In 2015, Head Start was funded to serve 1,100,000 children and pregnant women throughout the United States (Office of Head Start, 2015). Head Start programs serve children, families, and pregnant women in all fifty states, the District of Columbia, and six territories. Of the 1,100,000 served by the Head Start program during the 2014-2015 program year, 44% were age four, while 36% were age three (Office of Head Start, 2015). Of these children 43% were white, 29% African American, 2% Asian, 9% Biracial, 4% American Indian/Alaska Native, and 13% were Unspecified Other.

Head Start History

Between 1965 and 1969 multiple evaluations of Head Start were conducted, several of which were independent and uncoordinated (Love, et al., 2007). In 1968 the Educational Testing Services (ETS) Longitudinal Study began. The ETS study followed 1,650 three and a half year olds through grade three. The findings from this study were inconclusive as to the Head Start programs effectiveness (Love, et al., 2007).

The Head Start program faced changes with reauthorization under President George W. Bush in 2007 (Samuels, 2014). With the Head Start reauthorization, grantees of the program are required to demonstrate that they are comprehensive and high quality every five years. This requirement implemented a renewal system with a set of seven conditions that each program must meet in order to be considered high quality. These seven conditions include: annual budget, fiscal management data, annual audits and classroom quality; failure to establish school readiness goals; failure to meet minimum thresholds on CLASS: Pre-K domains; revocation of a license to operate a center or program; suspension from the program; debarment from receiving Federal or State funds or disqualified from the Child and Adult Care Food program; or, one or more material weaknesses or at risk for failing to function as a going concern (Department of Health and Human Services, 2011).

The Head Start curricula documents for implementing quality child development and educational programs are based on universal principles of child development (Lipina & Colombo, 2009). Head Start standards require that the curriculum include goals for child development and learning and experiences through which to achieve these goals. The roles of the staff and parents are defined to help achieve goals as well as materials needed to support the implementation of the curriculum (Lipina & Colombo, 2009). For every identified goal, developmentally appropriate experiences are selected from the curriculum, planned, and

presented to the children. Changes are made to keep the curriculum responsive and supportive of children as they grow and learn (Lipina & Colombo, 2009).

Head Start programs offer parents training to support school readiness and positive learning experiences (Office of Head Start, 2014). Parents are provided with information on healthy child development, and connected to resources to address causes of family stress (Office of Head Start, 2014). According to Early Childhood Office (2013) parents participate in parent and child activities in the classroom once a month and at least once quarterly on a weekend in the community. Parents attend workshops and trainings about family health, nutrition, early childhood assessments, financial planning, child development, mental health consultations, home ownership and family literacy (Early Childhood Office, 2013).

Head Start Outcome Studies

In a recent study Hindman, Skibbe, Miller, and Zimmerman (2010), followed 945 children from Head Start through kindergarten and into first grade. The study focused on mathematics, literacy skill growth over time. Two subtests from the Woodcock-Johnson Psychoeducational Battery-Revised (Applied Problems and Dictation) were used to assess mathematics and literacy skills in the fall and spring of Head Start, the spring of kindergarten, and the spring of first grade. In literacy skills a statistically significant gain of 44.28 points occurred over the kindergarten year, and another 44.28 points through the end of first grade. In mathematics a statistically significant gain of 13.97 points occurred during the Head Start year. Growth continued at a rate of 27.94 points over kindergarten and then slowed through first grade. Results of the study found that even though Head Start students began well below national averages on all assessments, their scores grew substantially closer to the national mean by the end of first grade.

In 2010 Westat, Inc. conducted a study to examine two cohorts of children, newly entering three and four year olds to the Head Start program (Puma, Bell, Cook, Heid, Shapiro, Broene, Jenkins, Fletcher, Quinn, Friedman, Ciarico, Rohacek, Adams, & Spier, 2010). The purpose of the study was to determine if the impact of the program differed with the age of entry to Head Start (Puma, et al., 2010). Newly entering three and four year old Head Start applicants were randomly assigned to either a Head Start group or a control group that attended another preschool program chosen by parents (Puma, et al., 2010). The study found statistically significant differences between the Head Start and control group on every measure examined.

For the four year old Head Start group, positive benefits were found in the areas of vocabulary, letter-word identification, spelling, pre-academic skills, color identification, letter naming, parent reported emergent literacy, and dental care (Puma, et al., 2010). Within the three year old Head Start group positive benefits were found in the areas of vocabulary, letter-word identification, pre-academic skills, letter naming, elision, parent reported emergent literacy, perceptual motor skills, applied problems, hyperactive behavior, withdrawn behavior, dental care, health status, parent reading to child, and family cultural enrichment activities (Puma, et al., 2010).

Students included in this study were followed through the end of 1st grade. At the end of 1st grade there were few significant differences between the Head Start groups and the control group (Puma, et al., 2010). There was a favorable impact for the four year old Head Start cohort on the receipt of health care as a result of participating in the program. There was evidence that the three year old cohort had closer and more positive relationships with their parents. These benefits are related to improvements in behavior and may lead to long term benefits for children (Puma, et al., 2010). Providing access to Head Start has benefits for both three and four year

olds in the cognitive, health, and parenting domains, and for three year olds in the social-emotional domain (Puma, et al., 2010).

Long Term Benefits of Preschool Academic Environments

Children's experiences in home, childcare, and preschool settings impact development because of the large amount of time children spend in these settings (Auger, et al., 2014). Melhuish, Phan, Sylva, Sammons, Siraj-Blatchford and Taggart (2008) conducted a longitudinal study which investigated the influence of home and preschool environments on literacy and numeracy achievement at kindergarten and at the end of the 3rd year of school. The researchers were interested in determining which activities promote development of specific skills, and motivation for learning (Melhuish, et al., 2008). The longitudinal study conducted by Melhuish, et al., (2008), included 141 preschool centers chosen randomly. The study assessed children in reading and mathematics, and included parent interviews, usually with the mother. The interviewers examined the child's frequency in engaging in 14 activities: playing with friends at home, playing with friends elsewhere, visiting relatives/friends, shopping with parent, watching TV, eating meals with family, going to the library, playing with letters/numbers, painting or drawing, being read to, learning activities with the alphabet/numbers/shapes and songs/poems/nursery rhymes, and having a regular bedtime (Melhuish, et al., 2008).

For five year old children, the study found that for both literacy and numeracy specific preschool experiences matter (Melhuish et al, 2008). Results indicated that of the fourteen activities examined, being read to, going to the library, playing with numbers/painting/drawing, & being taught letters/numbers/songs/poems/rhymes had significant positive effects on literacy and numeracy skills (Melhuish et al., 2008).

Attending preschool programs may benefit low-income children's social development by compensating for some of the negative behavior effects of their home environment (Keys, Farkas, Burchinal, Duncan, Vandell, Weilin, Ruzek, & Howes, 2013). Stress from negative home environments can produce measurable changes in brain structure, which can lead to an increased risk for physical and mental health problems, and deficits in cognitive development and achievement (Duncan, Kalil, & Ziol-Guest, 2013; Stanton-Chapman, Chapman, Kaiser, & Hancock, 2004). Children may experience instability, a lack of continuity of care, and often inadequate nutrition and medical care. Poverty increases the risk of inattentive or erratic parental care, and removal from the home and placement in foster care due to abuse or neglect. These risk factors impact the developmental and academic achievement of children (Duncan, et al., 2013).

The environment in which a child is raised is crucial in determining developmental outcomes. Stanton-Chapman, et al. (2004) identified three psychosocial stressors (violence, family turmoil, child-family separation), and three physical stressors (crowding, noise, low housing quality) as risk factors that lead to negative outcomes for children in low income families. These factors give low income children a heightened risk for cognitive, behavioral, or social dysfunction. The stress of living in poverty can also cause depression and psychological distress in children that negatively impacts academic achievement (Roy & Raver, 2014). "Economic deprivation in early childhood creates disparities in school readiness and early academic success that widen over the course of childhood," (Duncan, et al., 2013, p.29). Therefore, it is important to examine time whether time away from home, in high quality learning environments, can offset the effects of poverty on academic success.

Full-Day vs. Half-Day

In a recent study Reynolds, Richardson, Hayakawa, Lease, Warner-Richter, Englund, Ou, and Sullivan (2014) evaluated whether full-day preschool was associated with higher levels of school readiness, attendance, and parental involvement compared to half-day programs. Researchers followed a group of 982 three and four year olds from eleven schools (Reynolds, et al, 2014). These schools were within five school districts serving predominantly low-income families in Illinois and Minnesota. The schools implemented a school-based public program known as the Child-Parent Center Education Program (CPC). This program has been used in Chicago Public Schools since 1967, and offers comprehensive education and family services beginning in preschool (Reynolds, et al., 2014). The program includes six major components: collaborative leadership team led by a head teacher, family coordinators, effective learning experiences like small class sizes, certified teachers, parent involvement and engagement, aligned curriculum across grades, continuity and stability, and professional development including teacher coaching and site support (Reynolds, et al., 2014).

Students were assessed on seven indicators of school readiness at the end of preschool using the Teaching Strategies GOLD Assessment System (Reynolds, et al., 2014). The Teaching Strategies Assessment is performance-based and designed for children from birth through kindergarten, and includes 66 items that measure mastery on 38 objectives in 9 domains of development (Reynolds, et al., 2014). Full-day preschool students scored significantly higher than their half-day peers in the areas of language, math, socioemotional development, and physical health. Full–day students also had significantly higher rates of mastery on the total readiness metric, with 80.9% at or above the national average on 4 subscales compared to 58.7% for half-day students (Reynolds, et al., 2014). These positive results suggest that increasing

access to full-day programs is something early childhood programs should consider (Reynolds, et al., 2014).

The debate over the benefits of full-day or half-day placements in education has been extensively studied with kindergarten programs. During the 1960's and 1970's many states implemented publicly funded kindergarten programs for the first time (Elicker & Mathur, 1997). Most of these programs were half-day programs, typically two and a half to three hours. During the 1990's full-day kindergarten programs began to grow in number. By 1993 approximately 45% of kindergarten programs were full day (Elicker & Mathur, 1997). The increase in full-day programs came about for many reasons (Elicker & Mathur, 1997). One of these is the possible scheduling conflicts inherent in half-day programs for parents who work full time. Another reason for the increase in full-day programs is the escalation of kindergarten curriculum expectations. According to Kentucky Revised Statutes, KRS 159.030, children in Kentucky are not required to attend kindergarten, parents and guardians are not required to enroll children in school until age six. Kentucky is one of 34 states that require school districts to offer half-day kindergarten (State Education Reforms, 2014). The state funds all kindergarten programs as half-day programs.

Elicker and Mathur conducted a study of twelve kindergarten classrooms (4 full-day and 8 half-day) to determine how children's full and half-day programming affects children's kindergarten academic outcomes. The study followed 179 children over a two-year period. At the end of each school year report cards were analyzed. Researchers also introduced a developmental report card to document progress throughout the year. The developmental report card analyzed literacy, reading, math, general learning, physical development, and social skills. Study results indicated that children in full-day kindergarten demonstrated greater academic

gains. Researchers posited that access to a full-day program allowed time for ongoing individual evaluation of student progress and program planning (Elicker & Mathur, 1997).

The implementation of lengthened school days can serve to reduce initial achievement gaps between advantaged and disadvantaged groups (Zvoch, Reynolds, & Parker, 2008). By attending full-day programs, children will be better prepared for the academic rigor of elementary school curriculum, while easing childcare issues for families (Elicker & Mathur, 1997). Extended instructional time allows children to thoroughly engage in varied learning activities that facilitate social and behavioral skills as well as academic competency (Zvoch, et al., 2008). Full-day kindergarten students are more likely than half-day students to spend more time in teacher-directed and child-initiated activities. Full-day students are also more likely to receive daily instruction in math, science, and social studies. Full-day kindergarten students achieve greater academic gains than half-day peers. Full-day students are more likely to have better attendance, experience less grade retention, and have greater social adjustment (Zvoch, et al., 2008). Evidence suggests that young children learn more in full-day programs over half-day schedules (Hindman, et al., 2010).

Closing the achievement gap for children who enter school at a disadvantage has become a national priority (Cooper, Allen, Patall, & Dent, 2010). Increasing the time children spend in high quality school environments may help close this gap. Cooper, et al. (2010) conducted a meta-analysis of studies that compared full-day to half-day kindergarten programs. The analysis included forty reports that compared full-day to half-day students on some measure of academic achievement. Results indicated that at the end of the kindergarten year, children who attended full-day programs perform better on test of academic achievement than their half-day peers.

Full-day kindergarten students score one fifth to one third of a standard deviation higher on academic achievement tests than half-day kindergarten students (Cooper, et al., 2010).

Full-day kindergarten contributes to increased school readiness, higher grades and standardized test scores, and supports language development. Full-day programs can also lessen the need for grade retention, remedial education, and foster independent learning. In full-day classrooms, less time is spent on transitions and more time is spent on individualized instruction and needed repetition (Cooper, et al., 2010). Full-day programs improve school attendance, and lower childcare costs, and ease scheduling and transportation concerns for parents and families. By attending full-day programs, children are provided more opportunities to interact with other children which helps them to be more cooperative and interact appropriately with others (Cooper, et al., 2010).

In an effort to determine whether children who attended full-day kindergarten programs learn more than half-day peers, Lee, Burkam, Ready, Honigman, and Meisels (2006), conducted a study using data from 504 public schools. Researchers used ECLS-K data from the Early Childhood Longitudinal Study sponsored by the National Center for Educational Statistics, which assesses literacy and mathematics skills. Study results found that students enrolled in full-day kindergarten had an advantage in cognitive learning of .93 standard deviations in literacy and .75 standard deviations in mathematics. A longer school day provides educational support that ensures a productive beginning school experience (Lee, et al., 2006). Attending school for a longer day increases the future school success, especially for children in poverty circumstances. Full-day program allow for many benefits for students and families: teachers have more opportunity to assess educational needs and individualize instruction, there is increased small group instruction, broadened learning experiences, in-depth explorations of curriculum,

improved parent-teacher relationships, and measurable benefits for working parents (Lee, et al., 2006).

Full and Half-Day Preschool Outcomes

The National Institute of Early Education Research conducted a study using a randomized trial in which four year olds from a low-income urban district were randomly assigned to preschool programs of different durations (Robin, Frede, & Barnett, 2006). The programs each had teachers with college degrees, a low ration of student to teacher, and used the same curriculum. In this study, 85 students were assigned to an 8 hour program for 45 weeks, 254 students were assigned to a 2.5 to 3 hour program for 41 weeks. The purpose of this study was to determine the effect of additional hours of preschool on student learning in literacy and mathematics at the end of the school year. The study followed participants through first grade. The study found that even students who were far behind at entry to preschool can develop vocabulary, math, and literacy skills that approach national norms with extended preschool (Robin, et al., 2006). In the spring of kindergarten assessment, students enrolled in the extended program had improved 11 to 12 standard points on vocabulary and math skills. In comparison students in the half day program improved 6 to 7 standard score points on vocabulary and math. Students in the extended program continued to outperform students in the control group in follow-up testing in the spring of first grade (Robin, et al., 2006).

Lee, et al. (2014) conducted a study that followed a group of children longitudinally from birth through kindergarten. They conducted parent interviews and direct child assessments at 9 months, and ages 2, 4, and 5. The study was interested in learning how children who attended Head Start compared in academic skills to those in preschool, center-based care, or parental care.

Results of the study indicated that full-day Head Start children had better academic skills (Lee, et al., 2014). Full-day Head Start children scored significantly higher in early reading than children in parental care alone. Study results also indicated that half-day Head Start children scored significantly lower in early reading in comparison to preschool children.

Full and Half-Day Head Start Outcomes

Lee (2011) conducted a study to examine the effects of the duration of Head Start enrollment on children's academic outcomes. The study was focused on determining whether children's academic scores differed among groups of children who entered Head Start at different ages (Lee, 2011). The study include 446 children who entered Head Start at age 3 and enrolled for one year, 498 children who entered at age 4 for one year, and 316 children who enrolled at age 3 and stayed for two years. Academic outcome measures in literacy, math, and science were collected using the Head Start and Early Childhood Program Observational Checklist (Lee, 2011). Results of the study indicated that children who enrolled at age 3 and stayed for two years had higher literacy, math, and science scores than children who enrolled for one year. Children who enrolled in Head Start for longer durations benefit from the program directly (Lee, 2011). Children who enter at an early age and stay longer receive greater benefits from the program directly (Lee, 2011).

In a recent study, Friedman-Krauss, Connors, and Morris (2014) evaluated the effect of length of time in Head Start programs on student performance. Researchers used data taken from the 2010 Head Start Impact Study (Puma, et al., 2010). From this data Friedman-Krauss, et al., (2014) analyzed student scores from the Peabody Picture Vocabulary Test (PPVT), and the Woodcock-Johnson Letter-Word Identification and Applied Problems subtests. The PPVT

measures children's receptive vocabulary. The Woodcock-Johnson Letter-Word Identification measures the ability to name letters and words. The Applied Problems subtest measures ability to analyze and solve math problems (Friedman-Krauss, et al., 2014). Classrooms included in the study were assessed for quality using the Early Childhood Environment Rating Scale (ECERS-R) and the Arnett Caregiver Interaction Scale (CIS). Researchers found that weekly hours in Head Start and the quality of the program were important, especially for math skills (Friedman-Krauss, et al., 2014). By translating hourly effects in high quality programs into full-day estimates researchers found moderate effect sizes (ranging from 0.29 to 0.44) on math and language outcomes. Children enrolled in high quality, full day programs performed 0.32 standard deviations higher in math compared to children in low quality, full-day programs (Friedman-Krauss, et al., 2014).

Conceptual Framework

According to Darragh (2010), Vygotsky believed that supporting children's learning and development was a socially mediated process. Through social interactions children gather schema which they use in future learning (Fisher, Frey, & Lapp, 2009). Through these interactions children learn societal expectations and gather knowledge from adults and other more experienced peers (Darragh, 2010).

Vygotsky is best known for his learning theory, the Zone of Proximal Development, or ZPD. According to Vygotsky there are two learning levels that form the boundaries of the ZPD. The lower level is the child's independent performance, or the knowledge and skills that the child can do alone (Fisher, et al., 2009). The higher level is the maximum the child can reach with help, or assisted performance. The assisted performance level is similar to that of an expert

and novice interaction, as one person has more knowledge than the other. These interactions extend to all socially shared activities (Bodrova & Leong, 2007). The learning in between these two levels is the ZPD. The skills and behaviors within this zone are constantly changing and are different for every child (Fisher, et al., 2009). Learning in the ZPD requires attention to the child's current level of mastery and support for attaining skills and knowledge beyond their present level (Darragh, 2010). The ZPD is not limitless; a child cannot always be taught any given thing at any given time. Children cannot be taught skills or behaviors that exceed their ZPD.

Two processes that contribute to development in the ZPD are scaffolding and reciprocal teaching. Scaffolding requires careful attention to the child's present level of knowledge and designing clear, attainable, relevant goals (Darragh, 2010). As the child learns more assistance is given, as mastery occurs mastery is decreased to ensure challenge. With scaffolding the level of assistance decreases as the learner takes more responsibility for the performance of the task (Bodrova & Leong, 2007). With scaffolding the task is not made easier, but the amount of assistance is varied. The support provided is temporary, and are removed gradually leading to independence.

Reciprocal teaching is two-way dialogue between a child and teacher or more experienced peer. Children are encouraged to engage in meaningful discourse that supports depth of knowledge (Darragh, 2010). In younger children this dialogue often occurs as imitation. In learning to speak, imitation is indispensable (Vygotsky & Kozulin, 1986). As parents and teachers we scaffold learning for children as they are learning to speak. We intuitively add more information and use more complex grammar, thus helping the child move beyond baby talk (Bodrova & Leong, 2007). Dialogic reading is one technique parents and

teachers are able to use to scaffold student vocabulary. Dialogic reading encourages the child to become the storyteller while the adult plays the role of active listener, providing assistance as needed (Pillinger & Wood, 2014). Through dialogic reading, children are encouraged to 'tell' the story rather than read the words on the page. While the child is telling the story, adults help to expand and respond to the child's verbalizations (Pillinger & Wood, 2014). Dialogic reading is an evidence-based intervention based on three principles: encouraging the child to actively participate, informative feedback, and progressive change to meet the child's developing skills over time (Pillinger & Wood, 2014). Dialogic reading positively impacts a wide range of important language and literacy skills, while also increasing children's interest and enjoyment of reading (Pillinger & Wood, 2014).

According to Bodrova and Leong (2007), there are two aspects that make up school readiness: the social situation itself, comprised of cultural practices and student expectations and the child's awareness of the expectations of a student. In order to gain awareness of these expectations a child has to actually participate in school activities and engage in interactions with teachers and other students. In regards to school readiness, Vygotsky believed that it was formed during the first months of elementary school through actual interactions in that environment and not prior to school entry (Bodrova & Leong, 2007). Vygotsky also believed certain accomplishments in the preschool years make it easier for children to develop school readiness: mastery of some mental tools, development of self-regulation, and the integration of emotions and cognition (Bodrova & Leong, 2007). The social and emotional achievements of early childhood are important for later school success. Children must have the motivation to learn formally, motivation to learn requires curiosity that is only possible if a child can think about

emotions (Bodrova & Leong, 2007). Early education emphasizes the underlying skills that facilitate later academic success.

Bronfenbrenner Ecological Systems Theory

The Ecological Systems Theory, or EST, of Bronfenbrenner utilizes two core concepts at the core of human development: proximal processes and life course perspective. Proximal processes are all forms of reciprocal interactions in the immediate environment which are progressively more complex (Wong, 2001). Bronfenbrenner highlighted the importance of a stable environment, in which interactions could occur on a regular basis over an extended period of time (Wong, 2001). Life course perspective refers to time and timing of these interactions. Bronfenbrenner's EST consists of a series of systems which become increasingly complex as more interactions are introduced to an individual. These systems include: microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Gauvain & Cole, 2004). According to Wong (2001), Urie Bronfenbrenner admitted that the core concept of his microsystem, reciprocal activity, was originally borrowed from Vygotsky. The proximal processes of Bronfenbrenner are similar to Vygotsky's formulation of the essence of human development (Wong, 2001).

The lowest level of the EST nested hierarchy is the microsystem. The microsystem is a pattern of activities, social roles and interpersonal relations experienced by the developing person in a face-to-face setting (Gauvain & Cole, 2004). The microsystem involves experiences of a developing person in their immediate environment, including family, school, and peer groups (Gauvain & Cole, 2004). The microsystem is nested in the mesosystem and includes

social interactions between two of the developing person's settings (Neal & Neal, 2013). For children the microsystem includes their parents, siblings, teachers, and classmates.

The mesosystem can include meetings between a parent (family setting) and teacher (school setting). The next level in the EST hierarchy is the exosystem. The exosystem includes settings that influence the developing person while they do not directly participate in this setting. The exosystem can include education policy-making communities whose educational policies influence a child's classroom and school experiences (Neal & Neal, 2013).

The macrosystem includes broad cultural influences that have long range consequences for the developing person (Neal & Neal, 2013). The macrosystem can include changes in societal views like the emphasis on teacher accountability and standardized test scores (Neal & Neal, 2013).

The chronosystem extends the environment to reflect change or consistency over time of the environment in which the developing person lives (Gauvain & Cole, 2004). The chronosystem includes influences that impact each of the other systems like moving from middle to high school, changes in family structure, or socioeconomic status (Neal & Neal, 2013). According to Auger, et al., (2014), the impact of a system impacts a child's development. High quality environments are necessary for children to reach their full developmental potential. Children's experiences in settings, or microsystems, such as home, child care, and early childhood programs have strong effects on development because of their proximity and the amount of time children spend in them (Auger, et al., 2014).

Brigance© Development

The Brigance© Screens items were originally taken from the *Inventory of Early Development* (IED), a much broader cognitive screening assessment published in 1978 (French, 2013). Items from the IED were selected for use on the Brigance© and rated by a large group of teachers, diagnosticians, and curriculum supervisors across the United States. The items were rated based on their degree of correspondence between the item and curriculum objectives. Those items that were chosen by ninety percent of the professionals remained as a part of the Brigance©. The Screens were field-tested and these results were used to finalize item selection. The Brigance© screens were updated in 1995, 2001, and 2005 (French, 2013).

In 2010 significant research, pilot testing, and item development began in order to publish the Brigance© Screens III (French, 2013). To develop the assessments used in the IED III, and subsequently the Screens III, a group of two development-behavioral pediatricians, a speech-language pathologist, two developmental psychologists, a developmental disabilities specialist, an early childhood curriculum specialist, and special educator was convened. These experts reviewed assessments and conducted pilot work to ensure that items were predictive of important aspects of development, and that directions were clear and replicable (French 2013). A survey consisting of current IED II and Screens II users was conducted to gather feedback on the assessment forms, content, and usability.

Development included gathering a panel representing a wide range of demographics for a bias and sensitivity review. The reviewers analyzed the key assessment items for content that could provide an advantage to certain groups or alienate certain cultures. According to French (2013), a pilot study of 265 children, representing an equal distribution across ages three to seven years old, was conducted. Brigance© Screens III development included an empirical differential

item functioning analysis to identify content that could be problematic for certain groups, no significant problems were identified.

From February 2011 to February 2012, testing was conducted and data was gathered as part of the standardization and norming process. Test sites included public and private schools, childcare and preschool programs, university research centers, after-school and summer enrichment programs that support learning (both public and private), birth centers, healthcare agencies, and Head Start and Early Head Start programs (French, 2013). At each of the 107 sites across 33 states, examiners obtained informed consent from parents and asked them to complete a questionnaire that provided demographic information.

Brigance© Norms

The Brigance© Screens III assessments yield a total score and three subdomain scores. The total score is a sum of the scores from the academic/cognitive, language, and physical development subdomains which are weighted, and have a maximum total of 100 (French, 2013). These weights were determined to reflect theoretical importance of each skill within a child's total development. The weight description of these subdomains is described in greater detail in chapter 3 (see Figure 1). Summing raw scores, or number correct, creates the three subdomain scores on the assessments within each subdomain. The four scores (three subdomain scores and total score) when summed can be converted to a normative score, including composite scores, percentile ranks, and age equivalents. Summing selected assessments (academic/cognitive, language, and physical development subdomains) and converting to a mean of 100 and a standard deviation of 100 created composite scores (see appendix E). The score distributions for each age-specific screen were used to generated normalized scores (French, 2013). Age

equivalent scores were produced from raw scores by plotting the relationship between age and score. The Brigance© is nationally normed for children from birth to age 7.

Brigance© Reliability and Validity

Scores, including the Total score and subdomain scores, from the 2012 study were used to estimate Cronbach's Alpha coefficients (French, 2013). The higher the value of the coefficient, the more consistent the scores. Across all age levels of the Screens III the range of estimates for the subdomain scores is 0.61 to 0.96. According to French (2013), evaluation of the data within subdomains revealed that reliability is lower due to a lack of variability. At certain ages most children mastered all or most of the items within a subdomain. The age group reliability estimate totals are as follows: Infant = .98, Toddler = .95, Two Year old = .94, Three Year old = .96, Four Year old = .97, Five Year old/Kindergarten = .96, First Grade = .97. Across the Total scores the range of estimates is 0.94 to 0.99, which exceeds reliability estimates standards. The subdomain score average reliability estimates are as follows: Physical Development = .80, Language Development = .90, Academic Skills/Cognitive Development = .92, Total score = .96.

According to French (2013), a confirmatory factor analysis was conducted to support the proposed test structure and the Screens III subdomain structure was supported by the analysis. It was determined that the structure of the subdomains fits well across all age levels.

Brigance© and Kindergarten Readiness

Being school ready means that a child has the skills and abilities (e.g., knowledge, attitudes, and behaviors) that will allow them to benefit from kindergarten instruction (Anatasi & Urbina, 2008). Quality readiness screenings are needed to support the school readiness

movement (French, 2013). By accurately screening behavioral, language, and academic skills children who may need further support to become school ready are also identified.

The subdomains measured by the Brigance© Screens III are "consistent with theoretical perspectives of early childhood development as important indicators of a child's growth and development (French, 2013, p. 56)." The subdomains assess skills that support school readiness and future achievement. The physical development subdomain includes gross motor and fine motor skills. The gross motor tasks include standing, walking, and hopping (French, 2013). Fine motor skills involve using the small muscles of hands and fingers, like building with blocks and writing. The fine motor tasks include building a tower with blocks, and printing personal information (French, 2013).

The language development subdomain contains receptive and expressive language skills. Receptive language skills show comprehension of spoken language, for example, following multistep directions (French, 2013). The receptive language assessments include early nonverbal communication skills; understanding verbal concepts; and the ability to follow two- or three-step directions. Expressive language is the ability to produce speech, express ideas and feelings, and communicate a message (French, 2013). The expressive language assessments include early verbal skills; verbal fluency; and the ability to use language in context.

The acdemic skills/cognitive development subdomain includes literacy and mathematics skills. This subdomain measures a child's ability to problem solve using intuition, perception, and verbal and nonverbal reasoning (French, 2013). The literacy assessments include experience with books; visual discrimination; and phonological awareness (French, 2013). The mathematics assessment skills include matching quantities with numerals; sorting object by size, color, and shape; and adding and subtracting numbers (French, 2013). A sample of Brigance© questions

can be found in Appendices A – C. The Reading Readiness Scale provided by this subdomain creates a standardized measure of skills and behaviors related to the child's emergent literacy.

According to Daily, Burkhauser, and Halle (2010), the average cognitive scores of affluent children are 60% higher than other children prior to entering kindergarten. Children growing up in low SES environments evidence lower performance levels on a broad range of cognitive measures and school readiness (Lipina & Colombo, 2009). As educational expectations are raised, problems with basic skills become more apparent. The varying experiences of children lead to marked differences in skills and knowledge that is measured upon kindergarten entry. These discrepancies are strongly related to subsequent school performance as indexed by standardized measures of academic achievement and disproportionate rates of grade retention and special education placement (Ramey & Ramey, 2004).

Cognitive, Language, and Physical Development and Academic Outcomes

Hall, et al., (2009) examined how high quality preschool programming could improve the cognitive development of children considered to be at-risk for school failure. The study measured cognitive skills at 36 and 58 months, specifically looking at 22 risk factors to these skills and the quality of the program they attended (Hall, et al., 2009). The study posited that if children were in high quality programs their cognitive abilities would improve despite being considered at-risk for cognitive delays. Study results indicated that for children who were considered to be at-risk for normal development, attending programs of high quality appeared to mitigate the impact of the risks (Hall, et al., 2009). According to Hall, et al., (2009) these results indicate that attending high quality programs can protect young children's cognitive development.

According to Justice, Bowles, Pence Turnbull, and Skibbe (2009), the presence of language difficulties during early childhood is one of the more documented risk factors associated with later academic underachievement. Language difficulties are often an early indicator of later risk for reading disability (Justice, et al., 2009). Children with difficulties in language are likely to struggle with reading and mathematics in the early school years (Hindman, et al., 2010). Language is instrumental in the development of cognition, it facilities the acquisition of all other mental tools (Bodrova & Leong, 2007). Children who have language difficulties in the primary grades are at a much greater risk for academic problems, particularly in reading (Justice, et al., 2009).

In a recent study Cameron, Brock, Murrah, Bell, Worzall, Grissmer, and Morrison (2012) evaluated whether fine motor skills could predict kindergarten achievement. Early childhood professionals and kindergarten teachers rate fine motor skills as a key aspect of kindergarten readiness (Cameron, et al., 2012). Fine motor tasks are a better predictor of reading achievement at kindergarten entry than gross motor tasks. Cameron, et al. (2012), assessed 213 children using the Early Screening Inventory-Revised to assess fine and gross motor skills. The Woodcock-Johnson III Tests of Achievement was used to assess kindergarten readiness in the areas of general knowledge, mathematics, word-reading, reading comprehension, vocabulary, and phonological awareness (Cameron, et al., 2012). Results indicated that kindergarteners with higher fine motor scores achieved at higher levels. Students with strong fine motor skills demonstrated significantly stronger mathematics performance at kindergarten entry and made greater gains throughout the year (Cameron, et al., 2012). When children enter kindergarten with the ability to copy forms and write letters they can focus attention on more complex literacy

skills, like reading words and sentences. When children achieve automaticity with writing tasks, they use that cognitive capacity on other learning tasks (Cameron, et al., 2012).

Statistical Analysis

This study utilized a multivariate analysis of variance (MANOVA) to assess group differences on the Brigance© screener scores. A multivariate analysis of variance is used in a situation where there are multiple dependent variables (Tabachnick & Fidell, 2013, p. 245). This analysis is explained in greater detail in chapter 3.

Chapter 3:

Methodology

Research Questions

The research questions guiding this study were:

1. How does the daily program length of Head Start – full-day or half-day - impact Brigance© composite scores for previously enrolled children at the school level?
2. How does the daily program length of Head Start -full-day or half-day- impact Brigance© subdomain scores for previously enrolled children at the school level?

It was hypothesized that children who attended full-day Head Start programs will have significantly higher Brigance© readiness composite and/or subdomain scores than those who attended half-day Head Start programs.

Study Context

This study was conducted using Brigance© scores from students enrolled in kindergarten in the state of Kentucky in 2014-2015. The Brigance© screener used in Kentucky was adopted by the Kentucky Department of Education as a common kindergarten readiness screener (Rodriguez, 2012). The screener is administered to a child individually, taking between ten to fifteen minutes to complete.

This study involved analyzing data that are publicly available. The dataset has been de-identified and is impossible to link to personal identities (Office of Environmental Health and Safety, 2013).

The data was grouped to evaluate the impact of program length on student scores. These groups are based on whether students attended full-day Head Start or half-day Head Start. The scores between each of these groups will be examined to determine any differences in Brigance© kindergarten readiness scores.

Study Design

The study included a quantitative examination of school readiness scores as measured by the Brigance© Screens III, including composite scores and subdomain scores, for Kentucky kindergarten students who attended full-day or half-day Head Start. These scores were analyzed using a multivariate analysis of variance (MANOVA). This study utilized a secondary analysis of existing data. According to Cheng and Phillips (2014), an analysis of data collected for other purposes is considered a secondary analysis of existing data. The dataset used for this study was publicly available from the Kentucky Department of Education and published online.

Sample Selection

Brigance© scores from the 173 school districts in Kentucky during the 2014-2015 school year will be sorted based on which type of program they offer for students: full-day Head Start, or half-day Head Start. The available dataset does not specify scores based on full or half-day status of a program type. In order to determine which schools offered full and half-day program the director of Head Start at the Kentucky Department of Education, Jennifer Miller, was contacted by the researcher. The researcher was provided a list of all Head Start programs available in Kentucky sorted by full or half-day. This list was validated by contacting administrators in four school districts and twenty individual schools and verifying which type of Head Start program they offered. The list provided by the director of Head Start matched what

school administrators had stated were the program offerings in their school/district. Some schools offer both full and half-day Head Start programs, as a result, these schools were excluded (see Table 2). When the student enrollment for a program is less than ten students, the publicly available test data is redacted and unavailable for inclusion. The resulting available scores for schools that offer exclusively full-day or half-day Head Start programs with enrollment of 10 or more, were as follows: full-day Head Start (N = 121), half-day Head Start (N = 36).

Table 2: *Data Sample*

	# of School Districts	# of Elementary Schools	% Percentage
Total Number in Kentucky	173	685	100
Offer No Head Start	12	13	1.9
Offer both Half and Full-Day Head Start	32	148	21.60
Have Redacted Data	41	321	46.86
Have No School Level Data	9	46	6.72
Included in Study	79	157	22.92

Data Collection

According to Stewart and Kamins (1993), six questions must be answered when evaluating secondary data: What was the purpose of the study, Who collected the information, What information was actually collected, When was the information collected, How was the information obtained, How consistent is the information with other sources? These six questions were applied to the data set in an effort to evaluate reliability.

The purpose of the study. The purpose of the study was to evaluate whether the length of school day – full or half-day – in a Head Start program significantly impact kindergarten readiness for students in Kentucky.

The dataset. The dataset was gathered from the Online Management System (OMS). OMS was created as a system of reporting for Brigance© screening scores of incoming kindergarteners by teachers and administrators across the state of Kentucky. Each kindergartener was screened individually by teachers or administrators (Curriculum Associates, 2014). Evaluators complete a teacher feedback form for each student that is published in OMS (Appendix D). The researcher obtained the data set from the Kentucky Department of Education.

Information collection. The resulting scores from the Brigance© scores are inputted into an Online Management System, and then collected by the Kentucky Department of Education. This data is publicly available and used in this study.

Data consistency. The dataset was randomly checked in comparison to Brigance© screener score reports from individual school districts, no differences were found in the comparison. In a further effort to assess consistency, the researcher compared the data set to score reports provided by administrators from four school districts, and twenty individual schools. The data from these school districts and individual schools matched the dataset made available by the Kentucky Department of Education.

Key Variables

Independent Variable

The independent variable for this study was the type of program students are enrolled in: full-day Head Start, or half-day Head Start. Brigance© screener scores from individual Kentucky

schools in the 2014–2015 school year were sorted based on the type of program that they offered to students, either full-day or half-day Head Start.

Dependent Variables

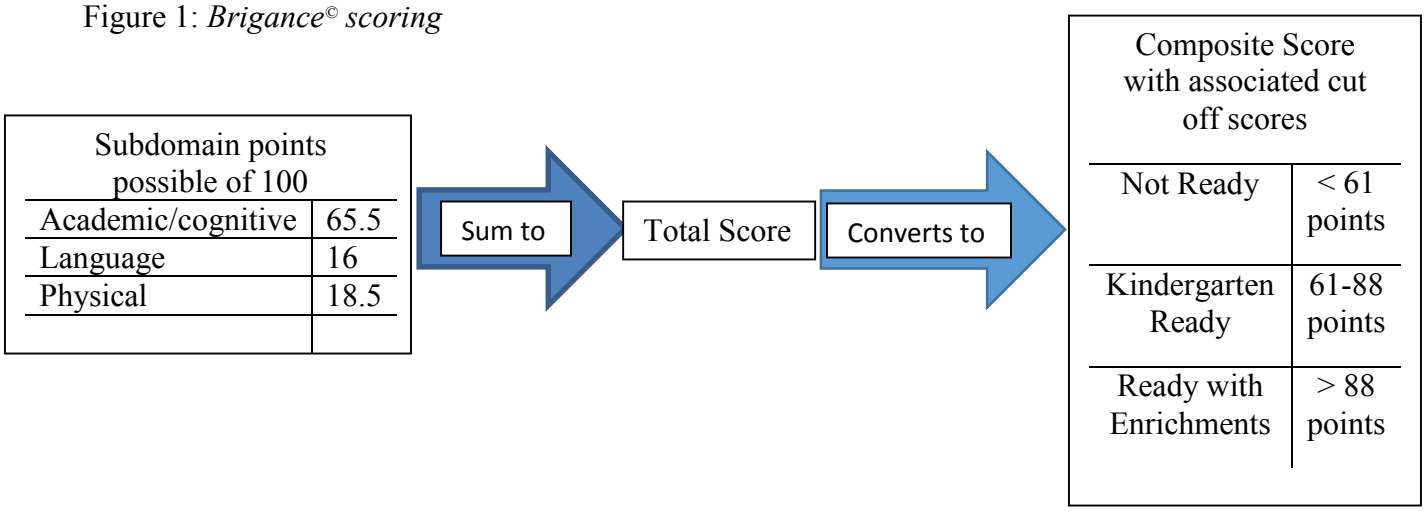
The dependent variables for this study were the Brigance© screener composite and subdomain scores: physical development, language development, and academic skills/cognitive development. Each assessment on the Brigance© has a weighted values and coefficients that give a possible 100 points. On the kindergarten screener, the point values are as follows: language development 16 points, physical development 18.5 points, and academic/cognitive skills, 65.5 points. These three subdomains combine to a total score with a maximum possible of 100 - then converted to the reported composite score.

The composite score is comprised of three categories: not ready, ready, or ready with enrichments. Students are placed into these categories based on their composite score points (see Figure 1). This composite score determines whether or not a student is labeled kindergarten ready. Kentucky composite score cut off scores are shown in Figure 1. These categorical identifiers are used to help parents and teachers better understand the skills of individual students. For the purposes of this study the focus will be on the numerical composite scores and not the categorical groupings.

The four dependent variables of this study were as follows:

1. Composite scores
2. Academic/cognitive development subdomain scores
3. Language development subdomain scores
4. Physical development subdomain scores

Figure 1: *Brigance© scoring*



The Brigance© screener was administered at each school to incoming kindergarten students no more than 15 calendar days prior to school starting and no later than the 30th instructional day of the school year (Kentucky Education, 2014). Teachers and administrators undergo a four hour training prior to administering the screening (Curriculum Associates, 2014). Teachers and administrators are also trained in how to enter scores using the Online Management System. Student results are sent to the Kentucky Department of Education for compilation and reporting.

Statistical Analysis

This study utilized a multivariate analysis of variance (MANOVA) to assess group differences on the Brigance© screener scores. A multivariate analysis of variance is used in a situation where there are multiple dependent variables (Tabachnick & Fidell, 2013, p. 245). A MANOVA compares the mean differences among groups. A MANOVA tests whether mean differences among groups on a combination of dependent variables are likely to have occurred by chance (Tabachnick & Fidell, 2013). This study utilized a one factor, two level MANOVA comparing full-day (N = 121 schools) vs. half-day (N = 36 schools) on the following dependent

variables: Brigance© Screens III composite score, academic/cognitive development subdomain score, language development subdomain score, and physical development subdomain score. The dependent variables represent the average score for a school in each of these areas on the Brigance© Screens III in the 2014-2015 school year.

In an effort to determine a priori design parameters, an analysis of required samples size was conducted using G*Power. According to Cohen (1988), for multivariate analyses small effect size $f^2 = .02$, medium effect size $f^2 = .15$, large effect size $f^2 = .35$. Results indicated that the design parameters of this study have adequate power to detect medium and large differences but not small differences. An a priori power analysis for a MANOVA with two groups and four dependent variables was conducted in G*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, and small effect size $f^2(V) = 0.02$ (Faul, Erdfelder, Buchner, & Lang, 2013). Based on these parameters the desired sample size is 602. This study has a total N of 157, therefore it does not have adequate power to detect small effect sizes. An a priori power analysis for a MANOVA with two groups and four dependent variables was conducted in G*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, and a medium effect size $f^2(V) = 0.15$ (Faul, et al., 2013). Based on the aforementioned parameters the desired sample size is 86. An a priori power analysis for a MANOVA with two groups and four dependent variables was conducted in G*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, and a large effect size $f^2(V) = 0.35$ (Faul, et al., 2013). Based on these parameters the desired sample size is 40.

Chapter 4:

Findings

Introduction

Research has shown that there are striking disparities in what children know and are able to do well before they enter kindergarten (Shonkoff, Phillips, & National Research Council, 2000). Head Start provides a comprehensive educational program for low-income children from birth to age 5 to address some of these disparities (Lee, 2011). The Head Start program is focused on school readiness, and helping the children they serve begin school at an equal standing with their higher-income peers (Lee, 2011). School readiness is critical for children, as their scores on early literacy tasks at kindergarten entry consistently predict academic performance throughout the first three years of formal schooling (Shonkoff, et al., 2000).

In the state of Kentucky, kindergarten readiness is measured by the Brigance© Screens III. The Brigance© was administered to incoming kindergarten students in Kentucky no more than 15 calendar days prior and no later than the 30th instructional day of the school year (Kentucky Education, 2014). Student scores are reported to the Kentucky Department of Education that provides publicly available reports through OMS on kindergarten readiness scores for each school district. These scores indicate whether students are ready with supports (or below average), ready (or average), or ready with enrichments (or advanced). School district data is reported in various subcategories, which include scores for students who attended Head Start within the district. The resulting available scores for students attending exclusively full-day or half-day Head Start programs with enrollment of 10 or more, were as follows: full-day Head Start (N = 121), half-day Head Start (N = 36).

The objective of this study was to discern whether the length of programming day in Head Start impacted Brigance© readiness composite or subdomain scores.

. The research questions guiding this study were as follows:

1. How does the daily program length of Head Start – full-day or half-day - impact Brigance© composite scores for previously enrolled children?
2. How does the daily program length of Head Start -full-day or half-day- impact Brigance© subdomain scores for previously enrolled children?

It was hypothesized that children who attended full-day Head Start programs would have significantly higher Brigance© readiness composite and/or subdomain scores than those who attended half-day Head Start programs.

Data Analysis

The research questions guiding this study were focused on the impact of Head Start program length on Brigance© composite and subdomain (academic/cognitive, language, and physical development) scores. A multivariate analysis of variance (MANOVA) was conducted to assess group differences on the Brigance© composite and subdomain scores. The MANOVA was an appropriate choice since the study included two independent and four dependent variables (composite and three subdomain scores) (Tabachnick & Fidell, 2013). An alpha level of .05 was used to determine significance. The multivariate partial eta squared statistic determined the practical significance, or effect size, of any differences.

Brigance© scores from the 173 school districts in Kentucky during the 2014-2015 school year were sorted based on the type of program they offered students: full-day Head Start, or half-

day Head Start. After excluding school districts that offer both program types, and districts with redacted data the available resulting scores were as follows: full-day Head Start (N=121), half-day Head Start (N- 36). In order to further evaluate the data a multivariate analysis of variance (MANOVA) was conducted. Table 3 shows the means and standard deviations for each group.

Table 3: *Means and Standard Deviations*

	Full-day Head Start (N = 121)	Half-day Head Start (N = 36)
Kindergarten Ready Composite Score		
Mean (M)	47.02	44.49
Standard Deviation (SD)	*16.00*	*16.12*
Academic/Cognitive Subdomain Score		
Mean (M)	32.15	30.58
Standard Deviation (SD)	*14.98*	*15.44*
Language Subdomain Score		
Mean (M)	74.18	68.87
Standard Deviation (SD)	*12.25*	*13.84*
Physical Development Subdomain Score		
Mean (M)	47.11	42.21
Standard Deviation (SD)	*17.83*	*20.24*

The resulting means for full-day Head Start students are higher than those of half-day Head Start students on the composite score and all subdomains. The standard deviations between full-day and half-day Head Start students vary greatly. These differences illustrate the skill disparities on the Brigance© tasks between these two groups. Full-day Head Start students scored higher than half-day Head Start students on each area of the Brigance©.

The Box's Test of Equality of Covariance Matrices was used to check the assumption of homogeneity of covariance across the groups using $p < .001$ as a criterion. Box's M (28.37) was

not significant, p (.188). This indicates that there are no significant differences between the covariance matrices. Therefore the assumption of homogeneity of covariances was not violated.

The Levene's Test of Equality of Error Variances was used to test the assumption that the variances of each variable are equal across the groups. Levene's test demonstrated the equality of variances assumption was met for each variable. Kindergarten readiness, F (1, 155) = .42, p = > .05. Academic, F (1, 155) = .005, p = >.05. Language, F (1, 155) = .87, p = > .05. Physical, F (1, 155) = 1.15, p = >.05. Self Help, F (1, 155) = .31, p = > .05. Social Emotional, F (1, 155) = 1.81, p = > .05.

Wilk's Λ was utilized in order to determine the proportion of the multivariate variance of the dependent variables associated with the group factor. Results indicated Wilk's Λ = .95, *F* (6, 150) = 1.31, p < .001, multivariate η^2 = .26. This significant *F* indicates that there are significant differences among the two groups. The multivariate η^2 = .26 indicates that approximately 26% of the multivariate variance of the dependent variables is associated with the group factor explained by full-day or half-day Head Start attendance.

The overall significance of the MANOVA was followed up with an investigation of the differences between full and half-day on the composite score and each of the subdomains (see Table 4).

Table 4: *MANOVA Table*

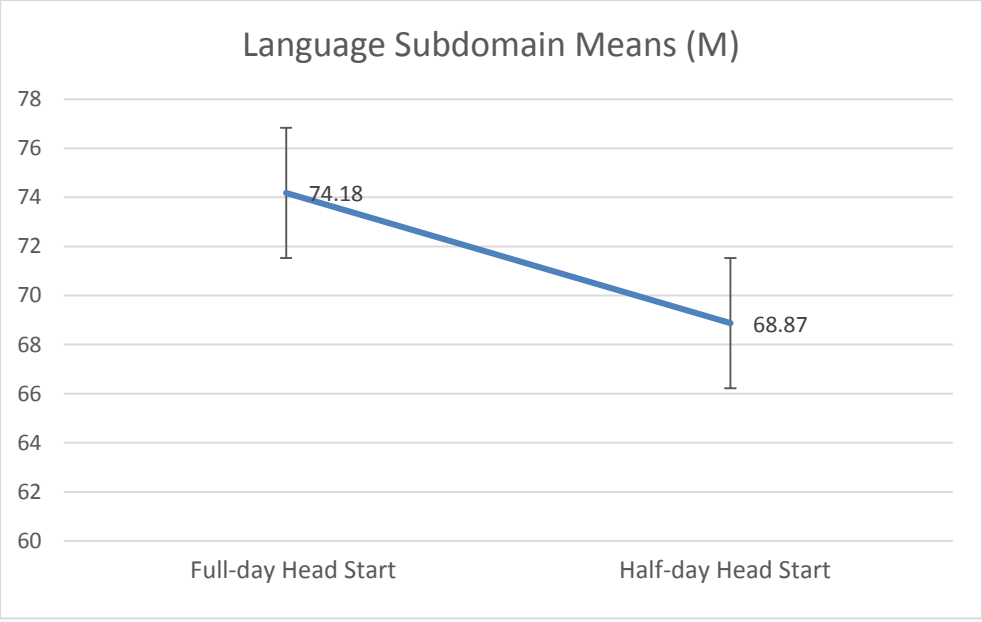
Dependent Variable	SS	*df*	*F*	η^2	*p*
K Ready (composite)	176.790	1	.688	.004	.408
Academic	67.965	1	.299	.002	.586
Language	782.743	1	4.908	.031	.028
Physical	663.799	1	1.959	.012	.164

Note. Significance computed using alpha = .05. Multivariate η^2 determined effect size > 0.02 = small, > 0.15 = medium, > 0.35 = large

Results indicated that there is no significant difference between full-day and half-day Head Start students on the overall composite score, F (1, 155) = .688, p = .408. There is no significant difference between the two groups on the academic/cognitive subdomain scores, F (1, 155) = .299, p = .586. On the physical development subdomain, there was no significant difference between the two groups, F (1, 155) = 1.959, p = .16.

There was a significant effect between the two groups and the Brigance© subdomain scores for language, *F* (1, 155) = 4.91, p = .028, η^2 = .03. These results indicate that the full-day Head Start students scored significantly higher on the language subdomain than half-day Head Start students (see graph 1).

Graph 1: *Language Subdomain Means*



A small effect size was indicated between the full-day and half-day Head Start students on the language subdomain ($\eta^2 = 0.03$). This small effect size shows that approximately 3% of the variability in language score is due to the program type. According to Cohen (1988), the guidelines for eta-squared effect size are: small = 0.02, medium = 0.15, large = 0.35. Post hoc analysis of achieved power was conducted using G*Power (Faul, et al., 2013). The sample size of 157 was used for the statistical power analysis. The alpha level of 0.05 was used for these analyses and the effect sizes were as follows: $f^2(V) = 0.15$ a medium effect size, and 0.35 large effect size (Cohen, 1988). The post hoc analyses revealed the statistical power for this study was 0.98 for a medium effect size, and 0.99 for a large effect size. Thus, the study has more than adequate power at the medium and large effect sizes.

Summary and Conclusion

The research study demonstrated that students enrolled in full-day Head Start scored higher on the Brigance© than students in half-day Head Start in means comparisons. Regarding the first research question for this study concerning the impact of Head Start program length on Brigance© composite scores, results indicated that there is no significant difference in program length. It is however, important to note that while the difference was not significant, there was a marked difference in means for these two groups. Students enrolled in full-day Head Start scored higher than half-day Head Start students on the each score included in this study, kindergarten ready composite score, academic/cognitive development, language development, and physical development. For the composite, academic/cognitive development, and physical development subdomain scores these higher means were found to be not statistically significant.

In regards to the second research question, concerned with the impact of Head Start program length on Brigance© subdomain scores, results indicated that there is no significant difference between the two groups on academic/cognitive or physical development subdomain scores. The study did find that students enrolled in full-day Head Start scored significantly higher than those students enrolled in half-day Head Start on the language subdomain. The analysis demonstrated a small effect size on the language development subdomain. Therefore, the null hypothesis was rejected for the language subdomain as statistical analyses indicated that there was a significant difference between the two groups on the language development subdomain.

Chapter 5:

Conclusion

Summary

Students with differing backgrounds enter school with significant disparities in skills (Shonkoff, et al., 2000). Early gaps in understandings of literacy and mathematics tend to be sustained, or even widened, over time for students who enter kindergarten at a disadvantage, especially those from low-income families (Linder, Ramey, & Zambak, 2013). The Head Start program is designed to serve low-income children, with the purpose of promoting school readiness. In Kentucky the Head Start program is available to young children who meet entry criteria. In an effort to determine school readiness skills, the Kentucky Department of Education mandated the use of a common readiness screen for incoming kindergarten students in the 2013-2014 school year (Kentucky Education, 2014). Kentucky defines school readiness as: each child enters school ready to engage in and benefit from early learning experiences that best promote the child's success (Governor's Task Force, 2012). The objective of this research study was to discern whether the length of programming day in Head Start impacted Brigance© readiness composite or subdomain scores. The research questions are:

1. How does the daily program length of Head Start – full-day or half-day - impact Brigance© composite scores for previously enrolled children at the school level?
2. How does the daily program length of Head Start -full-day or half-day- impact Brigance© subdomain scores for previously enrolled children at the school level?

It was hypothesized that children who attended full-day Head Start programs would have significantly higher Brigance© readiness composite and/or subdomain scores than those who attended half-day Head Start programs.

Student scores on the Brigance© Screens III, which is administered to incoming kindergarten students in Kentucky, were sorted into two groups for analysis: full-day Head Start (N = 121), and those who attended half-day Head Start (N = 36). The data analysis suggests that full-day Head Start students score higher than half-day Head Start students only on the language subdomain of the Brigance© ; this difference was found to be statistically significant. The language subdomain is worth 16 points of the overall 100 points that make up the total score of the Brigance©.

The effect size of this difference was .03, a small effect size (Cohen, 1988). According to Coe (2002), it is dangerous to use the term small effect size out of context. The effectiveness of an intervention can only be interpreted in relation of other interventions that seek the same effect (Coe, 2002). In education a small change that would raise academic achievement even as small as .01, could be a significant improvement, particularly when applied to all students cumulatively over time (Coe, 2002).

The statistical analysis of Brigance© scores revealed that there is indeed a significant difference in program types on kindergarten readiness scores within the language subdomain. A significant difference in the area of language is a critical finding. The language gaps for children from low-income families have a dramatic negative impact on their early learning. Students who enter kindergarten at a disadvantage and with gaps in understandings of literacy or mathematics tend to be sustained or widened over time; this is particularly true for children from low-income families (Pullen & Justice, 2003).

Study Limitations

Early childhood education programs provide developing children a brief, critical window of opportunity to develop sophisticated oral language skills (Pullen & Justice, 2003). Children acquire language proficiency through interactions with others, without this environmental input children will not develop language to any substantial degree. The quality and quantity of theses interactions serve as important sources of oral language models which allow children to produce their own sophisticated language productions (Pullen &Justice, 2003). The question remains as to whether full-day Head Start provides more time for language interactions or modeling, as opposed to half-day Head Start. Further research could better determine what students are doing in Head Start programs during full-day Head Start programs compared to half-day Head Start programs.

According to Heckman and Kautz (2013), poverty has lasting effects on brain development, and cognition. Children enrolled in Head Start programs come from families with incomes below the poverty line (Lee, Zhai, Brooks-Gunn, Han, & Waldfogel, 2014). Gaps in skills for children emerge early, before formal schooling begins (Heckman & Kautz, 2013). Waiting until kindergarten to address gaps is too late for children in poverty creating achievement gaps that are too costly to close (Heckman & Kautz, 2013). Hart and Risley (2003) found children living in poverty have gaps in their educational experiences prior to beginning school, especially in the area of vocabulary. In a 100 hour week they found that children are exposed to a variety of words based on their family's socio-economic status. An average child in a professional family is exposed to 215,000 words, while the average child in a working-class family is exposed to 125,000 words; the average child in a welfare family is only exposed to 62,000 words. Over a four-year period of time, this research indicated that the average child in a professional family would have had exposure to almost 45 million words, in a working-class

family 26 million words, and in a welfare family 13 million words. This shows that "by age 4, the average child in a welfare family might have 13 million fewer words of cumulative experience than the average child in a working-class family." (Hart & Risley, 2003, p.8). This massive gap in experiences impacts the language abilities of children who are living in poverty throughout their educational experience. The previous learning experiences, and learning gaps, of children enrolled in Head Start programs is an internal and uncontrolled threat to the validity of this study, as it is impossible to control what students know and experience prior to school entry.

Children acquire strong oral language skills through experiences with interacting with responsive, conversational adults who talk to them using rich vocabularies, grammatically complex and varied utterances (Hoff, 2013). These varied experiences support the scaffolded learning technique from Vygotsky's zone of proximal development (Darragh, 2010). The development of children is a highly complex process that is influenced by the interactions of the multiple nested context in which children are raised (Shonkoff, et al., 2000). Parents and other regular caregivers provide language opportunities that help children to develop rich language (Bond & Wasik, 2009). Children whose teachers provide more language advancing input progress more over the course of a school year than those with less supportive language models (Heckman, 2008).

The results of this study do not provide enough information to determine whether the statistically significant difference on the language subdomain was due to time spent in Head Start. In many Head Start classrooms the teachers have lived in the same neighborhoods as the students (Lipina & Colombo, 2009). It is impossible to determine whether the models of language students are exposed to in Head Start are richer than those they experience at home.

Further research is also necessary to determine the differences in time spent in language rich activities in full and half-day Head Start programs.

According to Krasnoff (2015), there is substantial evidence that suggests well-prepared, expert, and experienced teacher are among the most important determinants of student achievement. Teacher experience, academic background, preparation for teaching, and certification status matter for teacher effectiveness (Krasnoff, 2015). The evidence supporting teacher effectiveness impacting student achievement is so robust that the No Child Left Behind Act of 2002 required highly qualified teachers at all schools (Krasnoff, 2015).

This requirement for highly qualified instructors does not exist for the Head Start program. According to the Office of Head Start (2015), by 2013 at least 50% of Head Start teachers' nation-wide must have a baccalaureate or advanced degree in early childhood education. The Office of Head Start expects grantees to make progress in increasing the number of qualified teachers, but has no requirement for each grantee to assure that 50% of its teachers have degrees. It was not possible to control for teacher quality in this study.

One challenge of this study was sorting student scores into the two groups: full-day Head Start and half-day Head Start. Some of Kentucky's 173 school districts offer both types of programs, for example: both full-day and half-day Head Start. The scores are reported as a total score, therefore it is difficult to disaggregate the data based on program type. Additionally, a school district or school with less than ten students enrolled in the program has redacted scores and thus data on some subgroups were unavailable for inclusion in the analysis. In most school districts, data that identified gender, and ethnicity were also redacted. The availability of these scores could provide greater insight for future evaluation.

Student attendance was also unavailable for analysis in this study. Head Start programs report attendance to their funding source and not to the Kentucky Department of Education. School and district report cards do not include Head Start attendance. Without attendance reports, it is impossible to determine whether students attended programs every day or only a few days a month. Students with poor attendance would not have exposure to the full benefits that the Head Start program offers in either full or half-day programs.

Ensuring that each child has an equal opportunity to reach their potential requires making sure that every child is present, engaged, and accounted for as soon as they begin school (Chang & Romero, 2008). According to Ginsburg, Jordan, and Chang (2014), absenteeism in preschool and kindergarten can influence whether a child is retained in third grade. Absences in kindergarten have an immediate impact on academic performance for all children (Chang & Romero, 2008). Early intervention for absenteeism is especially important for closing the achievement gap for low-income children (Chang & Romero, 2008).

Another limitation of this study is the tool utilized: the Brigance© Screens III and its administration. The Brigance© is designed to be screening tool for skills that support school readiness and future achievement (French, 2013). Further research is necessary to determine whether the tasks assessed in the Brigance© assessments correlate with the curriculum of full or half-day Head Start programs.

In Kentucky, the Brigance© is administered by teachers and administrators with minimal training; only four hours are required (Kentucky Education, 2014). Whether this training that is somewhat new – only in existence since 2014 - is adequate for both understanding and use of the screening tool is still to be determined.

Conclusion

Nationally, policy makers are concerned with the financial burden inherent in quality early childhood education, and whether the burden is that of states or the federal government. Head Start is a federally funded early childhood program. Recently, President Barack Obama released the federal budget for the 2017 fiscal year. The Budget provides $9.6 billion for the Head Start program (Office of Management and Budget, 2016). The new budget includes a $434 million increase in funding. In 2016 the funding for Head Start included a $300 million investment towards increasing the number of children attending Head Start in full school day and full year programs (Office of Management and Budget, 2016). Funding for those expanded programs continues in the 2017 budget, and includes an addition $292 million to allow more programs to expand to full-day and full year schedules. According to the Office of Management and Budget (2016), full-day programs are more effective than programs of shorter duration, while also helping to meet the needs of working parents. These investments mean that more than half of all Head Start children will be provided a full school day (Office of Management and Budget, 2016). There is paucity of research supporting the assumption that full-day Head Start programs are better than half-day Head Start programs.

In 2014 Kentucky Head Start received $128, 035,469 in federal funding (Office of Head Start, 2015). During the 2013-2014 school year there were 15,960 children enrolled in either full-day or half-day Head Start (Office of Head Start, 2015). The overall cost per child in Kentucky was $8,022.27. Head Start is a very costly program and program characteristics, such as full and half-day offerings, staff training, and length of school year should be extensively studied before policy decisions are implemented. The curriculum and content of full vs. half-day

Head Start must be analyzed and compared in terms of the developmental domains assessed on instruments such as the Brigance© to determine kindergarten readiness.

The results of this study indicated that the only significant difference between full and half-day Head Start is the language development score on the Brigance©. The language subdomain is a very small part of the overall scoring of the Brigance© composite score, with only 16 points of 100. It is important to note that despite non-significant results, full-day Head Start students scored higher than half-day students on every area assessed by the Brigance© (composite, academic/cognitive, language, and physical development). As the President pushes to expand Head Start to full-day programs, it becomes necessary to question whether there is adequate research available to support that movement. As the results of this study show, more research is necessary to further evaluate the differences between full and half-day Head Start programs.

This research study focused on evaluating program type for the state of Kentucky. Following are some recommendations for further research:

1. Report daily attendance to stakeholders. Further research and communication with individual school districts and Head Start funding sources could provide student attendance records within program types. It is difficult to quantify full-day benefits when it is unknown what number or percentage of enrolled children actually attend each day. Without attendance information, it is impossible to know how many hours each child was involved in Head Start each year in either full or half-day programs. Chronic absenteeism negatively impacts academic performance.

2. Disaggregate dual program district scores. Within school districts that offer both program types it would be possible to determine the number of students enrolled in full-day vs. half-day programming and their corresponding Brigance© scores. With program types identified it would be possible to evaluate program types within individual school districts. School districts could evaluate Brigance© scores based on program type to determine differences in programs within the district.
3. Evaluate this data set further focusing on subgroups based on gender, ethnicity, and students identified as requiring special education. The percentage of students enrolled in Head Start programs cannot exceed 10% of the students in the class. This limitation does not mean that each Head Start program has a student population at that level. By disaggregating that data to identify outcomes for these subgroups, the impact of Head Start on subgroups could be analyzed.

The outcomes of this study of illustrate that the language subdomain on the Brigance©, a critical concern of early childhood development, is positively affected by full-day enrollment. The results of this study bring about important questions about the impact of full-day Head Start programs when compared to half-day programs, as full-day students score higher on each area assessed by the Brigance©. There is still a need for further research to evaluate the impact of Head Start program length on kindergarten readiness.

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Appendices

Appendix A. Brigance© Sample Questions: Counts by Rote

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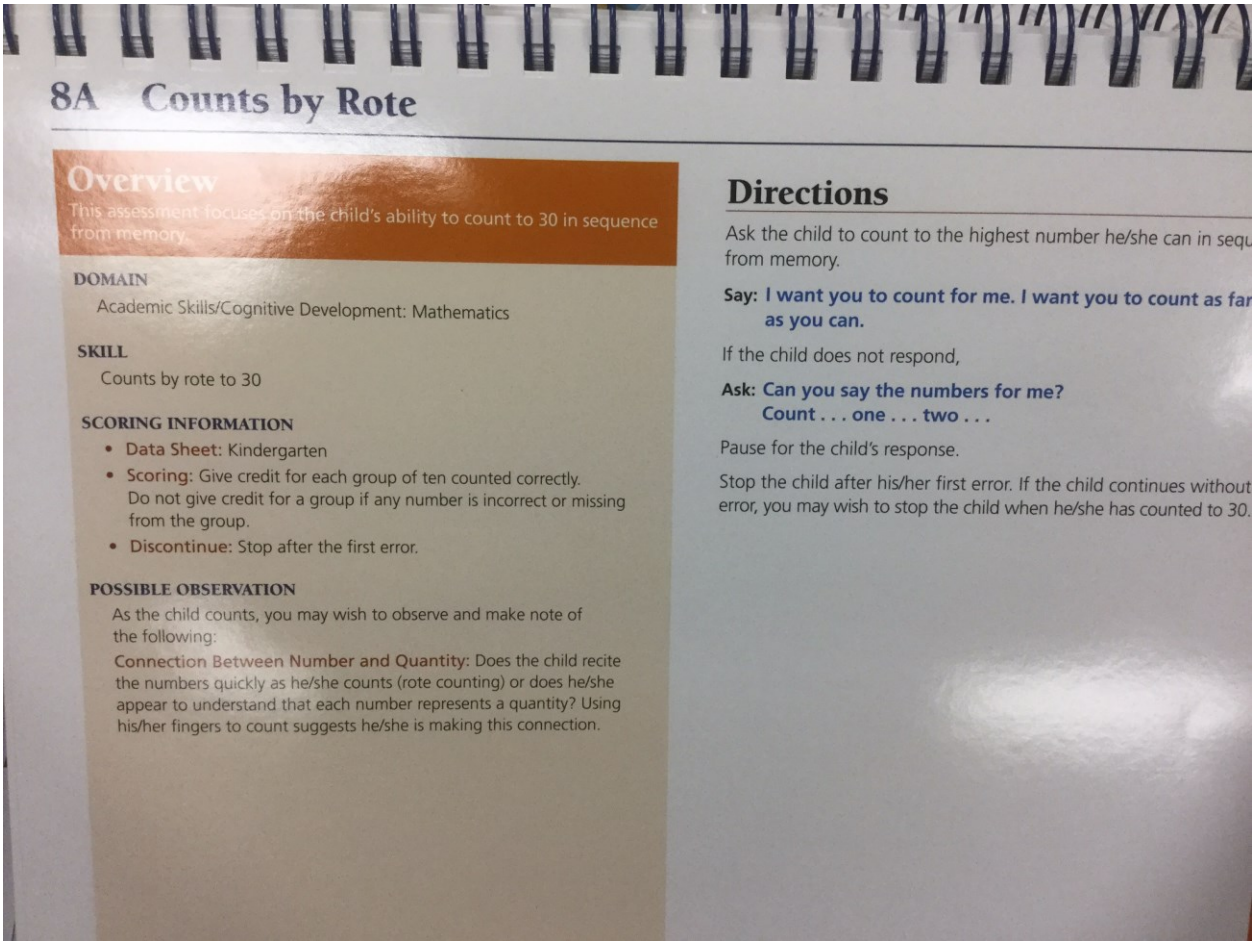

8A Counts by Rote

Overview

This assessment focuses on the child's ability to count to 30 in sequence from memory.

DOMAIN

Academic Skills/Cognitive Development: Mathematics

SKILL

Counts by rote to 30

SCORING INFORMATION

- **Data Sheet:** Kindergarten
- **Scoring:** Give credit for each group of ten counted correctly. Do not give credit for a group if any number is incorrect or missing from the group.
- **Discontinue:** Stop after the first error.

POSSIBLE OBSERVATION

As the child counts, you may wish to observe and make note of the following:

Connection Between Number and Quantity: Does the child recite the numbers quickly as he/she counts (rote counting) or does he/she appear to understand that each number represents a quantity? Using his/her fingers to count suggests he/she is making this connection.

Directions

Ask the child to count to the highest number he/she can in sequ from memory.

Say: **I want you to count for me. I want you to count as far as you can.**

If the child does not respond,

Ask: **Can you say the numbers for me? Count . . . one . . . two . . .**

Pause for the child's response.

Stop the child after his/her first error. If the child continues without error, you may wish to stop the child when he/she has counted to 30.

Appendix B. Brigance© Sample Questions: Knows Personal Information

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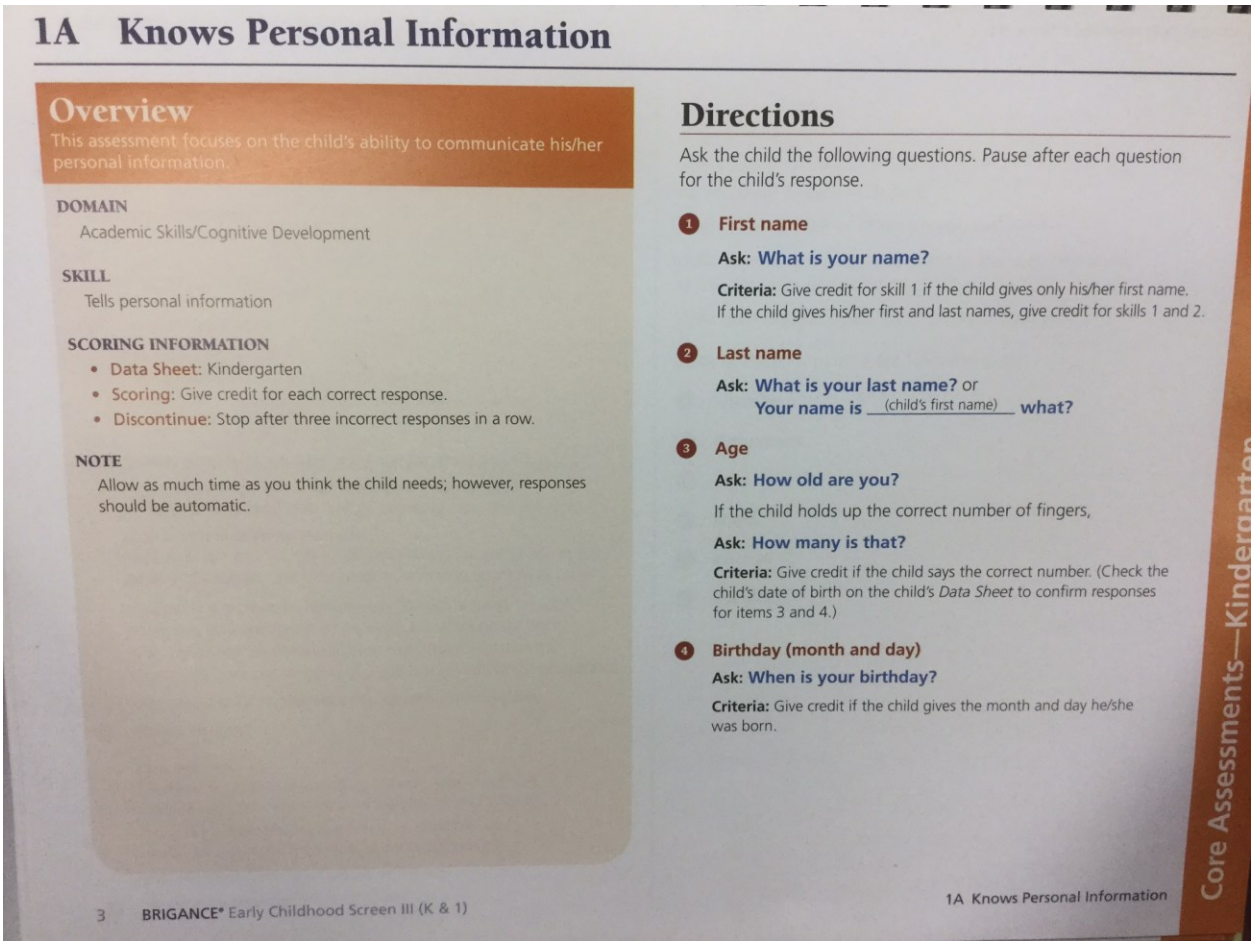

1A Knows Personal Information

Overview

This assessment focuses on the child's ability to communicate his/her personal information.

DOMAIN

Academic Skills/Cognitive Development

SKILL

Tells personal information

SCORING INFORMATION

- Data Sheet: Kindergarten
- Scoring: Give credit for each correct response.
- Discontinue: Stop after three incorrect responses in a row.

NOTE

Allow as much time as you think the child needs; however, responses should be automatic.

Directions

Ask the child the following questions. Pause after each question for the child's response.

1. **First name**

   Ask: What is your name?

   Criteria: Give credit for skill 1 if the child gives only his/her first name. If the child gives his/her first and last names, give credit for skills 1 and 2.

2. **Last name**

   Ask: What is your last name? or
   Your name is __(child's first name)__ **what?**

3. **Age**

   Ask: How old are you?

   If the child holds up the correct number of fingers,

   Ask: How many is that?

   Criteria: Give credit if the child says the correct number. (Check the child's date of birth on the child's *Data Sheet* to confirm responses for items 3 and 4.)

4. **Birthday (month and day)**

   Ask: When is your birthday?

   Criteria: Give credit if the child gives the month and day he/she was born.

Core Assessments—Kindergarten

Appendix C. Brigance© Sample Questions: Recites Alphabet

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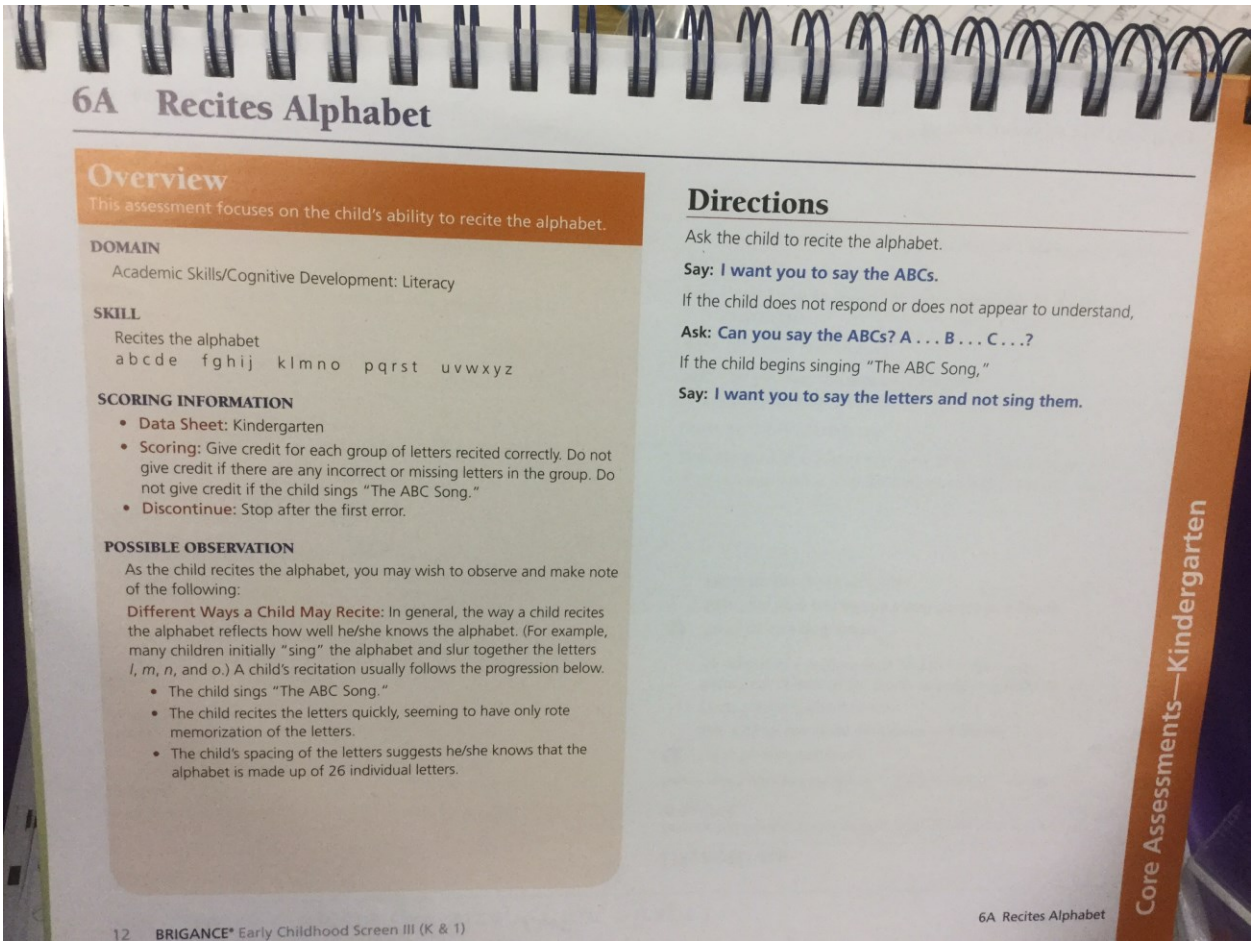

6A Recites Alphabet

Overview

This assessment focuses on the child's ability to recite the alphabet.

DOMAIN

Academic Skills/Cognitive Development: Literacy

SKILL

Recites the alphabet

a b c d e f g h i j k l m n o p q r s t u v w x y z

SCORING INFORMATION

- **Data Sheet:** Kindergarten
- **Scoring:** Give credit for each group of letters recited correctly. Do not give credit if there are any incorrect or missing letters in the group. Do not give credit if the child sings "The ABC Song."
- **Discontinue:** Stop after the first error.

POSSIBLE OBSERVATION

As the child recites the alphabet, you may wish to observe and make note of the following:

Different Ways a Child May Recite: In general, the way a child recites the alphabet reflects how well he/she knows the alphabet. (For example, many children initially "sing" the alphabet and slur together the letters *l, m, n,* and *o.*) A child's recitation usually follows the progression below.

- The child sings "The ABC Song."
- The child recites the letters quickly, seeming to have only rote memorization of the letters.
- The child's spacing of the letters suggests he/she knows that the alphabet is made up of 26 individual letters.

Directions

Ask the child to recite the alphabet.

Say: **I want you to say the ABCs.**

If the child does not respond or does not appear to understand,

Ask: **Can you say the ABCs? A . . . B . . . C . . .?**

If the child begins singing "The ABC Song,"

Say: **I want you to say the letters and not sing them.**

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6A Recites Alphabet

Core Assessments—Kindergarten

Appendix D. Teacher Feedback Form

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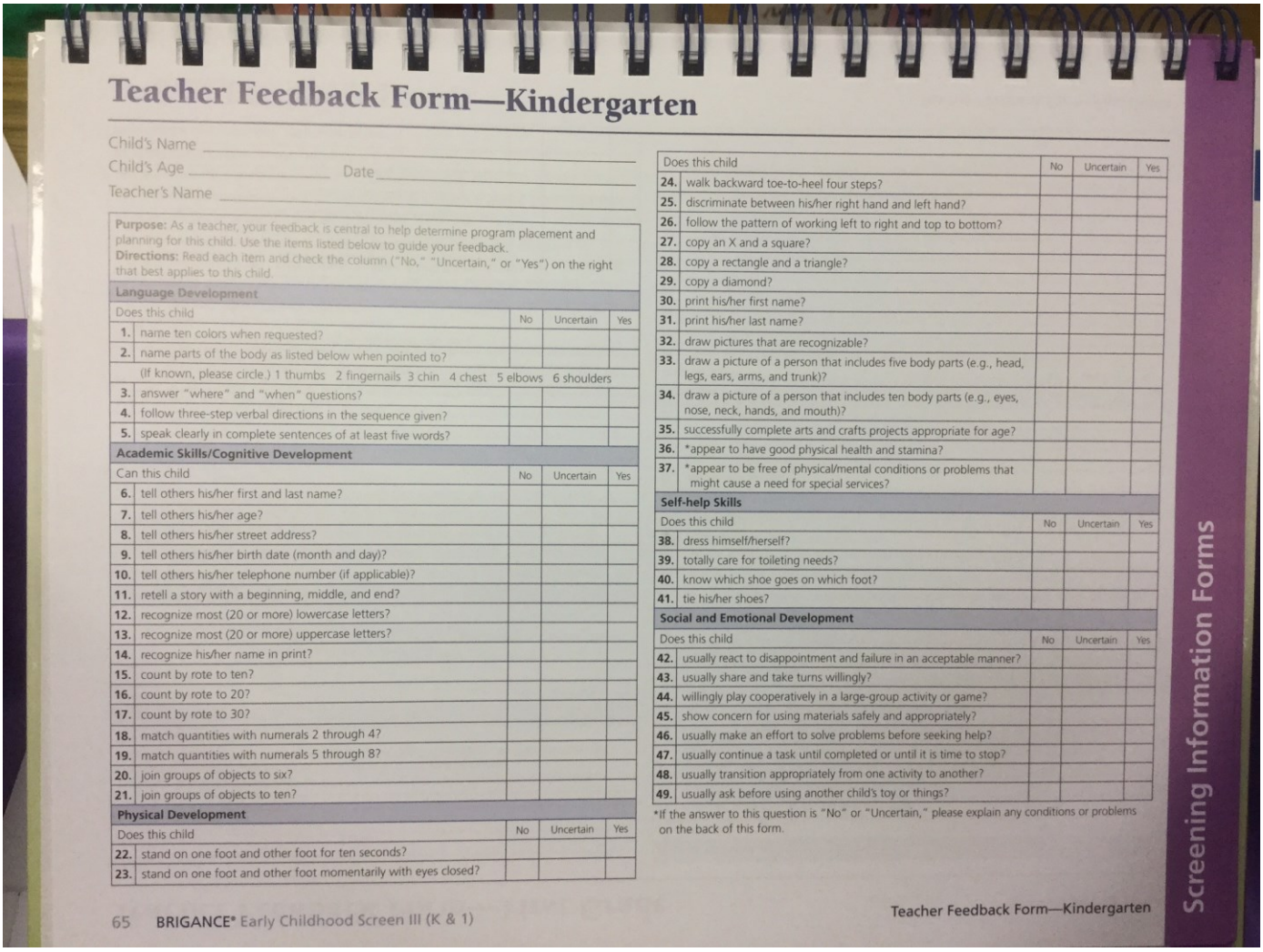

Teacher Feedback Form—Kindergarten

Child's Name _____

Child's Age _____ Date _____

Teacher's Name _____

Purpose: As a teacher, your feedback is central to help determine program placement and planning for this child. Use the items listed below to guide your feedback.
Directions: Read each item and check the column ("No," "Uncertain," or "Yes") on the right that best applies to this child.

Language Development

Does this child		No	Uncertain	Yes
1.	name ten colors when requested?			
2.	name parts of the body as listed below when pointed to?			
	(If known, please circle.) 1 thumbs 2 fingernails 3 chin 4 chest 5 elbows 6 shoulders			
3.	answer "where" and "when" questions?			
4.	follow three-step verbal directions in the sequence given?			
5.	speak clearly in complete sentences of at least five words?			

Academic Skills/Cognitive Development

Can this child		No	Uncertain	Yes
6.	tell others his/her first and last name?			
7.	tell others his/her age?			
8.	tell others his/her street address?			
9.	tell others his/her birth date (month and day)?			
10.	tell others his/her telephone number (if applicable)?			
11.	retell a story with a beginning, middle, and end?			
12.	recognize most (20 or more) lowercase letters?			
13.	recognize most (20 or more) uppercase letters?			
14.	recognize his/her name in print?			
15.	count by rote to ten?			
16.	count by rote to 20?			
17.	count by rote to 30?			
18.	match quantities with numerals 2 through 4?			
19.	match quantities with numerals 5 through 8?			
20.	join groups of objects to six?			
21.	join groups of objects to ten?			

Physical Development

Does this child		No	Uncertain	Yes
22.	stand on one foot and other foot for ten seconds?			
23.	stand on one foot and other foot momentarily with eyes closed?			
24.	walk backward toe-to-heel four steps?			
25.	discriminate between his/her right hand and left hand?			
26.	follow the pattern of working left to right and top to bottom?			
27.	copy an X and a square?			
28.	copy a rectangle and a triangle?			
29.	copy a diamond?			
30.	print his/her first name?			
31.	print his/her last name?			
32.	draw pictures that are recognizable?			
33.	draw a picture of a person that includes five body parts (e.g., head, legs, ears, arms, and trunk)?			
34.	draw a picture of a person that includes ten body parts (e.g., eyes, nose, neck, hands, and mouth)?			
35.	successfully complete arts and crafts projects appropriate for age?			
36.	*appear to have good physical health and stamina?			
37.	*appear to be free of physical/mental conditions or problems that might cause a need for special services?			

Self-help Skills

Does this child		No	Uncertain	Yes
38.	dress himself/herself?			
39.	totally care for toileting needs?			
40.	know which shoe goes on which foot?			
41.	tie his/her shoes?			

Social and Emotional Development

Does this child		No	Uncertain	Yes
42.	usually react to disappointment and failure in an acceptable manner?			
43.	usually share and take turns willingly?			
44.	willingly play cooperatively in a large-group activity or game?			
45.	show concern for using materials safely and appropriately?			
46.	usually make an effort to solve problems before seeking help?			
47.	usually continue a task until completed or until it is time to stop?			
48.	usually transition appropriately from one activity to another?			
49.	usually ask before using another child's toy or things?			

*If the answer to this question is "No" or "Uncertain," please explain any conditions or problems on the back of this form.

Appendix E. Composite Scores for Core Assessments

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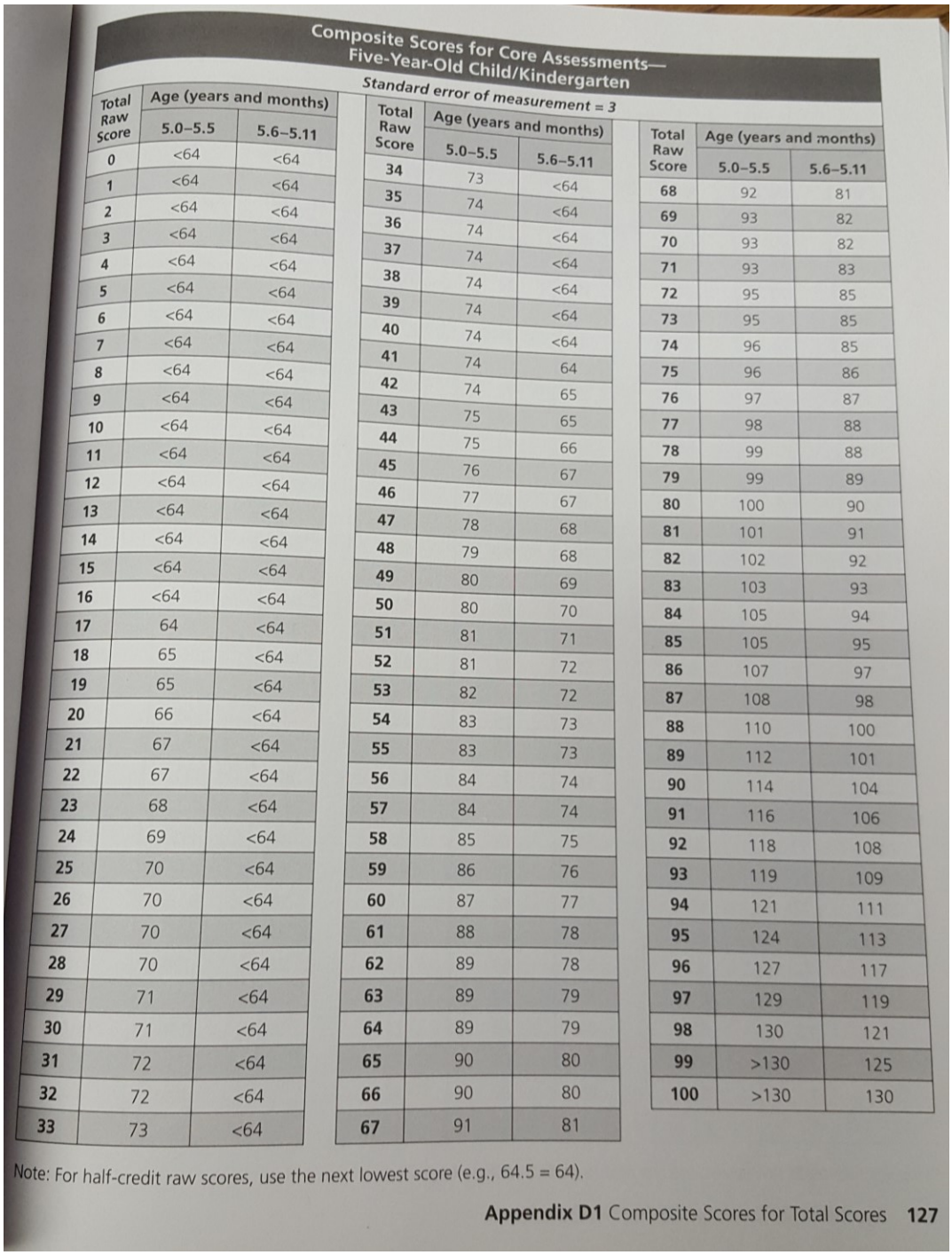

Composite Scores for Core Assessments—Five-Year-Old Child/Kindergarten

Standard error of measurement = 3

Total Raw Score	Age (years and months)	
	5.0–5.5	5.6–5.11
0	<64	<64
1	<64	<64
2	<64	<64
3	<64	<64
4	<64	<64
5	<64	<64
6	<64	<64
7	<64	<64
8	<64	<64
9	<64	<64
10	<64	<64
11	<64	<64
12	<64	<64
13	<64	<64
14	<64	<64
15	<64	<64
16	<64	<64
17	64	<64
18	65	<64
19	65	<64
20	66	<64
21	67	<64
22	67	<64
23	68	<64
24	69	<64
25	70	<64
26	70	<64
27	70	<64
28	70	<64
29	71	<64
30	71	<64
31	72	<64
32	72	<64
33	73	<64
34	73	<64
35	74	<64
36	74	<64
37	74	<64
38	74	<64
39	74	<64
40	74	<64
41	74	64
42	74	65
43	75	65
44	75	66
45	76	67
46	77	67
47	78	68
48	79	68
49	80	69
50	80	70
51	81	71
52	81	72
53	82	72
54	83	73
55	83	73
56	84	74
57	84	74
58	85	75
59	86	76
60	87	77
61	88	78
62	89	78
63	89	79
64	89	79
65	90	80
66	90	80
67	91	81
68	92	81
69	93	82
70	93	82
71	93	83
72	95	85
73	95	85
74	96	85
75	96	86
76	97	87
77	98	88
78	99	88
79	99	89
80	100	90
81	101	91
82	102	92
83	103	93
84	105	94
85	105	95
86	107	97
87	108	98
88	110	100
89	112	101
90	114	104
91	116	106
92	118	108
93	119	109
94	121	111
95	124	113
96	127	117
97	129	119
98	130	121
99	>130	125
100	>130	130

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Appendix D1 Composite Scores for Total Scores **127**