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The influence of preschool absence rate and stability on the school readiness of children

Taylor Watson Poole

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The influence of preschool absence rate and stability on the school readiness of children

By

Taylor Watson Poole

A Thesis
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Master of Science
in Human Development and Family Sciences
in the College of Agriculture & Life Sciences

Mississippi State, Mississippi

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2019

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This pilot study adds to the limited literature by examining various forms of dosage (i.e., absence rate; stability in years) within a quality early childhood center and its links to multiple criterion-referenced indicators of school readiness (i.e., gross motor, fine motor, pre-writing, cognitive, language, self-help, personal/social developmental). The sample included 46 children between the ages of 3 and 4-years-old primarily from middle to upper-middle socioeconomic backgrounds. Absence rates were determined via daily sign-in sheets, while stability was determined according to center records. Results indicate stability, not absence rate, as a statistically significant predictor of better performance on two school readiness domains, namely gross motor and personal/social development. This preliminary exploration gives implications to programs, parents, and teachers as it relates to best practices in attendance in early childhood.

DEDICATION

I dedicate my work to my faithful God, husband Jordan, and mom Shauna. All of which provided me with the strength, support, and patience needed to complete this journey. For that, I am forever grateful.

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CHAPTER I

INTRODUCTION

The focus on early care and education over the past fifty years has steadily increased (Office of Head Start, 2018), with two major influences being Presidents Johnson's 1964 War on Poverty and the increase in maternal labor force. The war on poverty and the recognition of the achievement gaps of low-income children influenced President Johnson and a group of professionals to create Head Start and later Early Head Start (Office of Head Start, 2018). Aiming to foster success and address the educational disparities noted between children from impoverished families and those from financially secure homes (Office of Head Start, 2018), both comprehensive programs raised the standards for early care and education programs by taking a whole-child approach. Additionally, women in the work force spurred a need for more high quality childcare, especially for middle class mothers (US Department of Education, n.d.). With the increase of working mothers, currently 61.8% of mothers with children between the ages of three and five years (U.S. Department of Labor, 2016), early care and education program participation has become a commonality among families. With growing policy support, such as the Child Care and Development Block Grant (CCDBG) and Quality Rating and Improvement Systems (Zaslow et al., 2016), attention shifted focus from basic care and primary needs, to now, the education and development of children for primary school and life (Kamerman & Gatenio-Gabel, 2007).

While there has been a shift in early childhood to focus on academics, not all early care experiences result in children being school ready. In 2013, 41% of Mississippi children fell below the 530 school readiness benchmark score, with an average score of 501 (Mississippi Kids Count, n.d.). This statistic suggests a problem within the state to produce school ready children. Additionally, during the 2015-2016 school year, chronic absenteeism in grades K-12 was apparent with a national rate of 16% and Mississippi sitting above the national average at 19.8% (U.S. Department of Education, 2016). Both of these statistics suggest a pattern of behavior that may not be conducive to optimal learning and success.

Research supports that participating in a quality early childhood education program (e.g., National Association for the Education of Young Children accreditation; NAEYC) prior to entering kindergarten promotes developmental growth needed for children to be successful in primary school, and helps foster child success in future learning and life (Ehrlich, Gwynne, & Allensworth, 2018; Hill, Gormley, & Adelstein, 2015; Reynolds et al., 2014; Swaminathan, Byrd, Humphreys, Heinsch, & Mitchell, 2014; Zhai, Brooks-Gunn, & Waldfogel, 2011). However, there is a small extent of literature that focuses on the influence early childhood dosage (i.e. absence rate and stability) in early childhood on school readiness. As a result of this limited knowledge, consistent daily attendance as it relates to attendance in a pre-kindergarten program may not be sought by parents or encouraged by teachers and directors, and thus is potentially negatively influencing a child's school readiness.

The purpose of this pilot study is two-fold. First, we investigated associations between absence rates (i.e., days absent/total possible days) from an NAEYC accredited early childhood program and end of the school year scores on a readily used criterion-referenced assessment of children's school readiness (LAP-3; Sanford, Zelman, Hardin, & Peisner-Feinberg, 2004).

Additionally, we examined if stability of enrollment at a NAEYC accredited early childcare facility (i.e., consistency in years) was associated with children's school readiness. That is, the stability measurement included not only preschool enrollment, as often reported in the literature (Shah and colleagues, 2017; Swaminathan et al., 2014), but also consistent enrollment in a quality early care program as early as 6-weeks of age; a novel contribution to the literature. The objective of this study was to add to the scant literature that delineates the link between two measures of early childhood education dosage (i.e., absence rates within the concurrent year; stability in years enrolled in the same early childhood program) and children's school readiness.

This pilot study aimed to answer two overarching research questions. Specifically, is dosage (i.e., absence rate) of quality early childhood education associated with seven criterion-referenced domains that determine school readiness (i.e., gross motor, fine motor, pre-writing, cognitive, language, self-help, personal/social)? Additionally, does the number of years spent in a consistent, accredited early care and education program (i.e., stability) predict school readiness as referenced by the LAP-3 domains (i.e., gross motor, fine motor, pre-writing, cognitive, language, self-help, personal/social developmental domains)? With knowledge of the negative correlation between absenteeism and positive outcomes in primary school (Chang, 2008) and higher-grade levels (U.S. Department of Education, 2016), we expected a lower absence rate in a NAEYC-accredited early care facility to be positively associated with more optimal school readiness across domains. Given research indicates that an increased number of years enrolled in an early childhood program prior to kindergarten positively influences school readiness (Shah et al., 2017), we expected that children who have consistently participated in the NAEYC-accredited program for a higher number of years to have more optimal school readiness scores at the transition to kindergarten than their less consistent counterparts.

Theoretical Framework

Urie Bronfenbrenner's Ecological Theory of Human Development (1994) acknowledges the influential nature of a child's immediate and indirect environments on his or her overall development with the consideration of historical events and timing as well as the child's own characteristics. The five nested, concentric circles representing various environmental systems explicate the significant impact that relationships and the environment have on a child's development across all domains. The child-centered theory begins with the immediate environment and proximal processes (microsystem) and ends with attention to timing (chronosystem) with three systems (mesosystem, exosystem, and macrosystem) in between, all with bidirectional influences on each other through system interactions and activities.

The microsystem is the innermost circle that contains the child and his or her individual characteristics. The microsystem consists of the child's immediate environment, such as the interactions between child and family, child and school, or child and peer group (Bronfenbrenner, 1994). These face-to-face interactions and proximal processes with the child and his or her characteristics guide development via specific, and often, complicated conversations, activities, and relationships.

The second ecological level is the mesosystem, which can be explained as the conjunction of microsystems containing the child (Bronfenbrenner, 1994). That is, the interactions between specific microsystem elements and the influence those interactions have on development. The exchanges between parents and teachers in the form of parent participation, developmental decision-making, at-home activities related to in-class lesson content, or communication provide great examples of microsystem settings containing the child working to

form the mesosystem. Furthermore, the stronger the connections between these microsystem elements, the more school ready a child may become (Rim-Kaufman & Pianta, 2000).

The third nested circle in the theory is the exosystem. This ecological level also includes interactions between settings; however, at least one setting precludes the child (Bronfenbrenner, 1994). For example, the interactions between a child's home life and the parental workforce can have a direct influence on development. For example, the loss of a job could deplete the needed monetary resource needed for childcare, which could result in a decrease in program quality.

The fourth ecological level outlined by Bronfenbrenner (1994) is the macrosystem. This system relates to the influence of broader societal values, norms, and beliefs of the micro-, meso-, and exosystem settings on development (Bronfenbrenner, 1994). For example, the belief that quality matters in deciding on an early childhood program may influence a parent's program choice, thus potentially influencing a child's early childhood experiences and school readiness.

The fifth, and last, level of the theory is the chronosystem. The chronosystem highlights the influence of time and the environment on development. It recognizes that specific life events such as changes in family structure, socioeconomic status, employment, place of residence, or historical contexts (e.g., recessions or wars) (Bronfenbrenner, 1994) impact development, and the degree of impact is dependent on timing. For example, a change in household dynamics at an early age, such as divorce, may alter monetary resources needed to pay for a high quality early care and education program, thus potentially influencing a child's educational foundation for all future learning.

Bronfenbrenner's Ecological Theory of Human Development (1944) provides a framework for the current study. That is, it is crucial in understanding the importance of both the environment and relationships on the development of a child, especially as it relates to the school

environment and dosage (i.e. absence rates and stability in years). The theoretical basis of this study supports the need for quality early childhood experiences and the potential lifelong influences of regularly attending an early care and education program.

CHAPTER II

REVIEW OF THE LITERATURE

School readiness is a critical, however complex, end sought for many educational researchers, early childhood professionals, parents, and children. While there is not a universal agreed upon definition for school readiness, in this study it is defined as “children possessing the skills, knowledge, and attitudes necessary for success in school and for later learning and life” (Early Childhood Learning & Knowledge Center, n.d., para. 1) The NAEYC (2009) school readiness position statement highlights the broadness and flexibility of the term by stating that a school ready child is a product of the child, family, environment, school, and community. Research supports that a child entering kindergarten school ready has a greater chance of future academic success (Duncan et al, 2007), and that participation in quality early childhood programming promotes school readiness (Ehrlich, Gwynne, & Allensworth, 2018; Hill, Gormley, & Adelstein, 2015; Reynolds et al., 2014; Swaminathan, Byrd, Humphreys, Heinsch, & Mitchell, 2014; Zhai, Brooks-Gunn, & Waldfogel, 2011). However, it is important to note that outcomes associated with engagement in an early childhood program vary based on a number of different variables. For example, the quality, defined in terms of structural quality (i.e. program organization) or process quality (i.e. teacher-child interactions) of the early care and education program matters in determining the attained developmental benefits that can influence a child’s school readiness (Zaslow et al., 2016). Research shows that enrollment in a quality rated early childhood education program positively impacts the development of school readiness skills and

increases success by decreasing the likelihood of special education placement and dropout rates (Raikes, Brooks-Gunn, & Love, 2013). Furthermore, evaluations of the Perry Preschool Program reveal that participation in a quality rated early care and education program can be an influential factor on not only high school completion, but also crime engagement and adult productivity (Raikes et al., 2013).

Individual variables such as dosage, defined as “frequency (e.g., absence rate); amount of time (e.g., hours attended per day); or length of participation (i.e., years of exposure)” (Shah et al., 2017), may also influence outcomes. The scant literature on dosage in relation to early care and education suggests attending a quality early childhood education program to acquire the skills needed for kindergarten is most beneficial when consistent attendance is sought (Zaslow et al., 2016). Quality and dosage will be further explored in subsequent sections.

Literature supports the idea that participation in a quality early childhood education program is beneficial for a child’s transition and success in primary school (Ehrlich et al., 2018; Hill et al., 2015; Reynolds et al., 2014; Swaminathan et al., 2014; Zhai et al., 2011), yet few studies are available on how the number of days absent from quality programming may link to school readiness (Swaminathan et al., 2014; Ehrlich et al., 2018). Additionally, there is limited research in early childhood available that have addressed how consistency in the same quality early childcare facility for three or more years may relate to school readiness.

School Readiness

School readiness is an important consideration for children, parents, teachers, and researchers because creating a solid educational foundation prior to school entry is predictive of future learning in multiple areas of development (Board on Children, Youth, and Families, n.d.). One commonly accepted definition of school readiness does not exist, but a commonly accepted

view is that school readiness is when children have the tools (i.e. skills, knowledge, and attitude) necessary to succeed in kindergarten (Early Childhood Learning & Knowledge Center, ECLKC, n.d.). Head Start further specifies this definition to include physical, cognitive, social, and emotional development as key skills for school readiness (ECLKC, n.d.) and literature underscores the importance of each developmental domain for school readiness (Fram, Kim, & Sinha, 2012; Hatcher, Nuner, & Paulsel, 2012; Lee, 2016; Welchons & McIntyre, 2015; Welsh, Nix, Blair, Bierman, & Nelson, 2010; Winsler et al., 2008). The physical, cognitive, language/literacy, and social/emotional domains are explored through the literature below.

Physical

Physical development is typically separated into two domains: gross motor development and fine motor development. The Early Childhood Learning and Knowledge Center (ECLKC, 2018) defines gross motor development as the skills relating to large muscle and whole body movements (e.g., walking, throwing, stretching) and indicates that proficiency in gross motor development positively influences children's social play engagement and ultimately their school readiness (ECLKC, 2018). The second component to the physical development domain is fine motor skills. Fine motor skills are those skills related to small muscle and separate body part movements such as drawing or stringing beads. Fine motor development is also related to skills like writing, turning the pages of a book, and completing self-help tasks like buttoning and zipping; all of which are needed for a child to be school ready.

It is important to note that motor skills include both the physical movements and the cognitive functioning used to complete the movements (Burton & Rodgerson, 2001). In fact, gross motor activities typically associated with exercise can be beneficial to learning, memory and

cognition (Sattelmair & Ratey, 2009). Further exploration of the connection between physical development and cognitive functioning is described below.

Cameron, Cottone, Murrah, and Grissmer (2016), interested in the association between motor skills and academic achievement, completed a comprehensive literature search that documented motor coordination (i.e. intentional use of body parts such as walking, sitting, tying shoes, or paper-pencil tasks), executive functioning, (i.e. focus, attention, information manipulation) and visuospatial skills (i.e. visualizing objects or cognitive representations) as relevant to physical development both in the gross motor and fine motor domains. These findings are important to a child's school readiness for a variety reasons: 1) motor coordination can influence how a child is perceived by peers and self (Cameron et al., 2016; Skinner & Piek, 2001), 2) executive functioning as it relates to motor movement is required to successfully complete tasks needed to prepare them for kindergarten (Cameron et al., 2016), and 3) visuospatial skills can influence both math and reading abilities (Cameron et al., 2016; Byers, Cameron, Jo, LoCasale-Crouch, & Grissmer, 2016). Recognizing the connection between motor development and cognition allows for a better understanding of the importance of physical development to school readiness.

Cognitive

The ECLKC (2018) defines cognition, specifically as it relates to preschool aged children, as reasoning, memory, problem solving, and thinking skills. Furthermore, skills such as working memory, or the ability to store and recall new information during a certain period of time (AlZubi, Fernandez, Flores, Duranb, & Cotos, 2018), is important for completing tasks required for the attainment of cognitive skills needed for school readiness. A child's ability to identify the next item in a verbal pattern sequence or recall the answer to a question regarding a

story they just heard are examples of this skill. ECLKC (2018) goes on to highlight the two key branches of cognition linked to school readiness: Mathematical development (i.e. number knowledge and manipulation, shape knowledge, measurements, classifications, and patterns) and scientific reasoning (i.e. a child's understanding of scientific knowledge about their environment).

There is a substantial amount of literature that supports attending an early childhood program prior to kindergarten may be beneficial to cognitive development (Fram, Kim, & Sinha, 2012; Winsler et al., 2008; Zhai et al., 2011). Fram and colleagues (2012), researchers investigating the influence of prekindergarten care on children's school readiness, found that childcare participation prior to kindergarten to be associated with more optimal math and reading outcomes as assessed by the Social Rating Scale (i.e. approaches to learning, self-control, interpersonal skills, externalizing behaviors, and internalizing behaviors), especially for children who attended a center based program. A study focused on immigrant children in the U.S. found reading and math scores improved with childcare attendance, with reading scores being similar to that of native children (Magnuson et al., 2006). However, research presents mixed results in regard to the longevity of the influence of early childhood programs on cognitive functioning (Hill et al., 2015; Huang, Invernizzi, & Drake, 2012; US Department of Health and Human Services, 2010). Reynolds, Temple, and Ou (2010) focused on the cognitive benefits of preschool education used Chicago Longitudinal Study (CLS) data from 2005, which consisted of 989 children who attended an early childhood program prior to kindergarten. Using the Iowa Test of Basic Skills (ITBS), researchers measured the cognitive skills of students and found a significant difference in cognitive abilities of children who attended preschool versus those who had not. Students who had attended preschool had less grade retention and special education

placements, even evident in high school, than their counterparts did. However, Hill and colleagues (2015) reported mixed results related to the math and reading scores of children in the third grade who had participated in a pre-kindergarten program. The first cohort examined showed no difference in math or reading scores in the third grade compared to their counterparts who had not been enrolled in early childhood program prior to kindergarten, while the second cohort showed children who had been enrolled in pre-kindergarten program had increased math scores compared to their peers who had not (Hill et al., 2015). Regardless of the long-term benefits of participation in an early childhood program, the short-term benefits to cognitive functioning are essential for school readiness as it relates to kindergarten entry.

Language/Literacy

ECLKC (2018) defines language and literacy skills as the understanding and use of language by a child. Language skills are broken down into attending and understanding, communicating and speaking, and vocabulary (ECLKC, 2018). Furthermore, literacy is broken down in phonological awareness, print and alphabet knowledge, comprehension and text structure, and writing (ECLKC, 2018).

This domain, according to Hatcher, Nuner, and Paulsel (2012), is a chief theme associated with school readiness. Hatcher and colleagues (2012) conducted a qualitative study exploring the readiness beliefs of teachers and parents affiliated with early childcare and education centers accredited by the National Association for the Education of Young Children (NAEYC). The results of the face-to-face interviews administered revealed that 11/13 teachers and 12/16 parents reported emergence of language/literacy skills as an important domain for school readiness (Hatcher et al., 2012). Distinct skills such as letter recognition, sound/letter association, recognition of site words and names, and the ability to write one's own name are

critical components to the domain of language/literacy (Hatcher et al., 2012). Upon entry into school, students need to have these foundational skills or they can easily fall behind and it can be difficult to achieve academic success.

Catts et al. (2015), researching the identification of difficulties in a child's reading comprehension skills (i.e. the ability to understand words and sentences), found that language skills assessed at the start of primary school to be predictive of reading comprehension skills at the conclusion of third grade. This conclusion is further supported by the research of Pace et al. (2019) who explored developmental domain trajectories in elementary school. Through the use of the NICHD Study of Early Child Care and Youth Development cohort and a variety of assessments focused on early academic skills (i.e. social, language, cognitive), researchers found that language skills in preschool predicted language skills at kindergarten entry (Pace et al., 2019). Furthermore, they found that preschool language skills were predictive of math (i.e. problem solving skills), reading (i.e. comprehension), and social skills (i.e. cooperation, assertion, and self-control) (Pace et al., 2019). These findings suggest a positive a strong link between early language/literacy skills and a child's future academic and social success.

Research supports that children with disadvantages, such as English language learners (dual language learners), benefit most from high quality early childhood education programs (Morrissey & Vinopal, 2018). Magnuson and colleagues (2006), looking to investigate the benefits of preschool education on the school readiness of immigrant children ($N = 12,626$ children), reported that attending an early care and education program better prepares immigrant children for the English-language skills needed for kindergarten. In fact, researchers found that after attending a center-based program compared to parental care, immigrant children were more likely to pass the English-language screening and to build early language skills (Magnuson et al.,

2006). Lee (2016) further supports the benefits of attending a prekindergarten program as it relates to Asian and Hispanic groups in his longitudinal study. Lee (2016) examined differences in the use of expressive language by Asian and Hispanic American children ($N = 10,700$) who were enrolled in an early childhood program in comparison to those who were solely in parental care. The results indicated that these cultural groups tend to have better expressive language at the onset of kindergarten after attending a preschool program as compared to solely parental care. Taken together, these studies highlight the importance of language and literacy skills for school readiness, particularly for children from non-native families.

Social/Emotional

Broadly, social and emotional development is the ability of child to react and interact with the social environment around them (The Urban Child Institute, n.d.). More specifically, The National Council on the Developing Child (2011) defines socioemotional development as the recognition and understanding of feelings of self and others, ability to cope with strong emotions and express them in a constructive way, demonstration of self-regulation behaviors, and ability to create and maintain relationships. Authors go on to highlight the influence of both relationships (i.e. nurture) and the environment (i.e. nature) on the knowledge and skills related to this domain (National Council on the Developing Child, 2011). Hatcher and colleagues (2012) report social and emotional development includes skills such as cooperating with the school routines, working in large groups, taking directions from a teacher, and expressing oneself with words. Parents and teachers both consider social skills, social problem-solving, and emotional expression as being vital skills necessary to achieve school readiness (Hatcher et al., 2012). These skills are important for school readiness because learning is a social experience and requires focus, attention, and positive interactions between teachers and peers (Shrier &

Michigan State University Extension, 2014). Oppositely, the absence of these skills can result in distraction, frustration, and social problems with peers (Shrier & Michigan State University Extension, 2014), which can hamper learning.

Wesley and Buysse (2003) conducted focus groups with parents, teachers, and elementary school teachers to explore the topic of school readiness. In each of the 20 focus groups, skills pertaining to social and emotional development (i.e. social interaction skills and expression of their desires) were noted as essential skills to be a school ready child (Wesley & Buysse, 2003). Again, implying the importance of social and emotional skills for school readiness. Furthermore, Welchons and McIntyre (2015) and NAEYC (n.d) state that a child's social and emotional skills may be more significant than cognitive skills when it comes to learning. This idea is further supported by the literature search of Lara-Cinisomo, Fuligni, Ritchie, Howes, & Karoly (2008) who cites that preschool teachers prioritize academic skills below social and emotional skills.

In addition to social and emotional skills being important to school readiness, soft skills typically associated with this developmental domain can be linked to future success in the workforce (Lippman, Ryberg, Carney, & Moore, 2015). The authors of the Workforce Connections executive summary list social skills, communication skills, higher-order thinking, self-control, and a positive self-concept as important soft skills needed for workforce development (Lippman, Ryberg, Carney, & Moore, 2015). Acquiring these skills, which can be fostered in early childhood education, could influence work environment navigation, colleague relations, and workplace achievements later in life (Lippman, Ryberg, Carney, & Moore, 2015).

Quality and School Readiness

An abundance of research suggests quality matters significantly to the overall effectiveness of an early childhood program to produce school ready children. There are two primary types of quality: structural and process (Bauchmiller, Gortz, & Rasmussen, 2014; Winterbottom & Piast, 2015). Structural quality describes the organization of the program such as child-to-teacher ratios, teacher qualifications, staff turnover rates, curriculum, staff development training, and similar indicators that are typically associated with accreditation (Bauchmiller, Gortz, & Rasmussen, 2014; Winterbottom & Piast, 2015). Process quality refers to the interactions between teacher and child. Winterbottom and Piasta (2015) exploring whether accreditation is an indicator of quality, worked with 4,322 childcare facilities in Florida and found that although the structural quality often required for accreditation is important, it does not always result in process quality through meaningful interactions in the classroom. Research supports that participation in an early care and education program that possesses both structural and process quality is a positive influence on a child's school readiness (Bauchmiller et al., 2014; Winterbottom & Piast, 2015). Furthermore, program quality and the consistency of quality of the program both positively influence the longevity of influence a program has on school readiness (Huang et al., 2012).

NAEYC is a high quality accreditation program and professional membership organization supporting the practice of quality early childhood education (NAEYC, n.d.) and is considered to be the gold standard for early childhood quality. NAEYC highlights the importance of quality, both structural and process, through creating 10 standards every early childhood program should meet in regard to quality. The 10 standards are as follows: Relationship, Curriculum, Teaching, Assessment of Child Progress, Health, Staff Competencies/

Preparation/Support, Families, Community Relationships, Physical Environment, and Leadership and Management (NAEYC, n.d.).

The Relationship Standard refers to the teacher-child relationship, as well as how that relationship influences the environment (NAEYC, n.d.). For example, the teacher responding to a child in a kind, sensitive way will increase the child's feeling of security within the classroom, which enhances learning (NAEYC, n.d.). The Curriculum Standard refers to the implementation of a developmentally appropriate curriculum that guides teaching in all developmental domains (NAEYC, n.d.). For instance, a NAEYC approved curriculum allows children to explore a wide range of materials that are of interest of the children, but also supports domain development and problem solving skills (NAEYC, n.d.). The Teaching Standard refers to the relationship between the curriculum and instructional methods used, as well as, showing support for different cultures and preferences (NAEYC, n.d.). For example, NAEYC approved teaching requires children's artwork to be seen in the classroom, thus, supporting individuality and the preferences of the child when creating that artwork (NAEYC, n.d.).

The Assessment of Child Progress Standard refers to the child assessment practices a program implements, as well as how the teachers use the assessment information. For instance, the teacher's assessment methods are varied (i.e. checklist and observation) and the information collected is used to influence instruction and classroom activities (NAEYC, n.d.). The Health Standard refers to a program's effort to maintain the health and safety of both children and staff (NAEYC, n.d.). For example, placing infants on their backs while sleeping or having CPR/First Aid trained teachers. The Staff Competencies, Preparation, and Support Standard refers to teacher qualifications, degrees, and educational knowledge that helps prepare teachers to provide high quality interactions and instruction (NAEYC, n.d.). For instance, a program requires

teachers to acquire a Child Development Associate (CDA) certificate or regularly informing teachers of staff development opportunities (NAEYC, n.d.).

The Family Standard refers to program-family collaborative relationship that should create trust and unity between both parties to support optimal child development (NAEYC, n.d.). For example, varied communication strategies are used to keep families informed (i.e. newsletters, parent-teacher conferences, and orientations) or the encouragement of families to volunteer in their child's classroom is encouraged (NAEYC, n.d.). The Community Relationship Standard refers to the establishment of community partnerships relevant to supporting children and families (NAEYC, n.d.). For instance, community groups or individuals are encouraged to perform for or inform the children about their talents (NAEYC, n.d.). The Physical Environment Standard refers to the health and safety conditions of indoor and outdoor space, as well as ensuring that age appropriate materials and equipment foster learning (NAEYC, n.d.). For example, each classroom has child size furniture and first aid kits are easily accessible anywhere in the building (NAEYC, n.d.). Lastly, the Leadership and Management Standards refers to having high quality leadership that oversees appropriate policies and procedures to support children, families, and staff. For instance, the program is licensed and the required child-to-teacher ratios are enforced (NAEYC, n.d.). It is NAEYC's belief that meeting each of these standards will promote the highest quality care and education possible to support optimal development and success.

Type of Early Care and Education and School Readiness

In addition to the quality of childcare provided, the type of early care and education program is a predictor of school readiness (e.g., Coley, Votruba-Drzal, Collins, & Cook, 2016; Forry, Davis, & Welti; 2013; Fram et al., 2012; Hammer et al., 2017; Rathburn, Zhang, and

Snyder, 2016). There is a variety of early childhood program options available for enrollment such as center based and home based programs. Center- based programs primarily include privately owned preschools, preschools embedded within organizations such as churches or schools, and Head Start. Home based care, typically smaller in size than center based programs, are programs implemented inside someone's personal home or it can also refer to care given by a family member. There is an overwhelming amount of research that supports participating in a center based program positively supports school readiness (e.g., Coley, Votruba-Drzal, Collins, & Cook, 2016; Forry. Davis, & Welti; 2013; Fram et al., 2012; Hammer et al., 2017; Rathburn, Zhang, and Snyder, 2016). Fram and colleagues (2012) used data from the ECLS-K 1998/1999 cohort and found that childcare participation prior to kindergarten was associated with higher math and reading outcomes at kindergarten entry, especially for children who attended a center based program. Rathbun and colleagues (2016) with National Center for Education Statistics used NHES: 1995 and ECLS-K: 2011 data in their study, which surveyed 18,200 kindergarten students. They examined the change in early childhood education arrangements between the years of 1995 and 2012 and found that reading, mathematics, cognitive flexibility, and approaches to learning scores were all lower at kindergarten entry in children who had not enrolled in an early childhood program. Coley and colleagues (2016) offer further evidence based on data from the Early Childhood Longitudinal Study Birth Cohort (ECLS-B), which consisted of 10,700 children between the ages of infancy and kindergarten entry. Findings revealed private, center based programs produced the most dependable outcomes in regards to language, math, and reading skills. Hammer and colleagues (2017) also agree that enrolling in a center based early care and education program both supports developmental outcomes and reduces the consequences of stress often associated with low socioeconomic households.

Similarly, Forry and colleagues (2013) assessed data from the Maryland Department of Education ($N = 6,772$ kindergarteners from low income homes) and found that children who participated in center based programs were regularly showing the necessary assessment scores related to math and language skills needed for kindergarten readiness compared to children who participated in informal care options. All of these studies suggest the benefits of participating in a quality center based early childhood program outweigh those seen in children from home based care prior to kindergarten.

Dosage and Stability

Dosage in terms of frequency, attendance hours, and length of participation (i.e. stability in years), is an important consideration for child outcomes across all ages, grade levels, genders, ethnicities, and socioeconomic statuses (Chang, 2008). For example, Chang (2008) reports that absenteeism in kindergarten negatively influences reading and math performance in both the first and fifth grades. Ginsburg and colleagues (2014) documents absenteeism and its negative impact on academics and child outcomes in fourth and eighth grades. Based on the 2013 National Assessment for Education Progress (NAEP), Ginsburg and colleagues (2014) note that students missing three or more days scored lower in math and reading in the fourth grade and math in the eighth grade.

In their research brief, Lara and colleagues (2018) reported that during the 2013-2014 school year, 14% of all United States primary and secondary students were chronically absent, defined in this study as missing 18 or more school days. Furthermore, Lara and colleagues (2018) deduced there is a falling-off in chronic absenteeism at approximately upper elementary grades (i.e., fourth-sixth grades), but absenteeism again increases through high school. In fact, in using data from the 2013-2014 Civil Rights Data Collection (CRDC), which consists of data

from across the nation and of varied grade levels, the U.S. Department of Education (2016) reports that students, regardless of race/ethnicity, are most chronically absent (i.e., miss 15 or more days of school) in high school. Lastly, authors report higher rates of absenteeism in schools with increased impoverished populations (Lara et al., 2018). The significance of these statistics are in the consequences of high school dropouts: low earning potential and career options (Lara et al., 2018).

Wills, Elder, and Molina (2018), examining variables influencing college success, found that a predictor of success in college is freshman year absenteeism as indicated by detailed freshman records kept between the years 1998-2004. Furthermore, Dobkin, Hil, and Marion (2010) researched the impact of various attendance policies reports that rates of attendance are associated with exam performance based on the results from three intermediate economic classes consisting of college sophomores, juniors, and seniors. Both of these articles suggest that higher education success is directly correlated with consistent attendance (i.e., dosage). There is a fair amount of research exploring dosage in elementary, middle, and upper grades, even higher education, as a negative consequence on academics (Chang, 2008; Ginsburg et al., 2014; Lara et al., 2018; Wills, Elder, & Molina, 2018). However, absenteeism and stability as predictors in early childhood education is understudied. The limited research for preschool aged children as it relates to dosage is explored below.

Dosage/Stability and School Readiness

Beginning broadly, children who were enrolled in a preschool program, not taking into account attendance rates, a full year prior to the start of primary school are more school ready in the language and literacy domain, than children who did not attend (Swaminathan et al., 2014). Furthermore, Shah and colleagues (2017) discovered children who attended a pre-k program two

years (i.e., stability) prior to the start of kindergarten were more ready for school and less likely to need special services or to be retained as compared the children who only attended for one year. Similarly, Ehrlich and colleagues (2018) focused on the influence of chronic absence patterns on school readiness, which elucidates the issue in the current research study. The results from the study revealed that chronically absent children in preschool were less ready for school, as indicated by the Kindergarten Readiness Tool (KRT) assessment, and, based on attendance data reporting total number of days absent and enrolled in both pre-k and elementary grades (i.e. absence rate), these students were more likely to be regularly absent in primary school (Ehrlich et al., 2018). The findings reported above suggest that attending an early childhood education program to acquire the skills needed for kindergarten is most beneficial when consistent attendance is sought (Swaminathan et al., 2014; Shah et al., 2017; Ehrlich et al., 2018), but replication and further delineation of this research is needed.

Covariates

To ensure the diligence of this study, the following covariates prominent in the literature were explored: child gender, child race/ethnicity, dual language capacity, socioeconomic status in the form of subsidy, and the child's teacher. Please note that given the school readiness assessment is based on developmental age, child age was not examined as a potential covariate. The rationale for the possible controls are explained below.

Child gender and race/ethnicity are commonly reported in the literature and it is for this reason gender and race/ethnicity are considered covariates. Additionally, Espinosa (2013) reports that dual language learners are 0.5 standard deviations below in literacy skills compared to their English-speaking peers at the start of kindergarten. Findings such as these suggest that for children learning English as a second language, school readiness is a challenging endeavor and,

thus, dual language is a potential control. Furthermore, Dotterer, Iruka, and Pungello (2012) define socioeconomic status (SES) as the income, education, occupation, welfare recipient, or some combination of these factors related to the child's guardian. Income as a resource, especially when limited, could potentially impact the type of early childcare program a child can attend and the quantity and quality of early care and education, thus, potentially impacting school readiness. Accordingly, SES is observed as a potential control. Lastly, the child's teacher is a potential control variable due to the possible differences in assessment decisions among teachers. In the current study, each teacher was trained by the assessment tool organization, the tool was evaluated based on its interrater reliability (Hardin & Peisner-Feinberg, 2004), and both the basal and ceiling scores are computer generated. However, maintaining the integrity of this study is essential, and therefore, the influence of the child's teacher was further explored.

CHAPTER III

METHODS

Participants

Participants in this study include 3- and 4-year-old children enrolled in the Child Development and Family Studies Center (CDFSC), which is a NAEYC accredited, university-affiliated childcare program in the 2017-2018 academic year. The CDFSC serves children from 8 weeks old up to 5 years old who are primarily from middle to upper-middle class, highly educated families. The sample was drawn from one of the four classrooms serving children in this age range, which resulted in the inclusion of 13 three-year-olds and 33 four-year-olds. Each classroom has two fulltime teachers. The lead teacher in all classrooms has earned a bachelor's degree or higher and the assistant teacher has a minimum qualification of a child development associate credential.

Procedures

Upon enrollment into the childcare program, parents provided consent for the participation of their children in research projects related to programming. All components of this study stem from data gathered as part of the normal operating requirements of the facility. Specifically, parents or caregivers were required to sign their child into the classroom each day their child attended. These records, in addition to a school roster, were kept as part of state and accreditation requirements. Developmental assessments were routinely used (e.g., LAP-3 was conducted three times each school year) to identify children who needed additional services and

to assist teachers in lesson planning. All assessments were stored on a password protected computer in the center. The study procedures were reviewed and approved by the institution's Internal Review Board (IRB).

Measures

School Readiness

The Learning Accomplishment Profile-3 (LAP-3; Sanford, Zelman, Hardin, & Peisner-Feinberg, 2004) is a comprehensive developmental assessment that is observation-based, ongoing, and provides documentation of seven domains (i.e., gross motor, fine motor, pre-writing, cognitive, language, self-help, personal/social) known to contribute to school readiness. The assessment was conducted by the classroom teacher and contains 383 developmental milestones across the seven domains. The version used in this study included the online assessment tool, which generates the basal and ceiling scores for the teacher during the assessment process. That is, the teacher was automatically prompted to begin testing at a certain skill, continue testing if the child was demonstrating ability to consistently complete tasks, and to discontinue testing upon the child showing inability to complete three tasks in a row. Teachers were required to attend a professional development training (i.e., # 8 hours), hosted by the Early Learning Accomplishment Profile, before they were able to conduct assessments. The evaluations were automatically scored and reports derived after the completion of the assessments. All assessments used in this study were conducted between the months of August and April, which was the last assessment of the academic year.

The gross motor subscale consisted of 54 items ranging from documentation of whether a child can stand alone to if they can jump rope. Fine motor skills were assessed via 40

developmental milestones (e.g., beats spoons together; builds structure with blocks). Pre-writing skills totals were derived from 38 milestones including the ability to mark on paper using a writing utensil and to draw a shape based off a visual illustration. Cognitive abilities were evaluated using 87 criteria ranging from the ability to remove the lid of a box to find hidden toys to naming four American coins. To assess language skills, 69 tasks were used and included the ability to say two words in addition to “ma-ma” and “da-da” and to recognize similar sounds. Self-help was evaluated through 50 items (e.g., ability to finger feed self for part of the meal; the ability to tie their shoelaces). Lastly, the personal/social subscale contained 45 items that assessed a child’s ability to respond to commands, participate in make-believe play, and recite their home address.

The LAP-3 was conducted at three intervals; the beginning, middle, and end of the school year. More specifically, assessments occurred for this sample in the months of August, January, and May. A teacher, the lead or assistant, evaluated each child within their classroom during each of these three assessment periods. In order to maintain consistency, the same teacher at all-time points (i.e. beginning, middle, and end) evaluated each child, with one exception. Teachers were instructed to note, during the assessment month, any milestones that they see the child meet during the daily routines (e.g., ability to write their name). For milestones that they did not observe during the regular classroom day (e.g., ability for a child to recite their address), teachers were instructed to individually assess the milestone within the classroom setting. For example, during circle time, a teacher may ask a student to name the seven days of the week. If the child correctly names the days of the week in less than two attempts, the teacher gave credit (i.e., a score of 1) to the child for successfully reaching the milestone. If the child was unable to name the seven days of the week, in the correct order, then documentation that the child did not meet

that milestone was recorded (i.e., score of a 0). A total score for each domain was calculated, with a higher score indicative of more advanced developmental knowledge and skills. Of note, for this study only the final yearly assessment was included in analyses.

In addition to developmental domains, teachers record in the LAP-3 system the child's birthdate, enrollment date, race/ethnicity, primary and/or dual language, special accommodations (e.g., IEP), gender, and the use of subsidy. This information was used to create variables such as child age and race/ethnicity. Additionally, some variables (e.g., primary and/or dual language, special accommodations, the use of subsidy) were examined as a potential control variable.

Dosage

To assess the dosage of early care and education, daily attendance sign-in sheets from August-April for the four 3- and 4-year-old classrooms in the year of 2017-2018 were collected. Due to a state requirement, attendance sheets were required to contain documentation of a child's presence or absence from class and these documents were kept on file at the child care facility. For analyses, calculations of both days present and absent were computed using the daily sign-in sheets. An absence rate (# of days absent/# of school days) was in turn calculated and used in analyses.

Stability

To determine the stability of early care and education, child records from the center were obtained. The number of consistent years of enrollment at the CDFSC from August through May were documented. The CDFSC serves children from 8-weeks old through age 5 years, which indicates that children could have been cared for in the same center for up to 5 years. Children

who received a stability score of one are those who were only present during the assessment year, with each additional number indicative of another year of enrollment.

Research design and hypothesis

The current relational study assessed two research questions. The first question, cross-sectional in nature, was to determine if the absence rate in the current preschool year was associated with any of the seven criterion-referenced domains of school readiness assessed via the LAP-3. The second research question examined if the number of years of enrollment within the same quality center was predictive of LAP-3 domains of school readiness (i.e. gross motor, fine motor, pre-writing, cognitive, language, self-help, and personal/social). Our propositions were consistent with Bronfenbrenner's Ecological Theory of Human Development as well as prior studies that support links between dosage and school readiness (Swaminathan et al., 2014; Shah et al., 2017; Ehrlich et al., 2018). The hypotheses are detailed in the following paragraph.

Given that research suggests enrollment in a high quality early childhood program fosters school readiness (Swaminathan et al., 2014; Ehrlich et al., 2018) and that research conducted with older children indicates that absence rates are predictive of academic success (Chang, 2008; Ginsburg et al., 2014; Lara et al., 2018; Wills, Elder, & Molina, 2018), we expected that a lower absence rate within the current preschool year would be significantly related to school readiness markers in a negative direction. That is, we expected lower rates of absences to be associated with higher school readiness scores. No hypotheses were made regarding the specific domains of school readiness and absence rates, as this pilot study is a novel contribution to this literature. Additionally, literature supports that an increased number of years prior to kindergarten is beneficial to a child's academic outcomes (Shah et al., 2017). Therefore, we hypothesized greater stability in a quality child care program to be positively associated with the previously

mentioned school readiness domains. The results of our analyses can be found in the next chapter.

CHAPTER IV

RESULTS

Introduction

This chapter outlines the results of our study analyses. Upon removing outliers and identifying covariates, a total of 14 hierarchical regressions were conducted. That is, seven regressions were conducted to examine if the absence rate was associated with the seven domains of school readiness. Additionally, to determine if stability in a quality childcare program was predictive of outcomes, an addition seven other regressions were conducted; one for each domain of the LAP-3. Results indicated stability to be the only predictor of any of the domains of school readiness, which is detailed below.

Preliminary analysis

Missing data points were examined first and 17 potential participants were removed from the original sample due to partial enrollment during the targeted school year, resulting in a sample of 46 children ($M = 4.6$ years old; $SD = 6.8$ months). The participants were 50% female from diverse ethnic backgrounds (69.9% Caucasian, 8.7% African American, 17.4% Asian, 2.2% Biracial). The means and standard deviations of the study variables are presented in Table 1. On average, children missed approximately 16 school days during the academic year, with variation in absences ranging from 6 to 52 days. In regard to school readiness, children scored highest in the cognitive and language domains and lowest in the pre-writing and fine motor domains. The means and standard deviations data were used to examine and remove potential outliers. That is,

children with school readiness scores 3SDs above or below the mean were removed from the analyses (e.g., potential developmental delays). Only one outlier was found (i.e., personal/social domain), and was removed from all subsequent analyses within that domain. Associations between study variables and potential controls (i.e. child gender, child race/ethnicity, dual language capacity, socioeconomic status, and child’s teacher) were evaluated and no significant associations were found, thus no control variables were entered into the regressions.

Table 1 Means and standard deviations of study variables.

	<i>M</i>	<i>SD</i>	<i>Possible Range</i>	<i>Range</i>
Absence	16.37	9.898	1-184	.10-28.26
Absence rate	8.69	5.514	0-100	1-52
Stability	2.28	1.186	1-5	1-5
LAP-3 Gross Motor	45.72	7.927	0-54	22-54
LAP-3 Fine Motor	34.33	5.241	0-40	20-40
LAP-3 Pre-writing	30.37	6.162	0-38	18-38
LAP-3 Cognitive	61.72	20.315	0-87	27-87
LAP-3 Language	51.43	15.733	0-69	22-69
LAP-3 Self-help	42.65	5.743	0-50	28-50
LAP-3 Personal/Social	42.07	3.172	0-45	30-45

Correlations among study variables are presented in Table 2. As expected, absence rate was positively correlated with absence, the variable in which it was derived. Furthermore, all seven school readiness domains were positively associated with each other as expected.

Table 2 Correlations among study variables

	1	2	3	4	5	6	7	8	9	10
1. Absence	-									
2. Absence rate	.962**	-								
3. Stability	.025	.032	-							
4. Gross motor	-.032	-.076	.436**	-						
5. Fine motor	.094	.048	.053	.609**	-					
6.. Pre-writing	.153	.099	.049	.710**	.836**	-				
7. Cognitive	.090	.035	.231	.782**	.717**	.767**	-			
8. Language	-.001	-.050	.164	.748**	.626**	.630**	.932**	-		
9. Self-help	.044	-.002	.090	.709**	.713**	.783**	.690**	.589**	-	
10. Personal/social	.000	-.041	.303*	.817**	.636**	.617**	.732**	.724**	.645**	-

Note. *p < .05; **p < .01.

Regression analysis

To assess the associations between absence rates and the seven domains on the LAP-3 school readiness assessment (i.e., gross motor, fine motor, cognitive, language, self-help, personal/social), seven regressions were conducted. To further understand the relation between attendance and school readiness, seven regressions were conducted on the years of enrollment (stability) and the seven LAP-3 domains. The results are reported below.

Absence Rate

Analyses revealed that absence rate was not significantly associated with any of the seven school readiness domains.

Stability

Analyses, as shown in Table 3, indicated that stability was predictive of two of the seven LAP-3 school readiness domains. That is, hierarchical regression results indicated a positive, significant association between stability and the LAP-3 gross motor domain. Specifically, higher consistency in years enrolled in the same quality childcare program was predictive of greater gross motor skills ($\beta = 2.916, p < .01$), with an R^2 of 19%. Furthermore, stability significantly predicted the personal/social domain. Similar to the findings with the gross motor subscale, higher consistency in enrollment in a quality center was positively associated with personal and social skills ($\beta = .812, p < .05$), with an R^2 of 9.2%. No significant results were found for the following subscales: fine motor, pre-writing, cognitive, language, or self-help.

Table 3 Regression estimates of models with stability predicting LAP-3 domains

LAP-3 Domain	β	R^2	ΔF
Gross Motor	2.916	.19	.005**
Fine Motor	.233	.003	.728
Pre-writing	.256	.002	.745
Cognitive	3.958	.053	.122
Language	2.169	.027	.278
Self-help	.435	.008	.553
Personal/social	.812	.092	.043*

Note. * $p < .05$; ** $p < .01$.

Discussion

This pilot study investigated associations between preschool dosage (i.e. absence rate; stability of enrollment in years) and school readiness, the latter of which was assessed via a criterion-referenced assessment of the following seven domains: gross motor, fine motor, pre-writing, cognitive, language, self-help, and personal/social. One indicator of dosage, increased stability of enrollment in the quality childcare center, was positively associated with better performance on two indicators of school readiness, namely gross motor and personal/social development. This finding is consistent with previous research that states an increased number of years enrolled in an early childhood program yields greater school readiness kindergarten readiness (Shah et al., 2017) and builds on the literature in a novel way by extending stability beyond enrollment in any early childhood facility to examining stability within one high quality center.

While much of the focus on early childhood and school readiness is on academic areas such as language and literacy, these results underscore the importance of recognizing the influence quality early childhood has on other areas of development that are known contributors to school readiness. Many times outside play time or physical activity are components of the school day that get reduced when time is short or weather is less than optimal (e.g., too hot; raining). However, physical development, including gross motor skills, is linked to better school readiness and more optimal cognitive functioning (Burton & Rodgerson, 2001; Sattelmair & Ratey, 2009; Cameron et al., 2016; Skinner & Piek, 2001; Byers et al., 2016). For example, engaging in gross motor activity increases blood flow (Mandolesi et al., 2018) and midline crossing (Welniak & Smith, n.d.), which allows for more optimal brain development and processing (Welniak & Smith, n.d.). Furthermore, motor skills require motor planning that is

associated with executive functioning skills such as working memory, planning and problem solving, and inhibitory control (Stockel & Hughes, 2016). The ability to properly motor plan has also been linked to a child's ability to adequately interpret and interact appropriately with their social environment (Bar-Hiam & Bart, 2006). Quality childcare programs, such as the one in this study, recognize this and adhere to the regulations that require children opportunities to engage in outdoor play and physical activity. Thus, it is possible that stability of enrollment in a quality center offers children the opportunity to consistently engage in activities that promote gross motor skills, ultimately contributing to children's school readiness. This finding may be particularly important in the current climate in which many children are sedentary and do not spend significant amounts of time outside (McCarthy, 2018). These findings can be understood through the lens of Bronfenbrenner's Ecological Theory of Human Development (Bronfenbrenner, 1994). For example, regulations regarding scheduled outside time (exosystem) and the modeling of healthy habits by teachers (i.e. walking, running, stretching) and the availability of developmentally appropriate materials meant to guide development (microsystem interactions), are likely contributors to these findings and further highlight the importance of a high quality early childhood environment for healthy development.

Similarly, social and emotional development (i.e. the personal/social domain) is an integral part of being school ready (Hatcher et al., 2012; Wesley & Buysse, 2003; Shrier & Michigan State University Extension, 2014; Lara-Cinisomo et al, 2008; Lippman et al., 2015). The findings associating increased stability (i.e. number of years in the same early childhood program) and the personal/social domain may be the result of the child's extended exposure to a high quality environment, such as the participating center in this study, which fosters independence, self-regulation, healthy relationships, self-exploration, and a safe learning domain.

For example, a child with three years of experience in an early childhood program hand washing (i.e. self-help skills) and sharing a play space with peers (i.e. social skills) may be more school ready in those areas than a child who only has one year of experience. Furthermore, with the expectations of kindergarteners to adequately demonstrate self-regulation techniques needed for the transition to kindergarten, the importance of these findings and how these skills are supported by a high quality environment are paramount. After all, social and emotional skills are thought to be more importance for kindergarten readiness than any other developmental domain (Welchons and McIntyre, 2015). Once again, highlighting microsystem interactions between the child and learning environment to explain development over the years consistently attending the same early childhood program (Bronfenbrenner, 1994).

Although we were surprised that no other domain resulted in significant associations between either of the dosage variables, we recognized that early learning experiences happening outside of the classroom may make up for learning opportunities missed at preschool. Based on family SES and parent educational level of this sample, the possibility of quality early learning experiences outside of the classroom are likely, and some of these experiences may be happening on days absent from school. For example, children may miss a week during the school year to go on a business trip with their parent where they get to experience a diverse, rich learning experience (e.g., museums in Washington, D.C.) that may more than compensate for missed classroom opportunities. This suggests further research in the line of the current pilot study with a more diverse SES population is needed.

With limited research related to dosage in early childhood and a child's school readiness, this research makes a novel contribution to the literature. Specifically, this study provides a broader definition of stability than previous studies in this area (i.e., greater than two years

enrollment) and includes an evaluation of multiple domains of school readiness, the latter of which has rarely been highlighted in the literature. However, replication and further research is needed to ensure a thorough investigation of this research area. The study implications are described below.

Implications

The results of this study need to be replicated, but the findings have potential implications for the structure of early care programs and for parents and teachers. Specifically, if stability in years of enrollment in a high quality center is important for school readiness then a consideration of the structure (e.g., preschool only versus early care through preschool) of programs is required. Caring for infants and younger children is an expensive task that many private facilities may not venture into because it reduces the profitability of the program. These data would suggest that stand-alone preschools (i.e., only serving three- and four-year olds) may not be the most beneficial to children's school readiness, although they are the most profitable. Further examination of this line of research, including how including preschools into public elementary schools may relate to academic success, is warranted.

These data also provide guidance to parents about qualities to look for when selecting a childcare program. Parents may not always have access to quality programs in their area. Thus, if accredited programs are unavailable, these data would indicate parents should ask questions such as (1) How much outside time do children get daily?, (2) How much of the day is spent engaged in gross motor activities inside and outside the classroom?, and (3) What happens when the weather is not optimal for outdoor play? Parents may also consider the importance of finding a program that fits their needs long-term. For instance, if a parent anticipates that they would need childcare continuously for their child (e.g., from under a year old through preschool), then it may

be in the child's best interest for the parent to enroll an infant in a program that serves children from infancy through preschool.

The study results provide teachers with knowledge of the importance of both the gross motor and personal/social domains. In turn, teachers may be more intentional about planning gross motor and personal/social activities inside and out of the classroom if they are aware of the results of the study. For example, planning to use gross motor activities within the classroom right before a lesson would combine both gross motor and curriculum content. After all, gross motor can promote cognitive functioning and learning (Sattelmair & Ratey, 2009). Furthermore, the results may also influence teacher-child interactions and teacher modeling behavior. With knowledge of the importance of the personal/social domain on a child's school readiness, teachers may adapt guidance strategies to better support social/emotional development and model appropriate self-regulatory behaviors and social interactions with other children and adults. While the study provides guidance in these areas, the findings need to be considered in the context of which they were derived. The limitations of this study are outlined below.

It is important to note that these findings are in the context of children from middle to upper class families. Research supports that children from low-income backgrounds highly benefit from a high quality early care and education program (Cascio & Schenzenbach, 2013). Thus, if our population resulted in significant school readiness gains, the benefit of enrollment in a NAEYC accredited center for children from low-income homes may be even more significant. As stated in the literature above, studies show children from low-income backgrounds highly benefit from regular attendance in a quality early childhood program (Forry and colleagues, 2013). Additionally, research highlights the importance of stability in caregiving for young

children, thus stability in early childhood programming may be even more critical for children from lower income homes. The study limitations are outlined below.

Limitations

We recognize that our sample was limited, both in size and socioeconomic diversity, which limits the generalizability of the results. However, given that the research questions were novel, the study provides a starting point for future research regarding dosage and school readiness. The inclusion of only one center also presents limitations, but this approach allowed for a natural control of the quality. That is, while accreditation is supposed to represent consistency across accredited programs, that is not always the case. Given that the sample was drawn from one center, the quality of the program was consistent.

Findings should be deduced within the framework of this study. Although we used a criterion-referenced assessment that is highly employed in the early childhood setting, it is plausible that a more standardized assessment, such as ones often used upon entry to public kindergarten (e.g., Kindergarten Readiness Assessment) could have resulted in different findings. Of note, standardized school readiness assessments used by the local school system during kindergarten was not available on an individual level for these children. However, we were able to obtain information about how children from the center included in this study did on the standardized assessment and results indicated that children scored an average of 579 on the Kindergarten Readiness Assessment, which is well above the necessary benchmark of 530. Inclusion of both developmentally appropriate and more standardized measures of school readiness would be beneficial for future research studies. It is important to note that the LAP-3 assessment is based on the Head Start Early Learning Outcomes Framework (ECLKC, n.d.), while the Kindergarten Readiness Assessment is written according to the Mississippi Early

Learning Standards for Classrooms Serving Four-Year-Old Children (Mississippi Department of Education, n.d.). Both of these developmental frameworks share investigations in similar developmental domains, have comparable key ideas, and alike purposes. Taken together, future studies should consider addressing with a larger, more socioeconomically diverse sample, across multiple centers using several variations of school readiness assessment, and the exploration of stability in months. There is a necessity for more in-depth, longitudinal studies related to this topic area.

Conclusion

The purpose of this study was to investigate both absence rate and stability in early childhood programming and their possible associations with a child's school readiness. We found, through the use of attendance records and a criterion-referenced assessment tool, stability to be a significant predictor of 2 of the 7 school readiness domains, namely gross motor and personal/social. However, absence rate was not found to be associated with any of the school readiness domains. Although findings of this pilot study are preliminary, the information can be used to influence best practices as it relates to attendance in early childhood programs.

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