IMPACT OF HEAD START ON AFRICAN AMERICAN ACADEMIC SCHOOL READINESS: A META-ANALYSIS

A Dissertation

by

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ABSTRACT

This meta-analysis examined how Head Start is impacting the academic school readiness skills of African American students from studies ranging from 1987 to 2017. Academic school readiness skills include early literacy, language, and early numeracy along with subcategories of each. The study also examined if race/ethnicity of students and teachers, parent annual income, and parent level of education impacts African American students in Head Start. There were several moderators of interest which also included: percentage of African American students within the study and the year that studies were completed or published. The meta-analysis resulted in 77 studies, which met the inclusion criteria. Results indicate Head Start has a moderate effect (Cohen's $d = 0.62$) on African American school readiness using a random-effects model. Parents who had lower levels of education had children with significantly lower levels of academic achievement. In addition, when Asian teachers were included within the study, academic school readiness of African American students was positively impacted. The discussion includes possible rationale for significant and nonsignificant results. The study's limitations, possible applications, and future directions of research are also discussed.

DEDICATION

This dissertation is dedicated to my family and extended family who have supported and loved me throughout my entire education. Words cannot begin to express how honored and grateful I am to be part of our family. Thank you for moving me to and from A&M twice, attending graduations, picking me up and dropping me off to school, and countless laughs.

Dad: Thank you for simply being my father and preparing me for the world. Desiree and I could not have asked or prayed for a better man to protect and raise us. It is because of you that I am the strong woman I am today. You challenge me to think about every life decision in a methodical way, which has helped me to navigate the last few stages of my education.

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TABLE OF CONTENTS

Page

Page

LIST OF FIGURES

Page

LIST OF TABLES

Page

CHAPTER I

INTRODUCTION

Statement of Problem

According to The Nation's Report Card of 2015 (National Center for Education Statistics [NCES], 2015), African American students have the lowest rates of Mathematics achievement for fourth, eighth, and twelfth graders. In addition, they have the lowest rates of Reading achievement for eighth and twelfth graders. These findings are of major importance to educators, because the achievement gap between African American and Caucasian students has been found as early as three years of age (Burchinal et al., 2011). The racial achievement gap can partially be explained by low-income students being educated in poorly funded schools (Sandy & Duncan, 2010). In addition, Webb and Thomas (2015) found that poverty, nutrition, self-esteem of students, less qualified teachers, fewer resources, teacher expectations and perceptions, and student/family attitudes toward education were associated with the racial achievement gap. The lack of funding provided to low-income schools impact society and how important the general public feels this problem should be remedied. Seemingly, the general public is more interested in reducing the achievement gap between socioeconomic statuses (SES) than race/ethnicity (Valant & Newark, 2016). Due to society's current views on social justice issues, it could be presumed the reason individuals rather focus on the achievement gap between SES groups is because low-income Caucasians could see more similarities between themselves and high-income Caucasians rather than other low-income peers of different racial backgrounds. Regarding early childhood education, it is critical to examine the school readiness of low-income students of color so see if their achievement is impacted by their race, SES, or both.

Head Start was created in 1965 to provide services to low-income children and families in the hope that these children will make the necessary gains in achievement (Office of Head Start, 2016). National studies such as, the Head Start Impact Study (U.S. Department of Health and Human Services [DHHS], 2010) or any research using the Head Start Family and Child Experiences (FACES, 1997) Survey longitudinal data provide snapshots of how Head Start is operating overall. Any findings related to African American students are due to being an outlier rather than being the sole focus of the study. Academic school readiness skills of the Head Start curriculum include language, early literacy (i.e., reading/writing), and early numeracy. Research on these academic areas stress the importance of examining environmental and cultural factors when determining how African American students are achieving in the classroom.

Bronfenbrenner's (1979) ecological systems theory provides a theoretical foundation on how Head Start can function on various levels (e.g., local, state, and federal). In addition, Piaget's (1941) preoperational stage is where Head Start children learn academic school readiness skills. These theories may help in determining what might be impacting the achievement gap between African American and Caucasian Head Start students. Previous meta-analyses have not focused specifically on African American children in Head Start or the factors that might impede or improve their levels of achievement. Any findings related to African American students within the meta-analyses were due to a finding worthy of discussion; however, the meta-analyses did not seek to examine African American Head Start children as the sole focus of the study.

A meta-analysis will be conducted to determine if Head Start is provides positive impact specifically for the achievement of African American students. Factors relating to home and school will be analyzed to determine their impact on African American achievement in Head

Start. Inclusion and exclusion criteria will be described in detail along with the rationale as to why a study may or may not be included within the meta-analysis. Moderators specific to sociodemographic factors, percentage of African American students within the study, Head Start legislation, and academic outcomes will be examined and rationale for including these moderators will be provided. This study will describe the procedures used for the literature search and coding for studies included within the meta-analysis. Finally, the statistical methods and planned analyses will be discussed to determine the overall effect size.

Purpose of Study

The purpose of this study is to examine whether participation in Head Start positively impacts African American students. Even though psychological research has increased regarding African Americans, there is historically a low amount of research regarding people of color (Delgado-Romero, Galván, Maschino, & Rowland, 2005; Graham, 1992; Imada & Schiavo, 2005) and recruitment of this population is difficult due to mistrust in research engagement (Cokley & Awad, 2013; George, Duran, & Norris, 2014; Scharff, et al., 2010). *People of color* is defined as those who are African American/Black, Asian, Latino/Hispanic, Native American, or Multiracial. This proposed study addresses gaps in the current literature by targeting a population that is already underrepresented in psychological research. The findings will have a greater impact by focusing on academic school readiness rather than social-emotional school readiness to determine factors affecting the achievement gap. The study will help to conclude whether Head Start continues to serve its target population, since African Americans are most likely to enroll into Head Start programs compared to other racial groups even though only 29% of students in Head Start are African American (DHHS, 2017d). The study will also examine if these students are making academic gains in accordance with the Head Start Program

Performance Standards (HSPPS, 2016). Finally, the study will identify environmental factors influence the academic outcomes for Head Start African American students.

Research Questions and Hypotheses

There are two proposed research questions for this study:

1. *Is Head Start an effective program specifically for improving African American students' academic school readiness skills?* It is hypothesized the effectiveness of Head Start for African Americans will produce a small to moderate effect size. The research regarding Head Start is mixed but generally positive for all students (Barnett & Hustedt, 2005; Cooper & Lanza, 2014). Inconsistent findings related to the effectiveness of Head Start prompted the Office of Head Start to revise its Performance Standards in June 2015 (DHHS, 2015a). These mixed, inconsistent results are due to students having short-term benefits such as substantial advantages in Reading and Math at the end of Kindergarten (Youn, 2016) with increases in receptive vocabulary for urban children and increases in oral comprehension for rural students (McCoy, Morris, Conners, Gomez, & Yoshikawa, 2016) in Head Start. The effectiveness of Head Start over the long-term has produced limited effects on academic skills for children in primary and secondary education (Magnuson, Meyers, Ruhm, & Waldfogel, 2004; Phillips, Gormley, & Anderson, 2016).

2. *Which factors contribute to the achievement gap between African American and Caucasian students, as well as, which factors provide the most benefit to academic outcomes?* It was hypothesized that sociodemographic variables such as race/ethnicity of all participants, annual family income, and parental education level will have significant effects on the academic school readiness skills of African American students. In addition, the percentage of African American students within the classroom was analyzed to determine the effect on academic outcomes. The mission of the new HSPPS is to implement services to improve teaching, parent

engagement, professional development, and the Head Start curriculum (DHHS, 2016). Therefore, the completion/publication year of the study will be examined to determine if Head Start legislation is providing positive effects for African Americans in the classroom. Finally, academic school readiness outcomes were examined to determine if Head Start provides higher achievement scores in one academic area over another.

Definition of Terms

- *Academic school readiness skills* include early literacy, language, and early numeracy skills of early childhood and Head Start students.
- *African Americans* are defined as anyone who is classified or self-identifies as a U.S. citizen with having ancestral origins from Africa but who also do not identify as part of any other racial/ethnic group. Due to the research being examined, African Americans also were referred to as *Black* depending upon how they were referenced in the literature. In addition, Head Start classifies these students as African American/Black.
- *Black - White Achievement gap:* The Black - White achievement gap can be defined as the difference between the average achievement scores for Black and White students (NCES, 2009).
- *Caucasians* are defined as anyone who is classified or self-identifies as an U.S. citizen with having ancestral origins from Europe but who also do not identify as part of any other racial/ethnic group. Caucasians also were referred to as *White* depending upon how they were referenced to in the literature. In addition, Head Start classifies these students as White.
- *Early literacy* skills defined by Shanahan and Lonigan (2010) indicate the variables that measure early literacy skills. These include alphabet knowledge,

phonological awareness, rapid automatized naming of letters/digits, rapid automatized naming of colors/objects, writing/writing name, and phonological memory.

- *Early numeracy* or "number sense" is the "ability to immediately identify the numerical value associated with small quantities, a facility with basic counting skills, and a proficiency in approximating the magnitudes of small numbers of objects and simple numerical operations" (National Mathematics Advisory Panel, 2008, p. 27).
- *Head Start* is a federally created program that services low-income children and families from birth to age five. The purpose of Head Start is to provide services related to early learning, health, and family well-being. (DHHS, 2017c).
- *Head Start Program Performance Standards (HSPPS)* "are the foundation for Head Start's mission to deliver comprehensive, high-quality individualized services to support school readiness of low-income families" (DHHS, 2018).
- *Language* as defined by Sparks and Reese (2013) are vocabulary skills, receptive/expressive lexical knowledge, semantics, syntax, and narrative discourse.
- *School readiness skills* are defined as foundational skills related to academic achievement, cognition, and social-emotional behavior taught in an early childhood setting.

Implications for Practice

Head Start takes an ecological approach to intervention. Certain information such as family income, parent employment, and teacher education level/years of experience are crucial for informing data-based decision making in Head Start programming. The Office of Head Start has revised the HSPPS to target effective teaching and learning, healthy development, comprehensive service delivery, family engagement, health and safety, and management (Office

of Head Start, 2016). This study will inform the literature and educational in several ways. The results will impact educational programming within Head Start programs at the local, state, and federal levels. Using research conducted at the local level, changes in policy and legislation will have evidenced-based results to assist in the decision-making process. Having African American students as the target population, Head Start research will be informed of the cultural and diversity factors that are unique to this population. The findings of this study will impact the design and implementation of curriculum to suit the needs for Head Start centers with a large population of African American students. In addition, it will offer insight into what is and is not effective specifically for African American students in the hopes of reducing the achievement gap between them and their peers.

CHAPTER II

LITERATURE REVIEW

School Readiness

Early childhood programs introduce students to *school readiness skills,* the skills and knowledge children need to be successful in the academic and environmental demands of the classroom (Snow, 2006; Carlton & Winsler, 1999). These skills range from academic achievement, cognition, social-emotional development, and physical/motor development (Kagan, Moore, & Bredekamp, 1995) but also can include components of executive functioning (Diamond, 2010). Obtaining these necessary skills in preschool offers students lasting benefits in the areas of reading and mathematics (Claessens, Duncan, & Engel, 2009), social-emotional development, (Li-Grining, Votruba-Drzal, Maldonado-Carreno, & Haas, 2010), and physical development (Hair, Halle, Terry-Human, Lavelle, & Calkins, 2006).

The National Center for Education Statistics (NCES, 2016) provided data regarding children enrolled in preschool programs ages three to five years from 1970 to 2016. Most of the students attended preschool in a public, full-day setting and are White, living in a two-parent household, with both of who are employed. These demographics are notable, because not all children have these protective factors to assist with the transition to kindergarten. Children will have the best opportunity to succeed if they have access to resources, high-quality early childhood programs, and early intervention for those at-risk (National Association for the Education of Young Children [NAEYC], 2009). For students enrolled in preschool programs such as Head Start, early intervention is of the utmost importance due to the multidisciplinary, individualized approach for child development within the program. Head Start targets school readiness skills within central domains that include Approaches to Learning, Social Emotional

Development, Language and Literacy, Cognition, and Perceptual, Motor, and Physical Development (DHHS, 2017e). From these Central Domains, the academic areas of Literacy, Language and Communication, and Mathematics Development fall within the Preschool Subdomains (DHHS, 2017e). Due to the emphasis on social-emotional functioning in early childhood research, examining academic school readiness will have a lasting impact on intervention implementation. In addition, it is crucial to examine how students of color, particularly African American students, are progressing within their academic school readiness skills.

Early Literacy

As mentioned previously Shanahan and Lonigan (2010) provided six variables, which serve as foundational early literacy skills. The National Early Literacy Panel (NELP, 2008) provided definitions for the six variables measured within their report. Alphabet knowledge is the ability to identify letters/letter sounds and is usually measured by a recognition task or naming test that was developed by the investigator. Phonological awareness is the "ability to detect, manipulate, or analyze components of spoken words independent of meaning" (NELP, 2008, p. 43). Tasks to measure phonological awareness include but are not limited to alliteration detection, rhyme detection, combining syllables, counting the number of syllables in words, or deleting sounds from words. The investigator may use curriculum-based measures (CBMs) to assess phonological awareness or the child might be administered a norm-referenced test such as the Comprehensive Test of Phonological Processing-Second Edition (CTOPP-2; Wagner, Torgesen, Rashotte, & Pearson, 2013). Rapid automatized naming (RAN) of letters/digits is the repetition of groups of letters, digits, and/or both and are evaluated by a measure created by the researcher (NELP, 2008).

Rapid automatized naming (RAN) of objects/colors is the ability to recall pictures of objects or colors, which may be assessed by a measure created by the investigator (NELP, 2008). These exact measures are important, because they are most commonly used by researchers when examining outcomes related to academic outcomes. Measures such as, the RAN of letters and colors were used in the Head Start Impact Study completed in 2010. Writing/writing name is defined writing individual letters when requested or writing one's own name, which is usually measured by an assessment created by the examiner. Writing is a foundational early literacy skill unique to concepts more related to reading. Gerde, Bingham, and Wasik (2012) define writing as, "expressing ideas, opinions, and views in print: writing for communication or composing" (p. 351). There are ten stages of writing development (DeFord, 1980). These stages include scribbling, differentiation between drawings and writing, attending to fine visual details, developing letters and shapes that resemble letters, and combining letters but letter-sound correspondence may not be apparent. Additional skills include writing words in isolation, writing simple sentences, creating complex sentences, using appropriate punctuation, and using all these skills to create stories or information material. Finally, phonological memory (Phonological STM) is when one can remember information heard aloud for a brief period. Tasks to measure phonological STM include digit span, repeating sentences, or repeating nonwords from standardized assessments or assessments created by the investigator (NELP, 2008).

Language

Early literacy skills and language are often intertwined in research and Head Start also considers these areas as domains of school readiness. Language skills include vocabulary, receptive and expressive language skills, semantics, syntax, and narrative discourse (Sparks &

Reese, 2013). Probably the most commonly used assessment for language skills is the Peabody Picture Vocabulary Test-Fourth Edition (PPVT-4; Dunn & Dunn, 2007). Hoff (2006) discusses how environmental circumstances can impact language development. These contexts are found within and outside the home. Home and personal characteristics such as cultural influences, SES, race/ethnicity, more than one language spoken in the home, age of parent, and the quality of time spent between the child and parent all have an impact on language development. Other contexts include early childhood education experiences, school attended, and the opportunity for the child to engage in language development with peers (Hoff, 2006). Since Head Start takes an ecological approach in providing services, it is important to consider the child's environment at home and school when assessing language skills.

Early Numeracy

Early numeracy skills or number sense is the "ability to immediately identify the numerical value associated with small quantities, a facility with basic counting skills, and a proficiency in approximating the magnitudes of small numbers of objects and simple numerical operations" (National Mathematics Advisory Panel, 2008, p. 27). Purpura and Lonigan (2013) specify that informal numeracy skills for preschool students includes numbering, relations, and arithmetic operations. Students' early numeracy skills can be assessed with CBMs created by the investigator or norm-referenced assessments. These norm-referenced assessments can include mathematical test/subtests (Applied Problems) from the Woodcock-Johnson III Tests of Achievement (Woodcock, McGrew, & Mather, 2001) or the Test of Early Mathematical Abilities-Third Edition (TEMA-3; Ginsburg & Baroody, 2003).

African Americans and School Readiness

When focusing on African American students in early childhood education, it is critical to discuss how children develop these skills at school and home. The High/Scope Perry Preschool Project, Abecedarian Project, and the Chicago Child-Parent Centers are longitudinal studies, which targeted the school readiness skills of low-income African American students and families. The High/Scope Perry Preschool study began in the 1960s and analyzed the outcome of participating in preschool of one hundred and twenty-three children. By the age of forty participation in preschool resulted in higher rates of completing high school, employment, health and positive family interactions, and a reduction in the likelihood of being arrested (Schweinhart et al., 2005). The Abecedarian Project, which was conducted in the 1970s, concluded that preschool participation resulted in higher intelligence quotient (I.Q.) scores, academic achievement, obtain and maintain employment, and less drug use and depressive symptoms. In addition, by the age of thirty-five participants had lower rates of prehypertension and less likely to experience total coronary heart disease (The Carolina Abecedarian Project, 2017). Finally, the Chicago Child-Parent Center (CPC) Program that began in 1967 created the Chicago Longitudinal Study to analyze the long-term effects of the CPC Program. Students within in this program experienced a reduction in the likelihood of arrests, special education placement, child maltreatment and higher rates of achievement (Reynolds, Temple, Robertson, & Man, 2001). These foundational studies have shown factors related to intervention implementation are most useful for low-income African American students in and outside of the classroom. They also offer information on factors that are impacting achievement for this specific group.

Even though the preceding studies reviewed demonstrate there were benefits of early childhood education for low-income African American students, participation in these programs

have also shown to benefit African Americans despite above and beyond socioeconomic status (SES). African American children from middle-income backgrounds had significantly better scores on norm-reference receptive and expressive vocabulary assessments. In addition, these children used more words during spontaneous speech (Horton-Ikard &Weismer, 2007).

Parent engagement also impacts African American student outcomes in early childhood. Hammer and Weiss (1999) found African American mothers and children of middle SES backgrounds engaged in more language goals, verbalizations, verbal play, and used a wider variety of words when compared to African Americans of a lower SES. Furthermore, low-income rural African American fathers used more vocabulary with their 6-month old children if there was more flexibility in their work schedules (Pancsofar, Vernon-Feagans, Odom, & The Family Life Project Investigators, 2013). Low-income African American preschoolers from homes which engage in more language have larger vocabularies, use more irregular nouns and verbs, and use longer utterances (Roberts, Burchinal, & Durham, 1999). Parents from high-income backgrounds were more likely to engage in mathematical exchanges when reading and playing with their children compared to low-income parents (Vandermaas-Peeler, Nelson, Bumpass, & Sassine, 2009). Regarding school, the quality of care an African American preschooler receives impacts their language development during the first two years of their lives (Burchinal et al., 2000). Overall, parents and classroom factors continue to have an impact on children's early language and numeracy skills. Even though early childhood programs have shown benefits, differences in parent involvement and access to resources in early childhood may impact rates of achievement between and within racial/ethnic groups. The purpose of Head Start is to reduce the gaps or risk factors of low-income families so they can obtain resources that will assist in educational programming in numerous areas.

School Readiness Gap

As mentioned previously, there are gaps in achievement and/or school readiness in the early childhood setting (Burchinal et al., 2011). The environment of poverty has shown negative associations with children's literacy, oral language, and math skills (Okado, Bierman, & Welsh, 2014; Britto, Brooks-Gunn, & Griffin, 2006) and this increases for African American students due to their race and SES (Johnson, 2014). Equally important are the protective factors for African American students in early childhood. Factors such as weekly childcare hours and better health (Holliday, Cimetta, Cutshaw, Yaden & Marx, 2014) substantial increase in preschool enrollment of students of color, policies specifically targeting these groups (Magnuson & Waldfogel, 2005), and altering parent behavior (Brooks-Gunn & Markman, 2005) have positive associations with closing the achievement in early childhood. A key point to realize is that these types of protective factors or "wrap around services" can be found in the Head Start setting to maximize students' achievement in the classroom. Currie (2005) indicates that providing interventions on various developmental levels will help in reducing the school readiness gap. Due to differences in rates of achievement and early childhood experiences specific to African American students, it is essential to consider how those differences may be viewed in the classroom.

An aspect that is unique to African American school readiness is the research on African American English (AAE). AAE, Black Language, Black English, African American Vernacular English (AAVE), or Ebonics which is considered a "nonstandard" dialect spoken mostly by African American students (Craig & Washington, 2006; Manning & Baruth, 2003). Conversely, Standard American English (SAE), Mainstream American English (MAE), or School English (SE) is a dialect spoken mostly by Caucasian students and is used within the school setting

(Connor, 2002). Research indicates that low-income children who use AAE exhibit morphological (i.e., vocabulary) weaknesses (Pruitt, Oetting, & Hegarty, 2011) while African American children who are more familiar with SE have better reading achievement (Charity, Scarborough, & Griffin, 2004). In addition, children speaking both MAE and AAE showed equivalent pronunciation of words (Pearson, Velleman, Bryant, Charko, 2009) and preschoolers having the ability to use AAE and SAE exhibit a developing awareness of pragmatics and metalinguistics (Connor & Craig, 2006). The research on AAE indicates African American students can overcome gaps in achievement due to their sociodemographic factors but, it may highlight biases in the classroom. Students entering a formal education setting may be viewed in a negative light strictly due to a lack of exposure to SAE. With the increase of students of color but the lack of diversity in school faculty and staff, the overidentification of a language difficulty may be due to the norms and biases of the mainstream culture rather than an actual language impairment. These cultural factors and biases can impact how education is applied to African American students and in result can impact the achievement gap.

Achievement Gap

The National Assessment of Educational Progress (NAEP, 2015) provides reports if student achievement is increasing or decreasing; however, the reports do not indicate what might be causing these changes. There are five instances the achievement gap can be reduced (NCES, 2009). First, if both groups produce gains in achievement with the lower group making even more gains than the higher group. Second, if the achievement of the higher group levels off while the lower group makes gains in achievement. Third, if the higher achieving group decreases its rate of achievement while the achievement of the lower group increases. Fourth, if the higher performing group decreases its achievement and the lower performing group does not

change. Fifth, if the achievement of both groups declines; however, the higher achieving group has declined even more (NCES, 2009). Across time the racial achievement gap between African American and Caucasian students has decreased; however, African American children are still underperforming compared to Caucasian students (NCES, 2009). Barton and Coley (2009) identify sixteen factors contributing to the achievement gap between these two racial groups, which are separated into three clusters. The clusters include school factors, the home and school connection, and before and beyond school. Most of the national student achievement reports do not consider the achievement of early childhood students at the national level (Bassok & Latham, 2017). This is unfortunate given that preschool students are learning academic concepts by the age of three and are periodically assessed to measure their rates of achievement.

Racial Achievement Gap

The racial achievement gap can be defined as the difference in academic achievement between African American and Caucasian students (Williams, 2014). Data from the Center for Education Policy Analysis (CEPA, 2013) indicates the achievement gap has narrowed for Black and Hispanic students due to their achievement scores rising at faster rates than Whites. In addition, they found associations between the achievement gap and racial gaps in income, poverty and unemployment rates, and educational attainment. There are other factors to consider when analyzing the racial achievement gap. First, it is important to consider the lack of access to opportunities students of color may experience (Cowan Pitre, 2014) and how this may impact their education. Second, SES and non-school factors such as health, family, and culture impact the racial achievement gap as well as race and school factors such as organizational processes, teacher characteristics, resources, and racial/ethnic composition of students (Condron, 2009). Third, the racial composition of school faculty and staff impacts achievement. Moore,

MacGregor, and Cornelius-White (2017) indicate *racial congruence* between students and teachers is associated with an increase in reading and math achievement. Racial congruence is defined as a student attending a school where most of the school staff or students are of the same racial/ethnic group (Moore, MacGregor, and Cornelius-White, 2017; Byrd & Chavous, 2011). Knowing that these factors affect children in primary and secondary schools, it is important to consider how these factors impact children in early childhood settings.

Black children are more likely to attend preschool at an earlier age than other children (Magnuson & Waldfogel, 2005; Snyder & Hoffman, 2002). Due to this, they are in a better position to succeed in kindergarten by gaining foundational information. Since the racial achievement gap can be found between three-year-old children (Burchinal et al., 2011), early childhood programs can provide services to narrow this gap. Research regarding the racial achievement gap for Head Start students is limited. There is more emphasis in the research on the impact of the racial achievement gap over time as opposed to while students are currently in early childhood programs (i.e., Head Start). Without adequate research in this area, it is difficult to conclude if Head Start is effective for any of its students much less for African Americans enrolled in the program.

What is Head Start?

Historical Perspective

Head Start has a history spanning nine presidential administrations and counting. Head Start was created as a response to the War on Poverty during the Lyndon B. Johnson administration (Johnson, 1965). The rationale for creating a program like Head Start was to break the cycle of poverty by providing low-income students with early intervention in various domains (Johnson, 1965). During this time, the United States was undergoing a major shift in

the fight for civil rights of African Americans (DHHS, 2015a). The population served includes families and children from birth to five years of age with a focus on increasing the school readiness skills for this population. These skills range from academics (reading/math), language, social-emotional skills, health and physical development, and approaches to learning. Head Start has undergone numerous changes with several reauthorizations to increase accountability in and outside the classroom.

As of 2017, twenty-nine percent of the students enrolled in Head Start programs were African American (DHHS, 2017d). This is compared to the forty-four percent of Caucasian and thirty-seven percent of Hispanic/Latino students in Head Start (DHHS, 2017d). Even though African American students are not the majority in this program, they are the most likely to be enrolled and eligible for Head Start (O'Connor, 1998). This is important, because African American students have different educational experiences in Head Start compared to their peers. Burchinal et al. (2011) found childcare, family, and schooling differences explained the difference in academic achievement between African American and Caucasian students. In addition, the long-term effects of participating in Head Start may fade due to African American students enrolling into inferior public schools after Head Start (Currie & Thomas, 2000). These students are more likely to experience lower "quality care" in Head Start (Hillemeier, Morgan, Farkas, & Maczuga, 2013) with quality care relating to caregiver responsiveness and sensitivity. Increasing the enrollment of Hispanic and African American children in Head Start and improving the quality of their programming, has the potential to reduce school readiness gaps (Magnuson & Waldfogel, 2005). Examining how Head Start solely impacts African American students is critical, because long-term benefits of participating in Head Start has resulted in African Americans being less likely to be charged with a crime (Garces, Thomas, & Currie,

2002). Nevertheless, Caucasian students who participated in Head Start were more likely to obtain a high school diploma, go to college, and receive higher wages (Garces, et al., 2002).

The most recent revision of the HSPPS in 2016 has emphasized the importance of research, which should result in a high-quality curriculum to produce individualized instruction, an increase in teacher professional development, and an increase in parent involvement within Head Start. In addition, the HSPPS seeks to provide comprehensive health services and effective management between and within local Head Start programs. Head Start's objective to provide services to an entire family at the local, state, and national levels can have a major impact within various facets of society.

Theoretical Perspective

Developmental psychology serves as a foundational field of study when discussing the effectiveness of Head Start programs. As part of evaluating the effectiveness of Head Start one must examine aspects of the program that make it unique. Probably more so than any other developmental theorist, Urie Bronfenbrenner (1979) ecological systems theory provides a template of how Head Start is structured and managed.

In Bronfenbrenner's theory, he considers the individual the center of society and this individual interacts within and between different systems (Bronfenbrenner, 1979). The system immediately surrounding the individual is the Microsystem, which includes groups that have the largest amount of impact on the individual (i.e., child). This may include the child's actual Head Start center they attend, their family and peers, and the type of home in which they reside. Next, the Mesosystem serves its purpose by connecting individuals within the microsystem together through consistent interactions. Local Head Start centers provide the opportunity for consistent parent involvement with their own child and service providers at the Head Start centers. This

increase in parent involvements results in home-school collaboration and a preventative approach to education and health.

In the Exosystem, the child is indirectly impacted by circumstances that may involve someone or something within their microsystem (Bronfenbrenner, 1979). When considering children in Head Start many factors such as the family's lack of annual income, type of neighborhood, and overall lack of access to resources can impact the child's development. For example, African American students have the lowest access to books within their homes from kindergarten to the eighth grade compared to Caucasians, Hispanics, Asians, and other racial groups (Potter & Morris, 2017). The Macrosystem is the culture where individuals live out their lives through their culture and values. This could include the child's race/ethnicity, SES, religion, country of birth, and group identity. Finally, the Chronosystem involves the events that may change society over time. These major changes could include a major political election or changes in legislation that impact society at large. The ecological systems theory is critical to the examination of Head Start programs because a child's school, neighborhood, and peers will impact the differences in achievement between African American and Caucasian students over time (McKown, 2013).

Understanding Bronfenbrenner's ecological systems theory can provide evidence for how African American's interact in society as well as how African American students and families function within the educational system. Familial factors such as mother's supportiveness (Martin, Ryan, & Brooks-Gunn, 2010), parent-child relationship (Hill, 2001), and emphasizing the importance of academic skills to African American boys (Joe & Davis, 2009) have all been shown to increase the academic school readiness skills of African American children attending Head Start. Jeynes (2010) examined the impact of religion on academic achievement. His

findings show that the achievement gap disappeared entirely when the African American students came from an intact home and belonged to a religious faith. In addition, participating in a religious faith, attending a religious school along with other academic measures and curriculum, and family factors significantly reduced the achievement gap for African Americans (Jeynes, 2015) ranging from kindergarten to twelfth grade.

Piaget's (1941) four stages of cognitive development also has served as a foundation for examining the effectiveness of Head Start. Piaget's stages included the Sensorimotor, Preoperational, Concrete Operational, and Formal Operational stages. The stage most pertinent to Head Start is the Preoperational stage which lasts from ages two to seven. More specifically, the preoperational stage is divided into the Preconceptual phase (ages 2 to 4) and the Intuitive phase (ages 4 to 7). Within the preconceptual phase the child has difficulty understanding situations from someone else's point of view (egocentric), while in the intuitive phase can classify objects but is unsure how or why they are able to do so (Lowenthal, 1975). Cooper and Schleser (2006) examined children in kindergarten and first grade specific to Piagetian stage theory. They concluded African American students remained within the preoperational stage longer than Caucasian children of the same age regarding math skills. The researchers specified factors such as SES (Jencks & Phillips, 1998; Rech & Stevens, 1996), education related activities within the home (Hill & Craft, 2003), and parent education level (Hall, Davis, Bolen, & Chia, 1999) may have impacted the cognition of African American students. Findings like these are of the utmost importance, because no one is sure as to what specifically is producing the achievement gap between racial/ethnic groups. Targeting African American students within Head Start will help determine the reasons these students may not be academically developing at the same rates as their peers.

Head Start Research

Head Start is a federally created program that has provided services to low-income families and children has been providing services for over fifty years. Since this program is held to certain standards, numerous studies have been completed to determine its lasting effectiveness. Early research has shown that participation in a full-year program in Head Start resulted in slightly higher significant scores for learning readiness, limited impacts on academic achievement, and more positive effects for African American students (Cicirelli, 1969). What Works Clearinghouse (WWC) reviewed 90 studies related to Head Start effectiveness from 1985 to 2014 (2015). The summary findings indicated "small" but "potentially positive effects" for general reading achievement; however, there were "no discernible effects" for general mathematics achievement or social-emotional development (WWC, 2015, p. 1). Of the 90 studies reviewed by WWC, only one (i.e., Head Start Impact Study: Final Report) met group design standards without reservation.

The Head Start Impact Study was mandated by Congress in 1998 with several purposes. These include determining the achievement rates between students enrolled in Head Start with those who are not, examining if Head Start improves school readiness skills, and the impact Head Start has on children and families (DHHS, 2015b). More recently, the Head Start Impact Study Final Report (DHHS, 2010) key findings demonstrated access to Head Start for 4-year old children led to positive gains in language/literacy/pre-writing skills while 3-year old children showed impacts in multiple academic areas. The overall gains for both cohorts are not maintained when these children continue in elementary school. For African American children in the 4-year old cohort, they demonstrated benefits to participating in Head Start especially in teacher reported social-emotional skills, but overall benefits only lasted through kindergarten

when compared to Caucasian and Hispanic students. Even though findings for African American students are reported, these students were not the sole focus of determining Head Start effectiveness. In addition, it illustrates Head Start has shown benefits for African American students for several decades.

The Head Start Impact Study dataset has been used to examine a range of academic outcomes. Findings from this dataset indicate small but significant effects on receptive language, early reading, and early numeracy (Bloom & Weiland, 2014) from participation in Head Start. Additionally, there are relationships between maternal level of education and the amount of educational materials in the home (Harding & Morris, 2015) and between neighborhood poverty and lower rates of achievement in early literacy and math (McCoy, Connors, Morris, Yoshikawa, & Friedman-Krauss, 2015). Miller, Farkas, and Duncan (2016) offer contradictory findings in that through Head Start's service model, the impact of Head Start was less for "highly at-risk" children.

Another dataset focusing on Head Start is the Head Start Family and Child Experiences Survey (FACES) which was created in 1997 and provides findings across several cohorts. The purpose of the project was to provide information on the characteristics of the children, families, and staff of Head Start (DHHS, 2017b). Currently, FACES is engaging in a "Core Plus" design for ongoing data collection resulting in studies being completed in a timely manner once new policy changes occur. Research using the FACES datasets indicated that students within Head Start had better vocabularies and early writing skills (Administration for Children, Youth and Families [ACYF], 2000). During this time, the achievement gap between Head Start students and same-age peers of other early childhood programs narrowed, but Head Start students were still below the national average on school readiness measures when they enter kindergarten (Zill

et al., 2003). These students were able to make gains in their early numeracy skills by first grade but continued to have weaker vocabulary and writing skills (See, 2009). The prior studies (ACYF, 2000; Zill et al., 2003) did not specifically reference African American students in their findings; however, See (2009) was able to determine African American students had weaker vocabulary, numeracy, and writing skills compared to Caucasian students when analyzing data across racial/ethnic groups. These findings are important because they demonstrate not only are Head Start students at a disadvantage academically compared to other students entering kindergarten, but also African American students are at a disadvantage when compared to their peers. As noted with the Head Start Impact Study research, participation with the program is usually positive; however, there is a lack of attention to how African American students are progressing. To truly examine the program's impact, it is important to analyze how specific groups within the program are performing according to Head Start standards.

Head Start and African American Achievement

A major component of Head Start is the development of its students' academic school readiness skills, which has been used in determining Head Start effectiveness. Hassett's (2008) multidynamic literacy theory states early literacy instruction should be multifaceted, socially constructed, and relevant to the children engaging in the curriculum. When considering African Americans and their early literacy skills it is important to consider factor related to SES, language, quantity and quality of literacy practices in the home, biases in standardized testing, and teacher expectations (Washington, 2001). In addition, it is important to consider home and school factors impacting the mastery of these skills. African American mothers in Head Start are more likely to use text-reading styles when interacting with their children compared to Puerto Rican mothers (Hammer, Nimmo, Cohen, Draheim, & Johnson, 2005). Reading to and with

toddlers and having them write their names are the most used literacy activities of African American parents in the home (Liu & Channell, 2015).

Due to differences in educational practices by race, it is important to consider race in the classroom. However, it has been shown to be difficult for, especially Caucasian, teachers to engage in this kind of perspective taking. Preservice early childhood teachers (mostly Caucasian) stated focusing on the race of their students and racism in the classroom came at the expense of the literacy training they were receiving (Nash, 2013). These teachers had difficulty accepting their own personal biases and felt considering race was unrelated, because they worked at predominantly Caucasian schools.

The NELP (2008) defined several variables related to early literacy, which were included in a meta-analysis composed of experimental and quasi-experimental studies focusing on students from pre-kindergarten to second grade. These foundational skills are moderately and strongly correlated with later literacy skills (Shanahan & Lonigan, 2010). Findings from the meta-analysis reported correlations between early and later literacy development and the impact instructional interventions have on learning. Students from Head Start programs and African Americans were included within the studies; however, there was no overall total, or percentage reported on these populations. Maternal education, language skills, and prereading skills are predictors of writing skills in the third and fifth grades on a mostly African American sample (Hooper, Roberts, Nelson, Zeisel, & Kasambira Fannin, 2010). In fourth grade, low-income African American students displayed limited writing skills due to not favoring writing, limited engagement with writing, and more emphasis on writing mechanics than content (Mavrogenes & Bezruczko, 1993). In addition, preschool oral narrative skills are a significant predictor of emergent literacy for African American children compared to Asian, Hispanic, and Caucasian

children (Gardner-Neblett & Iruka, 2015). Regarding findings specifically related to African Americans, physical activity resulted in increased alliteration, picture naming, and rhyming for African American Head Start students (Kirk & Kirk, 2016).

For African American students in Head Start, examining language skills can help assist in determining home and school characteristics that are impacting them in the classroom. The PPVT-III has been shown to be a valid language measure for African Americans (Washington & Craig, 1999); however, contrasting results have been found. Qi, Kaiser, Milan, and Hancock (2006) reported that African American students in Head Start and other low-income early childhood programs scored approximately 1.5 standard deviations below the expected mean based on national norms on the PPVT-III. This is of the utmost importance in determining why African American students may not be achieving at similar rates than their peers. Language interventions geared towards teacher professional development resulted in higher scores on the PPVT-III and Expressive One-Word Picture Vocabulary Test-Fourth Edition (4th ed.; EOWPVT-III; Brownell, 2010) and improved early literacy and language development, letter knowledge, blending skills, writing, and concepts of prints have shown to be beneficial for African American students in Head Start (Powell, Diamond, Burchinal, & Koehler, 2010). In addition, the Exceptional Coaching for Early Language and Literacy Professional Development (ExCELL PD) model assisted in closing the achievement gap for vocabulary skills (Hindman, Erhart, & Wasik, 2012). The ExCELL PD model is a two-year model specifically used with Head Start teachers to improve children's alphabet, phonological, vocabulary-building, and writing skills. Through a Vygotskian approach (Vygotsky, 1978), Head Start teachers engage in intensive workshops for the first year of intervention implementation while obtaining coaching and support of newly learned skills for the second year (Hindman, Earhart, & Wasik, 2002).

There is limited research regarding the early numeracy skills of Head Start African American students. The purpose of the National Mathematics Advisory Panel's (2008) report was to determine how effective mathematics curriculum and instruction is in the United States from pre-kindergarten to eighth grade. The panel reported number sense or early numeracy skills were needed to serve as a precursor for Algebra. Recommendations included teachers of Head Start students or students in similar programs should be aware of the importance of early numeracy strategies, and research in mathematics should focus on at-risk learners (i.e., Head Start), how children develop mathematical skills over time, and mathematics outcomes of African American and Hispanic students to help close the achievement gap (National Mathematics Advisory Panel, 2008).

Previous Meta-Analyses

Eleven meta-analyses have contributed to the literature regarding the achievement gap, African American students, early childhood education/preschool, Head Start, or school readiness. The studies described below have not examined all these concepts within the same study. The meta-analyses will be summarized in the following section.

McKey et al. (1985) examined the impact of Head Start on cognitive and social-emotional development, health, participant families, and local communities. Seventy-six studies were included dated from 1965 to 1982. Students were assessed up to three years after enrolling in Head Start. Cohen's d (Cohen, 1988) effect sizes were between 0.31 and 0.59 for Head Start effects on cognitive test scores. Results indicate Head Start provides immediate/short-term positive effects on cognitive ability, students are less likely to fail or be assigned to special education, and children with a primary emphasis on language interaction have higher academic motivation scores. In addition, Head Start classrooms with few minority students at zero to fifty

percent or classrooms with many minority students at ninety to one hundred percent had higher cognitive gains. This study focused on Head Start students; however, there was no indication as to how racial and ethnic groups compared to each other on various outcomes. There was also no report to the overall percentage of racial/ethnic groups within the meta-analysis.

Gilliam and Zigler (2000) evaluated the impact of state-funded preschool programs for early childhood programs for studies dated from 1977 to 1998. The authors investigated the characteristics of preschool programs, the quality of the implementation of the curriculum, how state programs are being evaluated, the effects of participating in these state-funded programs, the comparison of their impact compared to Head Start programs, and how differences in program characteristics and evaluation methodology impact children within the classroom. Students ranging from preschool to the fourth grade were assessed on various domains. These comprise overall development, perceived competence, behavior problems, child health, attendance, grades, achievement tests (reading/math), retention, special educational referral and placement, and parent involvement. Subdomains of development competence were examined for preschool to fifth grade students. The subdomain areas include social skills, self-help, motor skills, language, cognitive, and academic/literacy. Thirteen studies within the meta-analysis used Cohen's d (Cohen, 1998) to analyze the effectiveness of participation in preschool programs on the developmental domains. Results show significant short-term effects up to the first grade and results were similar to larger preschool programs for low-income students such as, Head Start. The race/ethnicity of the children in these programs was not reported. In addition, there was no indication as to how children in preschool programs compare regarding the domains within the study.

LaParo and Pianta (2000) examined the academic and social-emotional competence of preschool students. The 70 longitudinal studies included were conducted from 1985 to 1997 to investigate the correlation between academic/cognitive and social/behavior measures. Students were initially assessed in prekindergarten or kindergarten and follow-up assessments were conducted in the first or second grade. Only one study examined Head Start students. Six studies reported African Americans were more than 50% of the study sample sizes, while thirty-four studies consisted of Caucasians being more than 50% of the sample size. In addition, most participants within the meta-analysis were from middle to high SES backgrounds. Findings indicate an overall moderate effect size (r = .49). Even though reports of demographic data were included, there were no reports as to how African American and Caucasians compare. In addition, due to only one study targeting Head Starts students, it is difficult to know how the findings related specifically to Head Start.

Gorey (2001) investigated the short- and long-term effects of preschool interventions on intelligence and achievement measures. The author predicted preschool students would have significant cognitive and related benefits and better endowed programs would result in larger effect sizes. A total of thirty-five studies included were completed from 1990 to 2000. Twenty-four studies reported adequate demographic data to perform analyses; however, aggregated treatment and control groups did not result in different effects. In addition, for the twenty-four studies 73.2% were African American in the treatment groups while 71.8% of African Americans were in the control groups. Eleven studies focused on students within Head Start. There was no additional data regarding racial/ethnic groups or the differences between these groups. Cohen's (Cohen, 1988) U3 statistic indicated students who received a preschool intervention had higher intelligence (76%) and achievement (78%) scores than compared to

children within the control groups. In addition, if the preschool intervention had a duration of three years or longer, follow up assessment administered within less of five years, and with a high intensity produced significant effects.

Nelson, Westhues, and MacLeod (2003) investigated the short-, medium-, and long-term effects of participating in prevention preschool programs for low-income students. A total of thirty-four studies completed from 1993 to 2003 used Cohen's d to calculate the overall effect size. Three studies included Head Start students for their analyses and nineteen studies consisted of African Americans being more than 50% of the sample. Findings show participation within a prevention preschool program results in the largest effects during preschool (0.52) if a teacher directed component was included. In addition, the largest effect for preschool cognitive outcomes were found for programs with a predominantly African American population when compared to Caucasian or Hispanic students. This study provided analyses as to how African Americans are performing compared to other racial/ethnic groups and included studies from Head Start participants; however, only two studies included Head Start students as part of the treatment or control group. In addition, there were no demographics regarding other racial/ethnic groups used within the studies.

Camilli, Vargas, Ryan, and Barnett (2010) examined the effects of early education interventions on cognitive and social development. The length of treatment effects, programs and their instructional practices, and how the interventions were provided was investigated. One hundred and twenty-three studies were included with studies dated from 1960 to 2000. Findings revealed participation in preschool produced the largest effect for cognitive outcomes. The cognitive domain used an adjusted Hedges g unweighted effect size of 0.231 when comparing treatment to control groups. There was no report on how many students were enrolled in Head

Start or other early childhood programs. In addition, there was no racial/ethnic participant data or how racial/ethnic students within preschool compare on cognitive and social outcomes.

Jeynes (2010) investigated the relationship between personal faith and reducing the achievement gap between African American and Caucasian students. Twenty-eight studies were included from 1975 to 2009 and Cohen's d was used to calculate an effect size for the meta-analysis. Academic outcomes included within the study are grade point average (GPA), standardized test scores, class rankings, and teacher ratings. With an effect size of 0.38, religious faith had the largest impact of reducing the achievement gap between African Americans and Caucasians. When Jeynes controlled for gender and SES, the achievement gap was significantly reduced for Math, Reading, and Social Studies of twelfth grade students. This meta-analysis provided sample sizes for the individual studies; however, there was no information regarding the racial/ethnic percentages of the samples. In addition, only one of the studies consisted of preschool students but there is no indication if this preschool program was Head Start.

Shager et al. (2013) examined if differences in research design impacts Head Start programming for studies dated from 1965 to 2007. They hypothesized studies with more rigorous methodologies that guarantee similarity between control groups and treatment groups before participation in the study, would produce larger sample sizes through random assignment. The authors also predicted studies with higher levels of overall attrition will have smaller effect sizes, a negative relationship between the effect size and activity level of the control group, and skills closely aligned with early education instruction (i.e., prereading and premath academic skills) will produce larger effect sizes than studies that measured abstract or global functioning (i.e., vocabulary or I.Q.). Their outcomes included cognitive functioning and achievement, quality and type of measure, activity level of the control group, and attrition. The study resulted

in a statistically significant average Hedges' g (Hedges, 1980) effect size of 0.27, indicating Head Start is providing short-term effects for cognitive and achievement outcomes. Forty-one percent of variations between evaluation findings was due to research design while eleven percent of the variation within Head Start programs was due to the quality and type of assessment measures. Shager et al. (2013) found only half of all studies (n = 57) included within their meta-analysis reported demographic data that could be quantified. Therefore, an overall percentage of the racial/ethnic participants for the meta-analysis was not included. The authors did not find significant predications on Head Start programming due to whether a Head Start student was African American, Caucasian, or Hispanic.

Jeynes (2015) investigated if certain strategies used to reduce the achievement gap are successful and factors that reduce the achievement gap. The studies within the meta-analysis sought to reduce the achievement gap between African American, Caucasian, and Hispanic students. Thirty studies were included and completed from 1975 to 2009. Only one study examined students within preschool; however, there was no indication if this preschool program was Head Start. There were no reports describing the demographic data of all participants within the meta-analysis. Cohen's d was used to calculate the effect sizes while Hedges' g was used as a supplement to the analyses. The overall effect size (0.11) for programs, which reduce the achievement gap for students of all ages was within the expected (i.e., positive) direction; however, the effect was no significant. Family factors, religious faith, curriculum, and religiously oriented schools resulted in significantly reducing the achievement gap between racial/ethnic groups. More specifically, religious faith resulted in the highest effect in reducing the achievement gap for African Americans and Hispanics when compared to Caucasians.

Ma, Shen, Krenn, Hu, and Yuan (2016) examined the relationship between learning outcomes and parental educational involvement during early childhood education and early elementary school. Learning outcomes included measures of academic achievement while parental educational involvement consists of family involvement and partnership development. Forty-six studies were completed from 1990 to 2012 with ten studies targeting preschool students. A correlation coefficient (r) was used as the effect size measure. Findings indicated a correlation of .509 between learning outcomes and parental involvement. The authors did not provide demographic data of the studies included within the meta-analysis or how racial/ethnic groups compared on the outcomes. In addition, there was no indication if the preschool programs used in the studies were Head Start programs.

Magnuson et al. (2016) investigated gender differences due to participation in early childhood programs. The outcomes of the study include cognitive and academic outcomes (i.e., grade retention and special education placement), child behavior and mental health, and adult outcomes (i.e., health, welfare receipt, crime, and earnings). Twenty-nine studies completed between 1960 to 2007 used an overall effect size statistic of Hedges' g. Seven out of twenty-three early childhood programs targeted Head Start students. Overall, females (0.20) slightly benefited more from participation within early childhood programs with an effect size difference of 0.03 standard deviations. Findings suggested early childhood programs had significant and nearly equivalent effects for males and females regarding cognitive and academic outcomes. There were no significant gender effects for the child behavior and adult outcomes; however, participating in early childhood programs for males resulted in significantly more benefits regarding grade retention and special education placement. The study did not report any

racial/ethnic differences on the outcomes. In addition, there was no demographic data to describe the overall sample of participants within the meta-analysis.

In summary, the eleven meta-analyses examined the achievement gap, African American students, early childhood education/preschool, Head Start, or school readiness. The studies ranged from 1985 to 2016 indicating moderate and immediate effects for participating in early childhood programs or Head Start. Only four meta-analyses reported data regarding African Americans while only five specifically referenced Head Start. Magnuson et al. (2016) examined gender differences of early childhood students; however, there has not been a focus regarding the differences in academic achievement of a racial/ethnic group. The research summarized indicates no one has considered the impact of African Americans students specifically in Head Start as it relates to their academic outcomes.

The Present Study

The purpose of this study is to determine if Head Start is having a positive impact on improving African American students' academic school readiness skills. The study will address sociodemographic factors most pertinent to African American students in Head Start such as race/ethnicity, family annual income, and parent education level. By examining the percentage of African American students within the study, it will assist in determining if academic outcomes are different for Head Start programs with a high population of African Americans. The Improving Head Start for School Readiness Act of 2007 is the most recent reauthorization of Head Start by Congress (National Head Start Association [NHSA], 2017). In addition, Congress called for revisions of the HSPPS in the 2007 reauthorization. Completed/published studies will be divided into four groups: 1987-1996, 1997-2006, 2007-2016, and 2017. Including studies completed/published from 1987 to 2017 will help determine if legislative

changes regarding Head Start produced benefits specifically for African American students. By comparing academic outcomes (i.e., early literacy, language, early numeracy) this will inform the literature if Head Start is providing more academic benefits in one academic area over another.

CHAPTER III

METHODOLOGY

Overview of Meta-Analyses

Gene Glass coined the concept of a *meta-analysis,* which suggested statically analyzing individual studies "for the purpose of integrating the findings" (Glass, 1976, p. 3). The strengths of conducting meta-analyses are its process for summarizing research, review of key findings with more consideration and significance to the overall literature, the ability to highlight the effect and relationships within the literature, and the provision of an organized way of reviewing a large amount of studies (Lipsey & Wilson, 2001). There are also weaknesses in conducting meta-analyses as the amount of labor and time it takes for it to be completed is arduous, its structured and mechanical procedures, the diverse types of studies included, and the mixing of study findings from different methodologies (Lipsey & Wilson, 2001).

The stages of synthesizing research included: (1) formulate a problem, (2) search the literature, (3) gather data from studies, (4) evaluate the quality of the studies, (5) examine and integrate the outcomes of studies, (6) interpret the data found, and (7) present the results (Cooper, 2017a). These stages assisted in making generalized conclusions for various empirical studies focusing on related hypotheses while also stressing the importance of issues that should be resolved in the research literature (Cooper, 2017a). Meta-analyses are analyzed according to a measure of effectiveness or an *effect size.* Various effect sizes used to determine effectiveness include Pearson's *r,* Glass' delta, Hedges g, and Cohen's *d* (Cohen, Cohen, West, & Aiken, 2003; Rosenthal, 1994). The effect statistic used depends on the type of data analyzed. The effect sizes across all studies are converted into one metric to aid in analyzing the data despite the original individual studies using various effect size metrics (Borg, Borg, & Gall, 1996).

Analyzing moderator variables that may influence the data systematically is another form of analyzing meta-analyses; however, moderator analysis is not always a part of meta-analyses (Hedges & Olkin, 1985; Hunter & Schmidt, 1990; McNamara, Morales, Kim, & McNamara, 1998).

Research Design

The present study conducted a meta-analysis over thirty years (1987-2017) of Head Start research to determine if Head Start was effective in improving the academic school readiness skills of African Americans. Based on a review from the literature, the aim of previous meta-analyses and national preschool and Head Start studies, generally, did not focus primarily on African Americans. Any reported findings regarding African Americans in the study were unrelated to answering the research questions or addressing the hypotheses. In addition, there was limited research found on Head Start studies completed in local Head Start centers targeting African Americans. Studies focusing on African Americans are needed to inform the literature of the differences between the implementation across centers, which may result in Head Start centers individualizing the implementation of services to suit the needs of their population.

There are previous meta-analyses investigating each of the following variables: school readiness skills, the achievement gap, African American academic achievement, and Head Start effectiveness. The present study, however, was the first meta-analysis to utilize each of these variables in one research study. Specifically, this study analyzed how African Americans were impacted, when each of these variables were considered. Many of the studies conducted by the Office of Head Start examined its overall effectiveness for all students within Head Start. These studies did not focus primarily on the differences in achievement between specific racial/ethnic

groups. A Head Start meta-analysis lends itself to determining specific characteristics of the program are producing the most effective results for African Americans.

Meta-Analysis Procedures

With assistance from a university systematic review librarian, all information needed for the meta-analysis was retrieved regarding the target population (i.e., African Americans), intervention (i.e., Head Start), and outcome (i.e., academic achievement areas). Once the information was compiled, a literature search was completed. The Literature Search section describes the databases and search terms used to identify studies. The studies were exported from their databases into Rayyan (Ouzzani, Hammady, Fedorowicz, & Elmagarmid, 2016) to determine inclusion or exclusion from the meta-analysis. If abstracts did not meet the inclusion criteria they were immediately excluded and labeled with the rationale for exclusion from the meta-analysis. Abstracts were reviewed if there was a strong possibility the study would meet the criteria and the text was downloaded for further review. If the downloaded studies did not meet the inclusion criteria, they were immediately excluded indicating the rationale for exclusion. Studies that met the inclusion criteria were included within the meta-analysis. If a study did not provide enough data to determine inclusion into the meta-analysis, the primary author of the study was contacted. If there was no response after three separate attempts, then inclusion/exclusion decisions regarding the missing data were made.

Studies meeting the inclusion criteria were coded using the coding sheet in Appendix A. Reliability for coding accuracy was completed by another coder. Interrater reliability for the 20% of studies found in the original literature search resulted in 95% accuracy. All disagreements in coding were discussed between both coders. The coding sheet was initially reviewed with the coder and questions were answered as needed. Example studies were used for

the author and coder to practice together to aid in understanding of the coding sheet. Of the studies found in the original search, 147 (i.e., 20%) were randomly reviewed for inclusion and exclusion. If the study met the inclusion criteria, the coding was completed for the entire study. If there was a disagreement, the coders met to discuss the areas of concern. Reliability for inclusion criteria was assessed to determine if the studies coded by the coder met the criteria for inclusion. The procedures for disagreement reported as previously described within this text were applied to this step. Analyses regarding moderators, effect sizes of individual studies, and the overall effect size were analyzed using Google Sheets and Stata 15.1 (StataCorp, 2017). The procedures for the meta-analysis are described below: (a) literature search, (b) inclusion criteria, (c) exclusion criteria, (d) coding procedures, (e) effect size, and (f) analyses.

Literature Search

The literature search was conducted according PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009). The databases for the preliminary search included: ERIC, Academic Search Ultimate, and PsycINFO. Key terms included individual phrases and combinations of the following key terms used within the abstracts or titles: *academic achievement, achievement gap, African American (Black), compensatory education, early childhood education, Head Start, mathematics achievement, preschool education, reading achievement, school readiness,* and *writing achievement*. The search was modified to include completed/published research studies from 1987 to 2017; studies from foreign countries were excluded.

A preliminary search using Academic Search Ultimate, ERIC, Eric Ebsco, and PsycINFO through Rayyan resulted in 737 studies. Three hundred fifty-three studies were found from Academic Search Ultimate, 85 studies from ERIC, 133 from Eric Ebsco, and 196 studies from PsycINFO. Rayyan provided the abstract of all articles found from the search. All 737 abstracts,

including 31 duplicates, were reviewed for potential inclusion. Ninety-seven abstracts were reviewed are were excluded due to information presented in the abstract, which would automatically disqualify inclusion into the meta-analysis. Six hundred and nine abstracts and articles were downloaded and reviewed to see if the article met the criteria for inclusion. If the abstract contained any exclusion characteristics, the study was excluded immediately and the reason for exclusion was indicated. After these steps were completed, 583 studies were excluded from the database search. The main reasons for exclusion were due to studies not including students in Head Start, no inclusion of African American students at the specified percentage of the sample or measuring the long-term effects of Head Start instead of immediate effects. After these steps were completed, 26 articles met the inclusion criteria. Therefore, an ancestry search was completed on all articles included from the database search. All articles were downloaded and reviewed for potential inclusion. Fifty-one additional articles were included from the ancestry search. In total, 77 articles were included for the meta-analysis. Figure 1 outlines the inclusion/exclusion process, which can be found in Appendix B.

Inclusion Criteria

The second step in the meta-analysis procedures was to determine if a study met the inclusion criteria. The inclusion criteria and the rationales are described below:

a) Head Start must be the only early childhood program specified in the study. The overall purpose of the study was to examine the sole impact Head Start has on the academic outcomes of African Americans currently participating in the program. The purpose of this project was not to compare Head Start to another early childhood program or to an outside control group.

b) African American students needed to be the majority or, if not, at least 40% of the sample reported within the study. African Americans are underrepresented in psychological research and found to have lower academic achievement scores compared to Caucasians.

c) Child participants must be three, four, and/or five years of age. The rationale for this age limit is because, students learn school readiness skills at these ages in Head Start.

d) Studies must include an academic school readiness outcome such as early literacy, language, and/or early numeracy. This inclusion is due to the focus of the study analyzing academic school readiness skills.

e) The study must evaluate the impact of Head Start while children are participating in the program. This meta-analysis examined if Head Start is positively impacting the population it is currently serving. The studies included did not analyze the long-term effect of participation within Head Start.

f) Studies completed/published from 1987 to 2017 were included. The purpose for the year ranges was to examine the impact of Head Start over an extended period due to legislation changes over time.

g) Only studies conducted in the United States will be included. Head Start is a federally created program in the U.S. requiring most families meet certain financial criteria to enroll. It would be difficult to determine if a family outside of the U.S. would have qualified for the program if they lived here since most countries do not use the U.S. dollar as a form of currency. In addition, early

childhood programs in other countries may not hold same standards or government guidelines as those in the U.S.

h) To be included in the study, measures of school readiness skills must have a Cronbach alpha (Cronbach, 1951) equal to or greater than 0.70 as an "adequate" measure of internal consistency (Green, Lissitz, & Mulaik, 1977; Spector, 1992; Vaske, 2008). If a Cronbach alpha value was not included within the study, then another acceptable level of reliability could suffice as being included within the meta-analysis. Multiple assessments may be used within one study; however, all assessments may not have an acceptable level of reliability. If this happens, the study may be included within the meta-analysis but an effect size for the academic outcome for the assessment used will not be calculated.

i) The study needed to report or have sufficient data (e.g., mean, standard deviation, standard error, etc.) to calculate a Cohen's *d* effect size to complete appropriate analyses. Given the large sample sizes within the studies, Cohen's *d* was the more appropriate measure of effectiveness.

Exclusion Criteria

No study was excluded due to methodological quality so there could be an accurate examination of the entire scope of research regarding African American students in Head Start. Studies were excluded if there were no academic outcomes reported within the study. The purpose of only analyzing academic skills was due to the limited amount of research regarding African Americans in Head Start and their academic outcomes. Studies that did not include African American Head Start students were excluded, because the appropriate analyses were unable to be conducted. In addition, studies including children from birth to two years of age

(i.e., Early Head Start) and those enrolled in to kindergarten or higher-grade levels were excluded from the meta-analysis. As mentioned previously, the aim of this study was not to examine the long-term effects of Head Start participation, but to examine the impact of Head Start on African American students who participated in the program.

Coding Procedures

The coding procedure used in Cooper (2017b) served as the foundation for the creation of the coding sheet. Articles included within the meta-analysis were coded within nine areas, which encompassed the criteria for inclusion. The coding sheet can be found in Appendix A. The coding of articles followed the sequence described in the following paragraphs. Articles were coded into a Google Sheets file and data was be uploaded into Stata (StataCorp, 2017) to be analyzed.

"Inclusion Criteria" outlined the inclusion criteria each study had to meet to be included in the meta-analysis. If a study did not meet the inclusion criteria, coding was immediately discontinued. "Study Characteristics" provided a basic description of the study such as, author(s) of the study, year of completion/publication, and if the study was peer-reviewed or a thesis/dissertation. "Setting Characteristics" included the United States region where the study was completed, the specific state(s) the data was gathered, the level of urbanicity of the sample population, number of Head Start centers and classrooms, and the type of setting in which the students received their education. "Child Characteristics" provided data for the descriptive data for the student participants. Specifically, this area is gathering data related to the percentage of African American students within the study as well as other racial/ethnic groups. In addition, data were gathered for sex, age, language (e.g., English only/Bilingual), and if any disabilities were reported. The "Teacher/Parent Characteristics" section provided descriptive data for

teacher and parent participants within the study. Racial/ethnic data for teachers were obtained, along with years of teaching experience and level of education. Parent data were obtained regarding the number of parents within the home, percentage of unemployment, annual family income, and parent level of education. "Outcome Measures" gathered data relating to overarching academic school readiness outcomes were measured, specific academic school readiness outcomes measured, and the norm-referenced assessment used to measure student achievement. The "Head Start Interventions" section reported if an intervention was used within the study and if so, the characteristics of the program implemented with its intended population to determine its effects on academic school readiness. These characteristics included length, aim, recipients, implementers, and quantity of intervention(s) used within the study.

Gersten, Baker, and Lloyd (2000) outlined how quality group design research should be conducted regarding classroom instruction and practice. Their research helped to formulate the "Research Design Quality" section of the coding sheet. These standards were applied by coding studies that use an intervention: operational definition of variables, transcripts/examples of intervention materials, assessment of treatment fidelity, report as to how control/comparison groups were treated, study design, description of sample population, random assignment of participants, and if more than one norm-referenced assessment was used to measure an academic outcome. Jeynes (2010, 2015) used ratings to determine the quality of the study included within the meta-analysis and the same format was applied to this study. Study quality was graded on a scale of 0 (lowest) to 13 (highest). The "Effect Size" section reported the overall academic area that was measured, the specific academic area measured, effect size and 95% confidence interval for each specific academic outcome, and the overall effect size and 95% confidence interval for the study.

Moderators

Several moderators were identified as important variables to consider when examining Head Start's impact on African American academic school readiness achievement. Aggregated effect sizes of the moderator groups were calculated in determining the variable that produces the largest impact/effect size for African American Head Start students. The variables were coded within the coding sheet for further analyses. Additional descriptive data such as student age, teacher level of education, teaching experience, and study location are reported within the Results section. This additional information was of importance since it assisted in determining how Head Start programs impacted African American student outcomes; however, they were not the main variables of interest for this study. Moderators and the group comparisons are discussed below:

a) Jung and Stone (2008) found that sociodemographic data such as race/ethnicity, annual family income, and parental level of education may impact students in Early Head Start programs. Evaluating sociodemographic data helped to determine if these factors were impacting the academic school readiness skills of African American students in Head Start.

    i. Race/ethnicity: African American/Black (teachers), American Indian and/or Alaskan Native, Biracial/Multiracial, Caucasian/White, Hispanic/Latino, and Native Hawaiian and/or Pacific Islander teachers and students

    ii. Annual family income: less than $10,000, $10,000-$15,000, $15,001-$20,000, $20,001-$25,000, $25,001-$30,000, $30,001-$35,000, $35,001-$40,000, $40,001-$45,000, and $45,001+

iii. Parental level of education: less than a high school graduate, high school graduate/General Equivalency Diploma (12 years of education), 2-year college degree/some college (14 years of education), 4-year college degree (16 years of education), and Master's degree or beyond (17+ years of education)

b) The percentage of African Americans included within the study will be used to examine the effects on academic school readiness.
    i. Certain percentage (i.e., less than 40% but majority)
    ii. Adequate percentage (i.e., 40%-50%)
    iii. Certain majority (i.e., 51%-75%)
    iv. Adequate majority (i.e., 76%-99%)
    v. Significant majority (i.e., 100%)
c) The Improving Head Start for School Readiness Act of 2007 served as a reauthorization of Head Start rules and regulations and a revision of the HSPPS. This moderator was analyzed to determine if legislative changes in Head Start resulted in higher rates of school readiness achievement.
    i. Studies completed/published from 1987 to 1996
    ii. Studies completed/published from 1997 to 2006
    iii. Studies completed/published from 2007 to 2016
    iv. Studies completed/published in 2017
d) Academic school readiness outcomes were analyzed to determine if participation in Head Start was providing more benefits in one overarching academic area over

another. In addition, the specific areas of academic school readiness were analyzed to examine within group differences in achievement.

i. Early literacy
    1. Alphabet knowledge
    2. Phonological awareness
    3. Phonological memory
    4. Rapid automatize naming of colors/objects
    5. Writing/writing name
    6. Other

ii. Language
    1. Expressive lexical knowledge
    2. Narrative discourse
    3. Receptive lexical knowledge
    4. Semantics
    5. Syntax
    6. Vocabulary
    7. Other

iii. Early numeracy
    1. Arithmetic operations
    2. Magnitude
    3. Numbering/basic counting skills
    4. Numerical value
    5. Relations

6. Simple calculation
7. Other

Effect Size

For this study, Cohen's *d* (Cohen, 1988) effect size calculation was used to determine effectiveness of each study and the overall effectiveness within the meta-analysis. Cohen's *d* is the difference between the experimental group mean and the control group mean divided by the pool standard deviation. Cohen's *d* was calculated using the Practical Meta-Analysis Effect Size Calculator (Wilson, 2001), which also provided the 95% confidence interval. If a study had multiple outcomes, the effect sizes were averaged to determine an overall effect size for the study (Camilli et al., 2010) given that the data was collected from the same sample of participants. All statistical analyses and Cohen's *d* were interpreted using Stata (StataCorp, 2017). The rational for using Cohen's *d* over Hedges' *g* (Hedges, 1980) was due to Cohen's *d* overestimating the size of an effect on small sample sizes. Of the 77 studies included within the meta-analysis, only three had a sample size of less than 20 students. Due to the large sample sizes of the studies included, Cohen's *d* was the more appropriate effect size statistic to use for this study.

Analyses

Research question 1: *Is Head Start an effective program specifically for improving African American students' academic school readiness skills?* Variables related to academic school skills including language development, early literacy, and numeracy skills were used in determining the school readiness skills of African American students in Head Start. It was hypothesized that the impact of Head Start for African Americans would produce a small to moderate effect size due to the previous meta-analyses reviewed producing overall effect sizes

ranging from 0.11 to 0.59. To test this hypothesis, effect sizes were used or calculated to determine if Head Start was producing effective results for African American students.

Research question 2: *Which factors contribute to the achievement gap between African American and Caucasian students, as well as, which factors have provided the most benefit to academic outcomes?* It was hypothesized that sociodemographic variables such as race/ethnicity, annual family income, and parent education level provide the largest effect on the academic school readiness skills of African American students. Additional analyses were included if there was a difference between the academic outcomes given the percentage of African American students within the study. To examine this hypothesis, moderators were analyzed to determine their impact on the academic school readiness of African American students in Head Start. The year of publication/completion of the study was also examined to determine if Head Start legislation is resulting in positive effects for African American students. Finally, academic school readiness outcomes were investigated to determine if participation in Head Start results in higher rates of achievement in one overarching academic area over another. In addition, analyzing the specific areas of achievement were analyzed to examine within group differences.

The quality of research design was measured using a scale of zero (lowest) to thirteen (highest). Studies that range from a score of zero to three received a *poor-quality* rating. Studies ranging from a score of four to seven received a *medium-quality* rating. Studies with scores ranging from a score of eight to eleven received a *high-quality* rating. Finally, studies with scores of twelve and thirteen received an *excellent-quality* rating. An overall quality rating was calculated by obtaining the mean of all quality ratings in the meta-analysis.

Cooper (2017c) stated, "In most instances where interventions are being evaluated or the research takes place in real-world contexts that vary from another in important ways, random-effects models should be favored" (p. 248). Head Start could be considered its own intervention and since the studies take place in local Head Start centers, a random-effects model was used with a 95% confidence interval index across all studies. In addition, a random-effects model allows for variations in the study's characteristics. To avoid publication bias, unpublished studies were included within the inclusion criteria along with peer-reviewed publications. The studies were coded to determine the characteristics of the report (i.e., journal article, conference presentation, book chapter, dissertation, etc.). In addition, coding helped in determining if there was any location bias or conflicts of interests in Head Start research. Coding also assisted in examining if Head Start research was being conducted in select parts of the country or if only a small group of researchers were examining African Americans in Head Start. A funnel-plot (Light, Singer, & Willet, 1994; Wang & Bushman, 1998) was constructed in Stata to graphically represent if there is publication bias within the meta-analysis.

The heterogeneity of effect size was evaluated using the I^2 index. The I^2 measures "the extent of true heterogeneity, dividing the difference between the result of the *Q* test and its degrees of freedom (k – 1) by the *Q* value itself and multiplying by 100" (Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006, p. 194). The I^2 index was interpreted using a percentage to indicate the total variability in effect sizes that is due to the variance between the studies. Higgins and Thompson (2002) indicated values of I^2 such as 25%, 50%, and 75% represented low, medium, and high heterogeneity and was used within this study to determine the amount of variance between the studies.

Stata was used to analyze all descriptive data, effect sizes for the individual studies, and calculating the overall effect size. Cohen's *d* values were used as interpretation of study effect size and overall effect size: 0.20 will be reported as a small effect size, 0.50 a medium effect size, and 0.80 a large effect size. If there was not enough data to calculate a Cohen's *d* (Cohen, 1988) effect size for any academic outcome, the study was excluded from the meta-analysis. An alpha level of .05 will be used to determine clinical significance. To correct for missing nonignorable data in a random-effects model, Yuan and Little (2009) suggested reweighting the DerSimonian and Laird estimate (DerSimonian and Laird, 1986) by the completion rate. The DerSimonian and Laird procedure was the most commonly used method in random-effect models and was useful for studies with larger sample sizes (Jackson, Bowden, & Baker, 2010).

CHAPTER IV

RESULTS

The coding sheet was created to obtain relevant data (2017 Fiscal Year) the Office of Head Start deems important (2017d). Areas of importance include Head Start Preschool Program options (e.g., type of Head Start center reported in the study), child and family demographics (i.e., age, race/ethnicity), and teacher education level. For the 2017 Fiscal Year, the United States Congress authorized $9,224,537,499 to be "directly awarded to public agencies, private nonprofit and for-profit organizations, tribal governments, and school systems for operating Head Start in local communities" (Office of Head Start, 2017d, p. 1). During the 2017 Fiscal Year, 50% of Head Start Preschool Programs were Center-Based at five days a week, six or more hours a day. Head Start serviced 1,070,000 children from birth to 5-years old with 35% of children being 3-years old, 40% being 4-years old, and 1% being 5-years old or older. Forty-four percent of children and families identified as Caucasian, 29% African American, 10% Biracial/Multiracial, 10% Other, 4% American Indian/Alaska Native, and 1% Asian. In addition, 37% of children and families were Hispanic or Latino origin. Regarding language, 29% of children and families reported primarily speaking a language other than English in the home, while 23% reported they primarily spoke Spanish.

The fiscal report also indicated 3% of students enrolled in Head Start have "special plans" under the Individuals with Disabilities Act (IDEA). There were 49,000 families who experienced homelessness with 163,000 families who were able to get job training regarding obtaining a general equivalency diploma (GED) and college information. Head Start also employed 259,000 individuals with 30% being proficient in a language other than English in the 2017 fiscal year. Three percent of employees had an unrelated degree or credential, 13% had an

advanced degree, 22% had an associate degree, and 60% had a baccalaureate degree (Office of Head Start, 2017d).

Descriptive Results

General Characteristics

The literature search resulted in 77 studies, which included data related to African American Head Start students' academic achievement. Four studies were published/completed between 1987 to 1996 with 26 between 1997 to 2006, 45 between 2007 to 2016, and two completed/published in 2017. The years of 2009, 2011, and 2012 resulted in the most studies being published/completed in an individual year with seven studies each. Seventy studies were journal articles while the other seven were either theses or dissertations. There were 13 individuals who attributed to more than one article being included, in which they were the primary author. The regions and locations of the studies was determined by the United States Census Bureau (2019). Twenty-nine studies were conducted in the Northeast, eight in the Midwest, 33 in the South, and one in the West. Four studies were conducted in numerous states, the location of one study was unknown, and one additional study drew participants from the "Rust Belt" states (Illinois, Indiana, Iowa, Michigan, New York, Ohio, Pennsylvania, West Virginia). Pennsylvania was represented in 24 studies where participants were from that state while Florida represented 14 studies. Other states such as New York represented six studies while Tennessee represented five. Although included there were low occurrences of studies being completed in other states.

Thirty-two studies reported participants from urban areas while 38 studies did not indicate the urbanicity of its participants. Seven studies reported collecting data in a suburban or a combined location (e.g., mixture of urban, suburban, and/or rural). There were 31 studies

conducted in four or more Head Start centers, 24 where the number of Head Start centers was not included, nine in two Head Start centers, and six studies were conducted in one Head Start Center. Fifty-five studies used four or more Head Start classrooms to obtain their data while nineteen studies did not report the number of Head Start classrooms used in the study. In addition, two studies used three classrooms and one study each used one or two Head Start classrooms. Only 24 studies reported the type of Head Start program used (e.g., school/center based, home based, combination).

Student Characteristics

There was a total of 31,939 student participants in the 77 studies included in the meta-analysis. Twenty-eight studies reported that African American Head Starts students were 76% to 99% of the participants in the study. In addition, 19 studies indicated these students were 40% to 50% in the study, 16 reported 51% to 75% in the study, 12 reported 100%, and only two studies reported that African American students were 39% or less within the study; however, they were still in the majority. Forty-six studies reported Hispanic students were included within the study along with African American students. In addition, 40 studies that reported Caucasian students were participants as well. Regarding other races/ethnicities, 13 studies included Asian students, 11 studies included Biracial or Multiracial students, one study included Native American/Alaska Native students, and none included students who were Native Hawaiian/Pacific Islander. Sixty-eight studies reported both males and females were included as participants, while nine did not indicate if male or female students were included. In addition, no studies had male or female only participants. Sixty-nine studies reported a combination of age groups (i.e., three-, four-, and/or five-year old participants) as included in the study. There was a total of four studies with only three-year old students were participants, two studies had only four-year old participants,

and one study each indicated that only five-year old participants were in the study or did not report the ages of the participant but reported they were in Head Start. Most of the studies (i.e., 53 studies) did not report the language(s) spoken by the student participants. Fourteen studies reported the students were in Bilingual households, 11 studies reported English-speaking only participants, and no studies reported students speaking only Spanish. A total of 15 studies reported some of their student participants has disabilities. The researchers noted speech/language impairments, developmental delays, learning related disabilities, speech delays, broad cognitive issues, physical challenges, and special needs as areas of suspected or identified disability.

Teacher and Parent Characteristics

There were 1,694 teachers reported in the 77 studies included in the meta-analysis. Regarding African American teachers, 11 studies reported they were 76% to 100% of the teachers in the study, 10 reported these teachers were 26% to 50% in the study, and four studies reported that African American teachers were either 0% to 25% of teachers in the study or 51% to 75%. Four studies reported 0% to 25% of the teachers were Asian. One study reported Biracial/Multiracial teachers were 0% to 25% of teachers in the study. For Caucasian teachers, seven studies reported they were 0% to 25% in the study, five reported they were 26% to 50% in the study, and two reported Caucasian teachers were 51% to 75% of the teachers in the study. Ten studies reported Hispanic teachers within the demographics. Seven studies reported Hispanic teachers were 51% to 75% and three studies reported Hispanic teachers were between 0% and 25% of teachers within the study. No studies indicated the percentages of teachers who were Native Indian/Alaskan Native or Native Hawaiian/Pacific Islander. Twenty-three studies reported teacher experience to ten or more years with six studies reporting that teacher

experience ranged from four to nine years. In addition, twenty-two studies reported teachers obtained a 4-year college degree while five studies reported teachers obtaining a 2-year degree or some college experience and an advanced degree.

A total of 2,188 parents were represented from the 77 studies included in the meta-analysis. Sixteen studies reported the type of household of the student participants with 13 studies reporting participants coming from single-parent homes and three studies reporting participants came from two-parent homes. Twenty-four studies reported the average annual family income. Eighteen studies reported the average annual income ranged from less than $10,000 to $15,000. Six additional studies reported the average annual income ranged from $15,001 to $25,000. Twelve studies reported the percentage of parent unemployment. Five studies reported 26% to 50% of parent were unemployed, four studies reported 76% to 100% of the parents were unemployed, and three studies reported 0% to 25% of parents were unemployed. Twenty-five studies reported the average level of education for parents. Seventeen studies reported that most parents had obtained a GED or high school diploma, five studies reported most parents obtaining an Associate degree, and two studies reported most parents' education level was less than a GED or high school diploma.

Academic Outcomes

The overarching academic areas that were the focus of this study is language, early literacy (e.g., reading and writing), and early numeracy (e.g., mathematics). For the moderation analyses, these overarching areas were divided to include subcategories, which can be found in Chapter II. Six studies only assessed early literacy, 29 studies only assessed language development, and only four studies assessed mathematics. There were 16 studies assessing language, early literacy, and early numeracy. Fifteen studies assessed language and early

literacy, three studies targeted language and early numeracy, and four focused on both early literacy and early numeracy. Regarding early literacy, 40 studies examined the early literacy skills of Head Start students. More specifically, 28 studies assessed alphabet knowledge, 18 assessed phonological awareness, 13 assessed writing, nine assessed other early literacy areas, and six examined rapid naming of objects or colors. Sixty-two studies measured the language skills of Head Start students. Twenty-seven studies targeted receptive lexical knowledge, 20 examined other language areas, 19 focused on expressive lexical knowledge, 11 studies assessed vocabulary, and one study examined syntax. A total of 27 studies assessed the early numeracy skills of Head Start students. Twenty-two studies assessed other early numeracy areas, 18 studies measured arithmetic operations, numbering/basic counting, and simple calculation. Eight targeted magnitude, seven focused on math relations, and three studies measured numerical value. There were a variety of norm-referenced assessments consisting of a Cronbach alpha or Pearson r level of 0.70 or greater used to examine school readiness. Thirty-nine studies used a version of the PPVT, 38 used other norm-referenced assessments, 12 used a version of the EOWPVT, 10 used a version of the Woodcock-Johnson: Tests of Achievement, nine used Learning Express, eight studies used either the Preschool IGDIs (IGDI; Early Childhood Research Institute on Measuring Growth and Development, 1998) or a version of the TEMA, and only one study used a version of the CTOPP.

Interventions

There were 30 studies assessing the impact of an academic intervention on the academic achievement of Head Start students. Twenty of the intervention studies had interventions that lasted 14-weeks or more while seven intervention studies lasted from five to nine weeks and two studies had interventions that lasted from two to four weeks. For 23 studies, the aim of the

intervention was to target student academic achievement while eight studies focused a combination of incorporating teacher professional development, parent participation, and/or student academic achievement. Twenty of the studies included students as the only recipients of the intervention while ten studies provided the intervention to either students, teachers, and/or parents. The individuals who implemented the intervention were a combination of main researchers, teachers, and/or parents in 13 studies. Nine of the studies included teachers as the implementers of the intervention with six studies implemented only by the researchers and one study with the intervention implemented by the parents only. Finally, 25 of the intervention studies used one intervention; however, five studies used two interventions within the study.

Analyses

Overall Effect Size, Heterogeneity, Publication Bias, and Research Design Quality

An overall effect size was calculated for each individual study. In addition, if a study had multiple academic outcomes, an effect size was calculated for those individual outcomes as well. Some studies assessed academic outcomes at different time points or also assessed outcomes unrelated to this study. Data was only calculated regarding the differences in means for the academic outcomes from the studies.

For the 77 studies included in the meta-analysis, the effect sizes ranged from a Cohen's *d* value of -0.00 to 4.52. The overall effect size for the random-effects meta-analysis was 0.62 with a 95% confidence interval of 0.47 to 0.76 indicating a medium effect. This would suggest African American Head Start students' academic skills are adequately addressed in Head Start programs. All study effect sizes were positive; however, three studies produced a negative effect size. The I^2 statistic indicated a high level of heterogeneity was found across all 77 studies at 97.0%. This would suggest considerable differences due to the characteristics of each study,

which is taken into consideration when using a random-effects model. In addition, a funnel plot was used to assess if there is evidence of publication bias. Figure 2 includes a funnel plot as a visual representation of publication bias, which can be found in Appendix B. The funnel plot lacked the even distribution of study effect sizes throughout the funnel and indicated there should be investigation as to the causes of the studies differences. Therefore, the *metabias* command of STATA was used as a regression analysis to estimate the funnel plot's shape. The results indicate significant publication bias with a p value of less than .05. Overall, research design quality resulted in a medium-quality rating (M = 5.16, SD = 2.65). Studies ranged from a research design quality score of one to eleven. These results are consistent with the overall effectiveness of Head Start providing adequate benefits in the academic school readiness of Head Start students.

Group Comparisons

Race/Ethnicity of Head Start Students

A one-way ANOVA was calculated to determine if there was a difference in the academic achievement between non-African American Head Start students. No significant difference was found ($F(3,108) = 1.10$, $p > .05$). Native Indian/Alaska Native and Native Hawaiian/Pacific Islander students were not included in this analysis due to insufficient data. Studies including Asian students had an effect size (ES) of 0.41 (SD = 0.42). Studies including Biracial/Multiracial students had an ES of 0.53 (SD = 0.50). Studies including Caucasian students had an ES of 0.74 (SD = 0.85). Studies including Hispanic students had an ES of 0.62 (SD = 0.51). This would indicate that no one racial/ethnic group of students is significantly outperforming the other regarding academic achievement.

Race/Ethnicity of Head Start Teachers

A one-way ANOVA was calculated to determine if there was a difference in the academic achievement of Head Start students depending on the race/ethnicity of the teachers reported in the study. Native Indian/Alaska Native, Native Hawaiian/Pacific Islander, and Biracial/Multiracial teachers were not included in this analysis due to insufficient data. No significant difference was found ($F(3,49) = 1.36$, $p > .05$). Studies that included African American teachers had an ES of 0.55 ($SD = 0.37$). Studies that included Asian teachers had an ES of 0.51 ($SD = 0.39$). Studies that included Caucasian teachers had an ES of 0.58 ($SD = 0.42$). Studies that included Hispanic teachers had an ES of 0.82 ($SD = 0.39$). The results indicate there was no difference in the academic achievement of Head Start students in relation to race/ethnicity of the teacher.

Annual Family Income

A one-way ANOVA was conducted to determine if there was a difference in the annual family income. There was no significant difference found ($F(3,20) = 0.15$, $p > .05$). Analyses for the annual family income of $25,001 to $30,000, $30,001 to $35,000, $35,001 to $40,000, $40,001-$45,000, and $45,001 or more was not included due to insufficient data. Studies with the annual family income was less than $10,000 had an ES of 0.81 ($SD = 1.41$). Studies with the annual family income was $10,001 to $15,000 had an ES of 0.51 ($SD = 0.61$). Studies with the annual family income was $15,001 to $20,000 had an ES of 0.69 ($SD = 0.34$). Studies with the annual family income was $20,0001 to $25,000 had an ES of 0.58 ($SD = 0.26$). These results indicated there was no difference in the academic achievement of Head Start students when their annual family income was reported.

Parent Level of Education

A one-way ANOVA was calculated to determine if there is a different in the parental level of education. Analyses relating to parents earning a 4-year college degree or an Advanced degree was not included due to insufficient data. A significant difference was found between the groups ($F(2,21) = 6.93$, $p < .05$). Studies that reported parents had less than a high school diploma had an ES of 2.54 ($SD = 2.79$). Studies that reported parents had obtained a GED or high school diploma had an ES of 0.46 ($SD = 0.50$). Studies that reported parents had obtain an Associate degree or had some college education had an ES of 0.42 ($SD = 0.27$). The Bonferroni multiple-comparison test was used to determine the nature of the differences between reported parental level of education. This analysis revealed that children whose parents had less than a high school diploma had significantly lower levels of achievement compared to parents who had obtained a GED/high school diploma or an Associate degree/completed some college level courses.

Percentage of African American Students

A one-way ANOVA was calculated to determine if there was a difference for studies, which had African American Head Start students as 39% or less but still the majority, 40% to 50%, 51% to 75%, 76% to 99%, or 100% of the overall sample. No significant difference was found ($F(4,72) = 0.32$, $p > .05$). Effect sizes ranged from 0.49 with 100% of African American to 0.88 with less than 40% African American. These results indicated there was no significant difference in academic achievement when African American Head Start students comprise most of the overall sample. The effect sizes and standard deviations can be found in Table 1 within Appendix C.

Year of Study Completion/Publication

A one-way ANOVA was calculated to determine if there was a difference for studies completed/published in 1987 to 1996, 1997 to 2006, 2007 to 2016, or 2007. No significant difference was found ($F(3,73) = 0.01$, $p > .05$). Effect sizes ranged from 0.62 for studies within 1987 to 1996 and 0.69 for studies completed/published in 2017. These results indicated there was no significant difference when a study was completed/published relating to the achievement of mostly African American Head Start students in the study. The effect sizes and standard deviations can be found within Table 2 in Appendix C.

Academic Outcomes

A one-way ANOVA was calculated to determine if there were any differences for studies that assessed early literacy only, language only, and early numeracy only. No significant difference was found $F(2,36) = 0.03$, $p > .05$). Effect sizes ranged from 0.58 for studies that only assessed early numeracy to 0.69 for studies that only examined language. These results indicated there was no significant differences in the academic achievement of Head Start African American students when only one academic outcome was examined. Effect sizes and standard deviations can be found within Table 3 within Appendix C.

A one-way ANOVA was calculated to examine if there was a difference between the studies that assessed more than one academic school readiness outcome. No significant difference was found ($F(3,34) = 2.78$, $p > .05$). Effect sizes ranged from 0.51 for studies that only examined early literacy and language to 1.84 for studies that only examined language and early numeracy. These results indicated there was no significant difference in academic achievement of African American Head Start students when more than one academic outcome

was examined. Effect size and standard deviations can be found within Table 3 within Appendix C.

Moderators

Race/Ethnicity of Head Start Students

Fourteen studies included in the meta-analysis provided the percentage of Asian Head Start students in the study, 41 reported the percentage of Caucasian students, and 46 studies reported the percentage of Hispanic students. This data was used in a metaregression analysis. No significant predictor of race/ethnicity of Head Start students was found. These analyses showed that having Asian (B = 1.23, $t(13) = 0.69$, $p > .05$), Caucasian (B = 1.02, $t(40) = 0.18$, $p > .05$), and Hispanic (B = 1.06, $t(46) = 0.49$, $p > .05$) Head Start students represented in these studies did not significantly predict academic achievement. Due to insufficient data the metaregression for Native Indian/Alaskan Native, Biracial/Multiracial, and Native Pacific/Hawaiian Islander students could not be calculated. The results indicated that regardless of the race/ethnicities of other students in the study, there was no impact on the academic achievement of Head Start students.

Race/Ethnicity of Head Start Teachers

Not all studies reported on the race/ethnicity of teachers. Those that did, identified the percentage of African American (n = 25) teachers, Asian (n = 4) teachers, Caucasian (n = 14) teachers, and Hispanic (n = 10) teachers. No significant predictor regarding the race/ethnicity of teachers were found except for the studies including Asian teachers. These analyses showed studies having African American (B = 1.09, $t(24) = 0.32$, $p > .05$), Caucasian (B = 0.94, $t(13) = -0.23$, $p > .05$), and Hispanic (B = 0.78, $t(9) = -0.62$, $p > .05$), teachers in the study did not predict the academic achievement of Head Start students. Studies including Asian teachers significantly

and positively predicted academic achievement (B = 1.67, $t(3)$ = 4.43, $p < .05$). It should be noted that only four studies reported the percentage of Asian teachers. A random-effects meta-analysis was conducted on the four studies and indicated a high level of heterogeneity at 90.9%. The analyses for Biracial/Multiracial, Native Indian/Alaskan Native, and Native Hawaiian/Pacific Islander teachers could not be conducted due to insufficient data. These results suggested having Asian teachers in Head Start classrooms may positively predict the academic achievement of Head Start students, at least when African American students are in the majority.

Annual Family Income

Twenty-four studies reported the annual family income of its student and parent participants, which was used in a metaregression analysis. No significant predictor was found (B = 0.93, $t(23)$ = -0.66, $p > .05$). These results suggested annual family income does not impact the academic achievement of Head Start students, especially when African American students are in the majority.

Parent Level of Education

Twenty-four studies reported the parental level of education, which was used in a metaregression analysis. No significant predictor was found (B = 1.29, $t(23)$ = 1.90, $p > .05$). These results suggest parental level of education does not impact the academic achievement of Head Start students when African American students are in the majority.

Percentage of African American Students

All 77 studies included in the meta-analysis provided the percentage of African American Head Start students in the study, which was used in metaregression analysis. No significant predictor regarding the percentage of African American students in the study was found. These analyses showed studies having 40% to 50% (B = 1.19, $t(18)$ = 0.78, $p > .05$), 51% to 75% (B =

1.05, $t(16) = 0.21$, $p > .05$), 76% to 99% ($B = 1.04$, $t(27) = 0.30$, $p > .05$), and 100% ($B = 1.76$, $t(11) = 1.58$, $p > .05$), of African American Head Start students in the study were not significant predictors of academic achievement. Due to insufficient data the metaregression analyses for studies having 39% or less but still most African American students in the overall sample was unable to be conducted. These results indicated that regardless of the amount of African American Head Start students in the study, there was no impact on their academic achievement.

Year of Study Completion/Publication

All 77 studies included in the meta-analysis provided the year of completion/publication, which was used in metaregression analysis. No significant predictor regarding year range of completion/publication was found. The analyses show that studies completed/published from 1987 to 1996 ($B = 0.89$, $t(3) = -0.50$, $p > .05$), 1997 to 2006 ($B = 0.93$, $t(25) = -0.77$, $p > .05$), and 2007 to 2016 ($B = 1.17$, $t(44) = 1.16$, $p > .05$) were not significant predictors of academic achievement in studies where African American students were the majority of participants. Due to insufficient data, the metaregression analysis for studies completed in 2017 could not be calculated. These results indicated that the study year of completion/publication was not impacting the academic achievement for African American Head Start students.

Research Design Quality

All studies resulted in a research design quality score, which was used in a metaregression analysis. No predictor regarding research design quality was found. The analyses show studies with poor quality ($B = 1.07$, $t(32) = 0.20$, $p > .05$), medium quality ($B = 0.93$, $t(25) = -0.91$, $p > .05$), and high quality ($B = 0.97$, $t(14) = -0.26$, $p > .05$) ratings were not significant predictors of academic achievement. Due to insufficient data, a metaregression for

excellent quality studies could not be conducted. These results indicated research design or quality was not impacting the academic achievement of African American Head Start students.

Research Questions and Hypotheses

Research question 1: *Is Head Start an effective program specifically for improving African American students' academic school readiness skills?*

The hypothesis that the meta-analysis would produce a small to moderate effect size for Head Start African American students was supported. With the overall effect size being a Cohen's *d* effect size of 0.62 supports the current literature of African American students being in Head Start. These results would indicate African American children in Head Start are achieving at moderate rates. Based on the concept from Jeynes (2010, 2015), a research design quality score was assigned to each study regardless if an intervention was used or not. Each study was assessed to determine if the independent and/or dependent variable was operationally defined, sample populations were described thoroughly, and if more than one norm-referenced assessment was used to measure an academic school readiness outcome. Design quality also focused on study design and random assignment of participants. If a study used an intervention, it would inherently gain more points. The additional areas where research design was assessed include examples/transcripts of the intervention, if treatment fidelity was assessed, time frame of fidelity checks, and how the other intervention and/or control groups were treated. Overall, the studies for the meta-analysis indicated a *medium quality* score ($M = 5.16$, $SD = 2.56$). Regardless of research design quality, there was no impact in predicting African American Head Start achievement.

Research question 2: *Which factors contribute to the achievement gap between African American and Caucasian students, as well as, which factors have provided the most benefit to academic outcomes?*

The hypothesis that annual family income and parent education would have some of the largest effects on Head Start African American achievement was not supported. Regardless of African American, Biracial/Multiracial, Caucasian, and/or Hispanic teachers and/or students being in the study there were no significant impacts on Head Start achievement. The outlier in these findings was having Asian teachers in the study, which served as a significant predictor of Head Start achievement. All the reported findings suggest the racial composition of all Head Start participants (e.g., students and teachers) has not affected the academic achievement of students. In fact, there was no one factor that solely or predominantly affected the academic achievement of Head Start students when African Americans are the majority.

CHAPTER V

SUMMARY AND DISCUSSION

Main Findings

This meta-analysis investigated the effectiveness of Head Start specifically for African American students' academic school readiness, the factors impacting the achievement gap between African American and Caucasian students, and the factors providing the most benefit to African American Head Start students. Prior meta-analyses related to the target population have not examined African American achievement, Head Start, the achievement gap, and early childhood education all within the same study. The results of this study highlight the current state of research when all these factors are considered, and these findings have implications on how African American achievement in Head Start should be examined moving forward.

The meta-analysis resulted in the finding that Head Start has a moderate effect on African American academic school readiness, which was consistent with previous meta-analyses examining similar factors (McKey et al., 1985; LaParo & Pianta, 2000; Nelson et al., 2003; Ma et al., 2016). Annual family income and parent education level were not found to produce the largest effects on Head Start African American achievement; however, parents with lower levels of education had children with lower level of academic school readiness. Studies have shown maternal education (i.e., not having a high school diploma) was significantly related to poor outcomes for children, being a single parent, lack of employment, lower SES, and needing public assistance (Ayoub et al., 2009; Vogel, Xue, Moiduddin, Kisker, & Carlson, 2010). Furthermore, early childhood poverty impacts achievement, employment, and earning power (Duncan & Magnuson, 2011). An additional finding of this study was that race/ethnicity of other student participants and teachers did not influence achievement, except when Asian teachers were

included in the study. Four studies included Asian teachers within the demographic information (Bulotsky-Shearer, Fernandez, Dominguez, & Rouse, 2011; Fuccillo, 2011; Hindman, Erhart, & Wasik, 2012; Wasik & Hindman, 2011); however, there were no specific findings due to the impact of Asian teachers participating in the individual studies. Two of the studies included interventions while two did not. The effect sizes ranged from 0.214 to 1.018 with total teacher participants ranging from 11 to 78 and total children participants ranging from 214 to 541. The large student sample sizes could have impacted the significant findings relating to Asian teachers included in the studies.

Limitations

There were several limitations to the completion of this study. First, many of the studies found did not include pertinent data, which would assist in determining how variables truly impacted African American achievement in Head Start. In addition, these variables are considered essential in determining the current state of Head Start for the fiscal year. Data related to study quality, geographic areas, year of study completion/publication, and the percentage of African American students in the study was obtained for all studies. Conversely, numerous variables resulted in less than 50% of data obtained. These data were critical in determining if race/ethnicity is truly impacting African American students in the classroom. In addition, it would have informed the research in assessing the achievement gap in Head Start classrooms.

There was limited information regarding students, parents, and teachers. Only 17% of studies reported Asian students, 14% reported Biracial/Multiracial students, 1% reported Native American/American Indian, and none reported Native Hawaiian/Pacific Islander students. Sixty-nine percent of studies did not specifically report the language(s) spoken by the student

participants. Only 25 studies which reported the language(s) spoken by the students (i.e., 18% Bilingual, 14% English only). In addition, only 19% of studies reported students with disabilities. Regarding teachers, only 32% of studies reported African American, 5% reported Asian, 1% reported Biracial/Multiracial, and none reported Native American/American Indian and Native Hawaiian/Pacific Islander teachers. Thirty-eight percent of studies reported teacher experience while 37% reported the education level of teachers. For parents, there were 25% of studies which included information regarding if students were from a single- or two-parent household. Thirty-one percent of studies reported the average annual income of families, 16% reported the rate of parent unemployment, and 31% reported parents' level of education. Given that Head Start serves low-income families, having enough data regarding income and parent education level would have assisted in determining if home and/or school has more of an impact on African American Head Start achievement.

Second, several variables had skewed data that could have impacted the results of the study. Only 5% of studies were completed from 1987 to 1996 and 3% of studies were completed in 2017. One would assume the research would be evenly distributed over time, given Head Start was created in the 1960s. It is difficult to determine if Head Start legislation has impacted the type of data collected from the program. The Office of Head Start is moving towards more evidenced-based research to guide legislation; however, this is regarding general Head Start research not research targeting specific populations within Head Start.

Third, there was significant publication bias found within the study. There were 13 individuals who were primary authors of multiple studies. These 13 researchers were responsible for 55% of the total articles included within the meta-analysis. In addition, most of the studies were completed in either the Northeast (38%) or the South (43%). This could have

impacted the overall findings of the study due to the repetition of sample populations within the individual studies. It is important to interpret the findings of this study with *caution* due to a lack of data relating to geographical representation. If the same participants were being assessed using the same norm-referenced measures, it does not provide an accurate representation of how African Americans are achieving over time. The current data show how these children are performing in either the Northeast or South; however, given Head Start is a federal program it does not provide information as to how African American children are performing in this program across the country. This leaves much to be desired when making evidenced-based decisions, which should be viewed through a cultural lens. In addition, it provides a lack of information needed regarding the current state of research on a national intervention program.

Fourth, given that Head Start is an intervention there was also a lack of data regarding research design quality. There were 30 studies which used an intervention in the study. Of these 30 studies, only 33% provided transcripts or examples of the intervention used within the study. Sixty-three percent of the intervention studies assessed treatment fidelity, with 13 using observations as their primary method. Data regarding if progress monitoring of the intervention was used. Fifty-percent of studies did not specifically report using progress monitoring to assess the intervention. Most (i.e., 26%) of the intervention studies compared the intervention to a control group or some other compensating activity. In examining research design quality, only three percent of all studies within the meta-analysis thoroughly described the child participants in the study. A thorough description would include data regarding gender, age, race/ethnicity, level of English development, SES, and disability status of the child participants. Gersten et al. (2000) not only suggested strategies for implementing high-quality research designs in the classroom, they also stressed the importance of having detailed data in replicating research. Since Head is

an intervention itself, it is difficult to determine its true impact due to the lack of data. If researchers provide specific data, especially regarding interventions, the effectiveness of interventions can be accurately examined across various groups. This may assist in the generalizing of interventions and assist in determining how interventions can be adapted to other populations.

Possible Applications

The racial achievement gap between African American and Caucasian students is a well-documented concern in the educational research literature. While students are making gains in achievement, the gap is not closing. In addition, low-income students are usually students of color and, once they enter kindergarten, they are enrolled in schools with limited resources. The study's results can inform local Head Start centers who provide services to African American students and families. The research implications will not only have a trickledown effect due to its national wraparound service delivery but will provide an impact from the bottom up by informing policy.

The study will also influence quality of life, policy, exchange of knowledge, and communication to other fields in various ways. First, the findings will assist in determining if African American students are making academic gains in a program where they are most likely to be eligible for and enroll in, a unique question not effectively answered in the current literature. Second, the findings of this study will assist in the implementation of culturally competent curriculums, specifically for local Head Start programs that serve high African American populations. Third, Head Start is required to provide services according to federal regulations. Given the reauthorizations of Head Start, the results of this study can assist policy makers in evidenced-based decision making for all students by using the most current and

relevant data. Fourth, the findings will aid professionals working within Head Start or early childhood populations to exchange ideas and expertise as it relates to African American students. Research on this topic indicates most Head Start African American research is being conducted on the east coast of the United States. Hopefully, this study will be the catalyst for more studies in various parts of the country given that Head Start is a national program. Finally, individuals working within Economy, Public Service and Administration, Business Administration, or Business Management would benefit from gaining knowledge about this research. In 2017, Congress authorized over eight billion dollars in federal spending for Head Start teachers, administrators, parents, and students. It would be beneficial for those in these fields to lend their expertise to determine if Head Start funds are being used appropriately and if Head Start, as it stands, is a solid investment to our society and the individuals it serves.

Future Directions of Research

This study has provided information regarding how African American Head Start students have academically performed while receiving educational services in the program. Given that numerous variables were analyzed without 100% of the data, future research on Head Start is needed. Nelson (2003) suggests future early childhood research should focus on children and families from a variety of racial/ethnic backgrounds with a specific focus on community-level outcomes. Head Start research would benefit in examining the effects of Head Start on children in rural areas, who speak other languages in the home, are Native American/American Indian and Native Hawaiian/Pacific Islander, and children who are receiving specialized services due to developmental delays. It would assist the Office of Head Start to know if the program is positively impacting subpopulations within the program. This will continue to aid in making

evidenced-based decisions, which will impact all children in Head Start. In addition, targeting subpopulations in research will assist in examining the achievement gap in early childhood populations (Jeynes, 2015). Additional research regarding teacher impact is also needed. Consistent with student findings, there was a lack of racial/ethnic data for Asian, Biracial/Multiracial, Native American/American Indian, and Native Hawaiian/Pacific Islander teachers. Due to this it is difficult to determine if teacher race/ethnicity, along with other experience and education, is truly impacting African American students in Head Start. Park (2015) examined the coexisting privilege and marginalization of two female Asian teachers. Given that having Asian teachers in a study positively impacted academic achievement, Head Start would benefit from examining the unique social and cultural factors Asian teachers may bring into the classroom.

Furthermore, the study found most Head Start research is being completed in either the Northeast or Southern regions of the United States, specifically on the East coast. With that said, it is important to consider the population density of African Americans in the Midwest and West regions of the United States. States from the Midwest included in the meta-analysis are Illinois, Indiana, Michigan, and Wisconsin. Nevada was the only state in the West that was included in the meta-analysis. The lack of research found in these regions could possibly due to other racial/ethnic groups being in the majority, especially in areas with high Hispanic and Caucasian populations. Additional research is needed to examine how African American children are achieving across the country, especially how they are performing in the West and Midwest compared to other racial/ethnic groups. It would be beneficial for the Office of Head Start to examine how African Americans are performing in regions where they are a significant minority. Hopefully, this will provide a more accurate assessment on the effectiveness of Head Start on

this population. By having diverse researchers investigate Head Start effectiveness from various areas of the country, it may reduce the current publication bias found in the literature.

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APPENDIX A

CODING SHEET

IC1. What is the study ID number?

1C2. Is Head Start the only early childhood program used and specifically specified?

IC3. Are African American students the majority or at least 40% of the population?

IC4. Are student participants three, four, and/or five years of age?

IC5. Does the study include academic school readiness outcomes (i.e., early literacy [reading, writing], early numeracy, and/or language development?

IC6. Does the study measure academic school readiness outcomes while the students are currently attending Head Start?

IC7. Was the study completed/published from 1987-2017?

IC8. Was the study completed in the United States?

IC9. Do the academic school readiness outcome norm-referenced assessments have a Cronbach alpha of 0.70 or greater or a Pearson r of 0.70 or greater?

IC10. Does the study include enough data to calculate an effect size (e.g., means, standard deviations, standard error of measurements, t values, degrees of freedom, etc.)

Study Characteristics

S1. What is the study ID number?

S2. What are the last names of the authors?

S3. What year was the study completed/published?

S4. Is the study published or a thesis/dissertation?

1 = Journal article

2 = Thesis/dissertation

Setting Characteristics

ST1. What is the study ID number?

ST2. What region of the United States was the study conducted in?

1 = Northeast

2 = Midwest

3 = South

4 = West

? = Can't Tell/Don't Know

ST3. What state(s) was the study conducted in? (Use postal service code/s.)

? = Can't Tell/Don't Know

ST4. What type of community was the study conducted in?

1 = Urban

2 = Suburban

3 = Rural

4 = Combination (specify)

? = Can't tell/Don't Know

ST5. In how many Head Start centers participated in the study?

1 = 1 center

2 = 2 centers

3 = 3 centers

4 = 4+ centers (specify)

? = Can't tell/Don't Know

ST6. How many Head Start classrooms participated in the study?

1 = 1 classroom

2 = 2 classroom

3 = 3 classrooms

4 = 4+ classrooms (specify)

? = Can't tell/Know

S7. What type of Head Start center was used within the study?

1 = School-based

2 = Home-based

3 = Combination

? = Can't tell/not reported

Child Characteristics

C1. What is the study ID number (specify)?

C2. What is the overall sample size (specify)?

C3. What was the percentage of African American students included within the study?

1 = 40% - 50%

2 = 51% - 75%

3 = 76% - 99%

4 = 100%

C4. What percentage of students in the study were American Indian and/or Alaskan Native?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

C5. What percentage of students in the study were Asian?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

C6. What percentage of students in the study were Biracial/Multiracial?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

C7. What percentage of students in the study were Caucasian/White?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

C8. What percentage of students in the study were Hispanic/Latino?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

C9. What percentage of students in the study were Native Hawaiian or other Pacific Islander?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

C10. What sexes were represented in the student sample?

1 = Male only

2 = Female only

3 = Both

? = Not reported

C11. What were the ages of students within the sample?

1 = 3 only

2 = 4 only

3 = 5 only

4 = Any combination above

C12. What were the native languages of students within the overall sample?

1 = English only

2 = Spanish only

3 = Bilingual (with any other language and English)

? = None reported

C13. Were there any disabilities reported in overall student sample?

1 = Yes (specify)

0 = No

C13a. If yes, what disabilities were reported?

1 = Autism Spectrum Disorder

2 = Deafness

3 = Deaf/Blindness

4 = Hearing Impairment

5 = Intellectual Disability

6 = Multiple Disabilities

7 = Orthopedic Impairment

8 = Other Health Impairment

9 = Traumatic Brain Injury

10 = Visual Impairment/Blindness

Teacher/Parent Characteristics

TP1. What is the study ID?

TP2. How many teachers were in the study (specify)?

0 = No teachers

TP3. What percentage of teachers in the study were African American?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

TP4. What percentage of teachers in the study were American Indian and/or Alaskan Native?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

TP5. What percentage of teachers in the study were Asian?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

TP6. What percentage of teachers in the study were Biracial/Multiracial?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

TP7. What percentage of teachers in the study were Caucasian/White?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

TP8. What percentage of teachers in the study were Hispanic/Latino?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

TP9. What percentage of teachers in the study were Native Hawaiian or other Pacific Islander?

1 = 0% - 25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Not reported

TP10. What were the average years of teaching experience in the teaching sample?

1 = 0-3 years

2 = 4-6 years

3 = 6-9 years

4 = 10+ years

? = Can't tell/Not reported

TP11. What was the average education level of teachers within the sample?

1 = high school graduate (12 years of education)

2 = 2-year college degree (14 years of education)

3 = 4-year college degree (16 years of education)

4 = Master's degree or beyond (17+ years of education)

5 = Combination/Multiple reports (specify; average percentages)

? = Can't tell/Not reported

TP12. How many parents were reported in the study (specify)?

0 = No parents

TP13. How many parents were within the home?

1 = Single parent household

2 = Both parents within household

3 = Foster parents/Guardians within household

? = Can't tell/Not reported

P34. What percentage of parents were unemployed?

1 = 0%-25%

2 = 26% - 50%

3 = 51% - 75%

4 = 76% - 100%

? = Can't tell/Not reported

P35. What was the average household income level for the study?

1 = less than $20,000

2 = $20,000 - $40,999

3 = $41,000 - $60, 999

4 = $61,000 - $80,999

5 = $81,000+

6 = Multiple reports

? = Can't tell/Not reported

P32. What was the average education level of parents within the sample?

0 = less than a high school graduate

1 = high school graduate (12 years of education)

2 = 2-year college degree (14 years of education)

3 = 4-year college degree (16 years of education)

4 = Master's degree or beyond (17+ years of education)

? = Can't tell/Not reported

Outcome Measure

O1. What is the study ID number?

O2. What academic school readiness outcome(s) were measured?

1 = Literacy only (reading/writing)

2 = Language only

3 = Math/Numeracy only

4 = Combination (specify)

O2a. If literacy, which specific area(s) were measured?

1 = Alphabet knowledge

2 = Phonological Awareness

3 = Phonological Memory

4 = Rapid automatized naming of objects/colors

5 = Writing/writing name

O2b. If language, which specific area(s) were measured?

1 = Expressive lexical knowledge

2 = Narrative Discourse

3 = Receptive lexical knowledge

4 = Semantics

5 = Syntax

6 = Vocabulary

O2c. If math/numeracy, which specific area(s) were measured?

1 = Arithmetic operations

2 = Magnitude

3 = Numbering/basic counting skills

4 = Numerical value

5 = Relations

6 = Simple calculation

O3. Which norm-referenced assessments were used to measure academic school readiness outcomes?

1 = Comprehensive Test of Phonological Processing (CTOPP)

2 = Expressive One-Word Picture Vocabulary Test (EOWPVT)

3 = Learning Express (LE)

4 = Oral and Written Language Scales (OWLS)

5 = Peabody Picture Vocabulary Test (PPVT)

6 = Preschool Individual Growth & Development Indications (IGDIs)

7 = Test of Early Mathematics Ability (TEMA)

8 = Woodcock Johnson Tests of Achievement (WJ-ACH)

9 = Other (specify)

Information about Head Start Interventions

I1. What is the study's ID number?

I2. Was an intervention(s) used within the study?

0 = No

1 = Yes

I3. If yes, how long was the intervention(s) implemented?

1 = less than a week

2 = 2 weeks - 4 weeks

3 = 5 weeks - 9 weeks

4 = 10 weeks - 13 weeks

5 = 14+ weeks

I4. What was the aim of the intervention?

1 = Teacher professional development

2 = Parent participation

3 = Student academic achievement

4 = Combination

I5. Who were the recipients of the intervention(s)?

1 = Students only

2 = Teachers only

3 = Parents only

4 = Combination

I6. Who implemented the intervention?

1 = Teachers

2 = Parents

3 = Researchers

4 = Combination

Research Design Quality

RDQ1. What is the study's ID number?

RDQ2. Was the independent variable operationally defined?

0 = No

1 = Yes

? = Can't tell/Don't know

RDQ3. If an intervention was used, did the researcher provide transcripts or examples of intervention materials?

0 = No

1 = Yes

? = Can't tell/no intervention used within the study

RDQ4. Was evidence reported that the intervention was or was not implemented in a manner similar to the way it was designed (i.e., treatment fidelity)?

0 = Not implemented as specified

1 = Implemented as specified

? = Can't tell/Don't know

RDQ4a. If the intervention was implemented as specified, what information was used to make this determination? (specify)

RDQ4b. If the intervention was implemented as specified, was there a time frame for conducting treatment fidelity checks?

0 = No

1 = Yes (specify)

RDQ5. How was the control/comparison group treated?

0 = No intervention or compensating activity (i.e., business as usual)

1 = Other compensating activity (i.e., other intervention)

? = Can't tell/Not reported

RDQ6. What was the design of the study?

1 = Correlational

2 = Pre/Post

3 = Quasi-experimental

4 = Experimental

RDQ7. Were the experiment and control/comparison groups described thoroughly? (gender, age, race/ethnicity, level of English language development, SES, disability status)

0 = No

1 = Provided some but not all information needed

2 = Yes

RDQ8. Were participants randomly assigned to groups?

0 = No

1 = Yes

RDQ9. Was more than one norm-referenced academic assessment used to measure each academic outcome?

0 = No

1 = Yes

RDQ10. What was the study's overall RDQM score (specify)?

Effect Size Estimate

ES1. What is the study ID number?

ES2. Which academic area is being measured?

1 = literacy

2 = language

3 = numeracy

ES3. What is the average effect size (Cohen's d) for the academic school readiness outcome (specify)?

ES4. What is the overall effect size for the individual study (specify)?

APPENDIX B

FIGURES

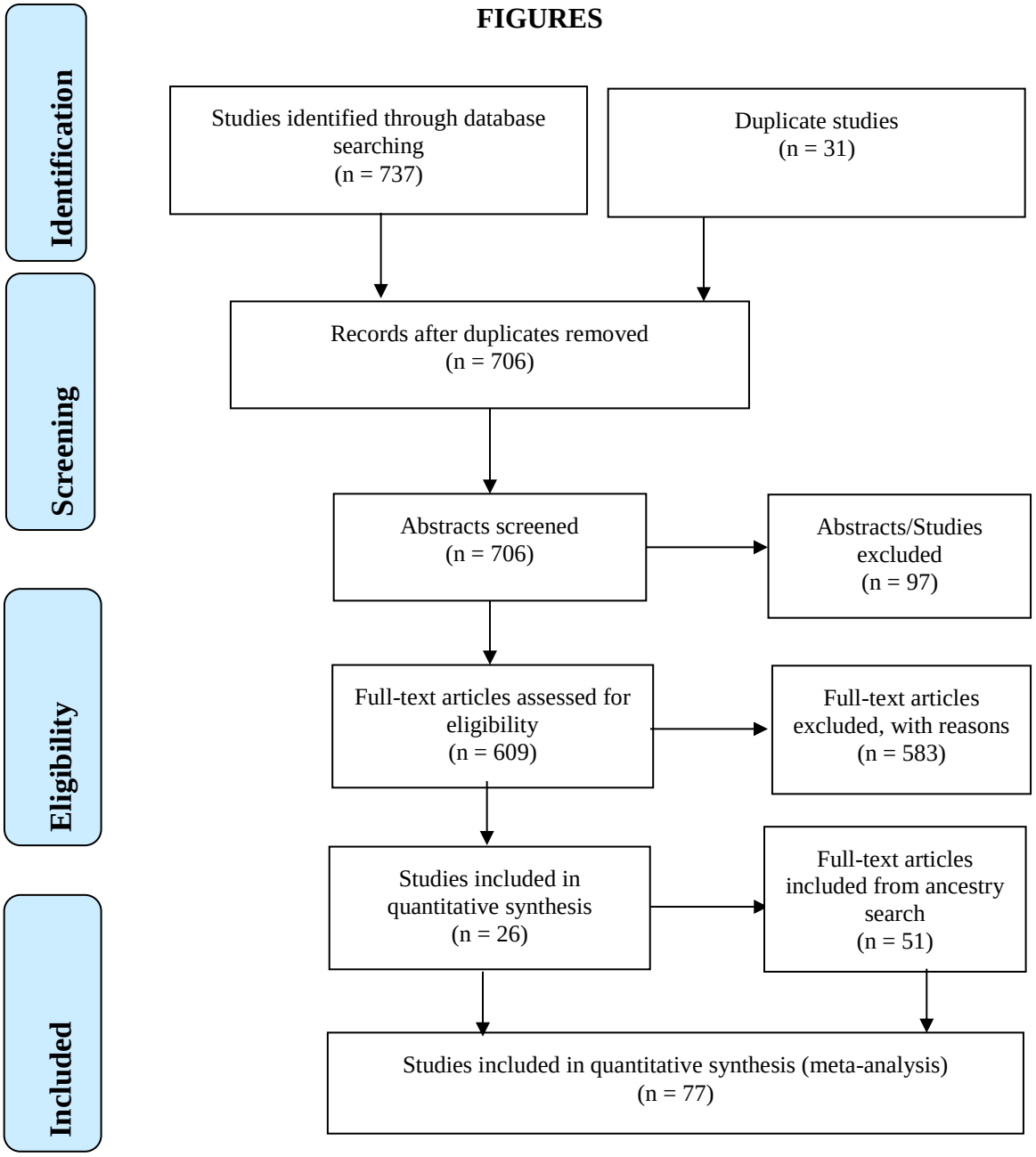

Figure 1. Inclusion/Exclusion Flow Diagram.
Adapted from Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., & The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097.

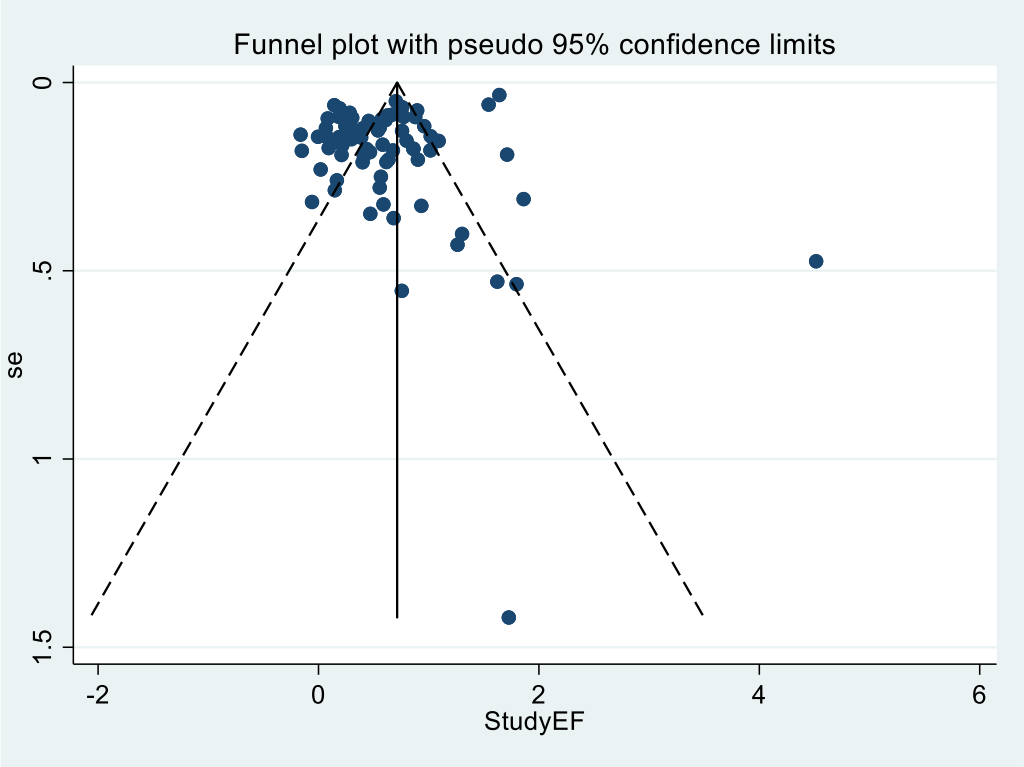

Figure 2. Funnel Plot Representing Publication Bias.
Funnel plot representing publication bias for all studies included within meta-analysis. StudyEF = Study Effect Size; se = Standard Error.

APPENDIX C

TABLES

Category	ES	SD
39% of less but still majority of sample	0.88	0.95
40% to 50%	0.57	0.48
51% to 75%	0.68	0.47
76% to 99%	0.68	0.89
100%	0.49	0.37

Table 1. Effect Sizes for Percentage of African American Students in Study.
Note. A One-Way ANOVA indicated there was no significant difference in academic achievement when African American Head Start students comprise most of the overall sample ($F(4,72) = 0.32$, $p > .05$). ES = Effect Size; SD = Standard Deviation; ANOVA = Analysis of Variance.

Category	ES	SD
1987 – 1996	0.62	0.70
1997 – 2006	0.65	0.94
2007 – 2016	0.67	0.46
2017	0.69	0.81

Table 2. Effect Sizes for Year of Study Completion/Publication.

Note. A One-Way ANOVA indicated there was no significant difference when a study was completed/published relating to the achievement of mostly African American Head Start students in the study ($F(3,73) = 0.01$, $p > .05$). ES = Effect Size; SD = Standard Deviation; ANOVA = Analysis of Variance.

Category	ES	SD
Early Literacy (only)	0.68	0.39
Language (only)	0.69	0.91
Early Numeracy (only)	0.58	0.12
All Academic Areas	0.77	0.51
Early Literacy and Language	0.51	0.50
Language and Early Numeracy	1.84	2.33
Early Literacy and Early Numeracy	0.65	0.27

Table 3. Effect Sizes for Academic School Readiness Outcomes.

Note. A One-Way ANOVA indicated there was no significant differences in the academic achievement of Head Start African American students when only one academic outcome was examined ($F(2,36) = 0.03$, $p > .05$). A One-Way ANOVA indicated there was no significant difference in academic achievement of African American Head Start students when more than one academic outcome is examined ($F(3,34) = 2.78$, $p > .05$). ES = Effect Size; SD = Standard Deviation; ANOVA = Analysis of Variance.