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Maternal predictors of school readiness among at-risk Head Start preschool children

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Maternal Predictors of School Readiness Among At-Risk Head Start Preschool Children

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Thesis

Submitted to the Department of Psychology

Eastern Michigan University

in partial fulfillment of the requirements

for the degree of

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in

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Abstract

Preschool has been identified as a critical period during which children who are at-risk for school difficulties are most responsive to intervention (National Institute of Mental Health, 2002; National Research Council & Institute of Medicine, 2001). Because of this, school readiness has recently become a prioritized area of interest for the educational system, the health care industry, and the federal government. However, many efforts to comprehensively prepare a child to begin school have not been successful because factors beyond the educational system (e.g., parenting/parent attributes, environmental stressors, and other demographic characteristics) have not been closely considered nor adequately researched. Therefore, the purpose of this study was to determine if maternal characteristics (e.g., maternal role satisfaction, future orientation, and level of maternal involvement) were positively related to domains of school readiness in children. I hypothesized that higher levels of maternal satisfaction and future orientation would result in more maternal involvement, subsequently leading to higher levels of child school readiness. Participants included 202 low-income, African American mother-child dyads, with the child being preschool age and enrolled in a Head Start program at the time of the study. The current study utilized secondary data where participants were recruited from Head Start facilities in Detroit, Michigan. Hierarchical multiple regression was utilized to test study hypotheses. Results revealed that maternal satisfaction and future orientation was positively related to some domains of child school readiness. The current study did not find support for the mediation hypothesis.

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Maternal Predictors of School Readiness Among Head Start Preschool Children

Introduction

Preschool has been identified as a critical period during which time children who are at-risk for school difficulties are most responsive to intervention (National Institute of Mental Health, 2002; National Research Council & Institute of Medicine, 2001). Lack of preparedness in school has been found to be associated with later academic achievement and economic well-being (Card, 1999; Heckman, 2006), among other negative outcomes for children and their families. Children entering kindergarten may begin this grade with varying levels of preparedness (McWayne, Cheung, Green-Wright, & Hahs-Vaughn, 2012). For this reason, being sure children are adequately prepared for school upon the start of kindergarten is developmentally crucial in order to ensure school success.

School readiness can be defined as children's success during the transition from preschool to formal school entry (Duncan et al., 2007; Konold & Pianta, 2005; McWayne et al., 2012; Rouse & Fantuzzo, 2009). School readiness is comprised of many domains, with the five most notable domains being cognitive skills, general knowledge, language skills, social-emotional skill, and motor skills/physical health, with deficits in any one of these domains potentially compromising a child's preparedness to begin kindergarten (McWayne et al., 2012). For this reason, it is important to understand what may facilitate higher levels of school readiness among children. Factors that strongly predict school readiness may include executive functioning (Fuhs & Day, 2011; St. Clair-Thompson & Gathercole, 2006), the home and school environment (Brown, 1999; Dearing, Simpkins, Kreider, & Weiss, 2006; Dilworth-Bart, 2012; Mantzicopoulos, 1997, Qi & Kaiser, 2004; Sheridan et al., 2011), math and reading skills (Duncan et al., 2007; Pagani, Fitzpatrick, Archambault, & Janosz, 2010; Romano, Babchisin, Pagani, & Kohen, 2010), early life experiences (Fantuzzo, Bulotsky-Shearer, Fusco, &

McWayne, 2005; George, 2014), stressors (Anthony et al., 2005; Mistry, Benner, Biesanz, Clark, & Howes, 2010), child characteristics (Berhenke et al., 2011), and adjustment (Bzostek & Beck, 2011; Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006; Tucker, 2008). Other factors that are also associated with school readiness include income, SES, race (Harden, Sandstrom & Chazan-Cohen, 2012), family functioning, parental abilities and education, parental involvement (Bulotsky-Shearer, Wen, Faria, Hahs-Vaughn, & Korfmacher, 2012), neighborhood quality, at-risk status, and child birth weight (Blair, 2001). Furthermore, additional factors, such as other risks to which the child is exposed (e.g., environmental risks related to the neighborhood, home, school etc.), may also have implications for school readiness.

Children who are exposed to a variety of risks are more likely to have lower levels of school readiness (Gabalda, Thompson, & Kaslow, 2010; Mistry, Benner, Biesanz, Clark, & Howes, 2010; Randolph, Koblinsky, Bemmer, Roberta, & Letiecq, 2000). More specifically, it has been found that children who are of low-income status, African American, and live in urban communities tend to fare poorly in terms of school readiness (Blair, 2001; Harden et al., 2012). The school entry gap represents the variation between children in terms of school readiness, with many risk factors mentioned contributing to this gap and the subsequent lack of preparedness for at-risk kindergarteners to begin school, specifically (Janus & Duku, 2007). It is important to note that not all children who are exposed to multiple risks are unprepared to begin school; however, children exposed to multiple risks are more likely to have significantly more obstacles to overcome in order to achieve academically at the same level as their peers (Gabalda et al., 2010; Mistry et al., 2010; Randolph et al, 2000). Because not all children who are exposed to many risks fare poorly, better understanding is needed regarding school readiness, especially vulnerable populations and predictors of school readiness. For that reason, the current study

examined school readiness among children from low-income, African American families who live in an urban community. Specific predictors were considered when examining school readiness and the role of mothers.

At this time, there is a large body of literature that has examined school readiness in a variety of manners, but little is known about how specific maternal factors may impact school readiness. Previous research indicates a strong relationship between various maternal cognitions and behaviors, and child school readiness (Rimm-Kaufman, 2004; Hess, Holloway, Dickson, & Price, 1984). Therefore, the factors that were examined as predictors in the current study were maternal satisfaction, maternal future orientation, and maternal involvement through shared book reading. The impact of maternal satisfaction, future orientation, and involvement have not been adequately examined as predictors of school readiness in the existing literature. Furthermore, it has rarely been examined in an urban, low-income, African American sample. Therefore, the purpose of the study was to examine the mentioned maternal factors as predictors of child school readiness among a low-income, urban, African American sample. The current study contributes to gaps in the literature of both rarely examined maternal variables and low-income, urban, African American populations. More specifically, maternal satisfaction, future orientation, and reading involvement have not been previously examined simultaneously among the population of interest. At this time, the literature related to the predictors, school readiness, and the population of interest will be discussed.

Review of Literature

Cognitive Skills and General Knowledge

Two of the primary domains of school readiness include cognitive skills and general knowledge. Because there is an overlap among these two domains, they will be discussed together. However, differences between cognition and general knowledge will also be discussed.

Cognition represents a vast construct that includes multiple skills. According to Berk (2013), “Cognition refers to the inner processes and products of the mind that lead to knowing” (p. 225). It includes all mental activity, including attention, memory, symbolizing, categorizing, planning, problem solving, creating, and fantasizing. Cognitive skills are frequently equated with executive functioning skills or cognitive control capacities (Welsh, Nix, Blair, Bierman, & Nelson, 2010) and include abilities such as working memory, attention set shifting, and inhibitory control. In addition, Welsh et al. (2010) stated that cognitive skills can also be viewed in terms of general skills, which typically encompass both executive functioning and specific skills, including numeracy and literacy. Also related to cognitive skills is the school readiness domain of general knowledge.

General knowledge represents the information accumulated through the use of cognitive processes and is thought to be gained through a child’s experiences, interpretations, and applications of what he/she knows (Welsh et al., 2010). Therefore, general knowledge is a by-product of cognitive skills and represents the information that is used, retrieved, and stored using the cognitive skills mentioned above (Welsh et al., 2010). Although general knowledge is similar to the concept of cognitive skills, Welsh et al. (2010) differentiated general knowledge from cognitive skills by indicating that the accumulation of knowledge is dependent upon the

cognitive skills that are used and learned by the child. Because this differentiation can be unclear, it is further elaborated upon below.

Cognitive skills and general knowledge relate to school readiness in that they predict academic outcomes and later achievement. For example, Fuhs and Day (2011) found that executive functioning was predictive of academic achievement and that the level of executive functioning of preschoolers should gradually become more sophisticated with time. Furthermore, findings from Fuhs and Day (2011) also indicate that executive functioning, response inhibition, working memory, and attention shifting all belong to the same construct that represents a child's cognitive functioning. St. Clair-Thompson and Gathercole (2006) have also found that executive functioning and cognitive skills are important parts of a child's achievement in school and that higher levels of executive functioning lead to higher quality performance in various areas of academic achievement (e.g., English, mathematics, science). Therefore, it is important for children to have adequate cognitive skills upon school entry.

The development of cognitive skills and general knowledge is dependent upon various factors, including biological maturation and the child's early environment. Home and school environments represent very important influences in the development of these skills, as well as other areas of school readiness (Dilworth-Bart, 2012; Mantzicopoulos, 1997). Brown (1999) found that opportunities for children to gain general knowledge may include children's interaction with their environment in a meaningful way or children's social opportunities with others that allow them to acquire new information and knowledge. School readiness requires that children have certain experiences and opportunities to gain knowledge that are used to gain more specific domains of knowledge (e.g., academic knowledge; Brown, 1999). In addition, Brown (1999) stated that without appropriate cognitive skills and capacities, abilities such as self-

regulation and goal-oriented learning, both skills necessary to accumulate knowledge, do not develop optimally. For that reason, developmentally appropriate cognitive skills are necessary in order for a child to learn and gain knowledge (Welsh et al., 2010).

As previously stated, cognitive skills and general knowledge are considered important indicators of school readiness. For example, Welsh et al. (2010) found that low-income children who have strongly developed general cognitive skills (e.g., working memory and attention control) were more likely to succeed in the areas of literacy and numeracy (specific skills) during prekindergarten. It was also found in this study that this growth predicted math and reading achievement when controlling for specific cognitive skills of numeracy and literacy. In sum, Welsh et al. (2010) found that higher cognitive skills were predictive of achievement in school among low-income children.

Duncan et al. (2007) completed a meta-analysis of six longitudinal datasets in order to determine the most significant predictors of school readiness and later achievement. It was found that math, reading, and attention skills, in the given order, were the most significant predictors of later achievement. In addition, Duncan et al. (2007) found that literacy and attention skills were predictive of later achievement in school. This study was replicated by Pagani, Fitzpatrick, Archambault, & Janosz (2010), who found that results remained relatively constant, as predictors of later achievement were math, attention, and receptive language skills being the most significant predictors, in that given order. Lastly, Romano, Babchisin, Pagani, and Kohen (2010) also replicated this study and found results similar to Pagani et al. (2010). Additionally, they also found that certain social-emotional behaviors of kindergarteners (e.g., hyperactivity/impulsivity, prosocial behaviors, internalizing behavior problems such as anxiety and depression) were predictive of math and reading performance in the third grade. Therefore, it has been shown that

cognitive skills are significantly related to many school readiness outcomes and later academic achievement, making them an important set of skills for children to have in order to succeed in an academic setting.

In sum, it is evident that cognitive skills and general knowledge are significant components of school readiness. They encompass a wide variety of skills, many of which are the most significant predictors of later school success. Specifically, the absence or presence of these skills has important implications for school success even among individual subject areas, such as mathematics and literacy. Therefore, it is necessary to conceptualize cognitive skills and general knowledge as important markers and components of school readiness. However, these skills do not represent the only important factors in determining a child's school readiness. It is also important to consider other skills crucial to academic success, such as language skills.

Language Skills

The development of language skills begins in utero, with the fetus being able to distinguish between sounds and speech patterns in the mother's voice (Cherry, 2014). This is an important facet of child development, as it provides the means by which a child is able to communicate and interact with his or her outside world (Sheridan, Knoche, Kupzyk, Edwards, & Marvin, 2011). For this reason, it has become an important domain of school readiness.

Language skills are an important component of school readiness because, like cognitive skills and general knowledge, they are predictive of outcomes in academic achievement and school success. For example, Fuhs and Day (2011) found that verbal abilities predicted and supported longitudinal change in executive functioning. Fiorentino and Howe (2004) found that low-income children with high levels of language competence and narrative abilities were more "ready to learn" than their less linguistically competent counterparts. Justice, Bowles, Pence

Turnbull, and Skibbe (2009) also found that the development of language skills can be time sensitive. More specifically, findings from this study indicate that children with persistent language difficulties at age 54 months, or 4–5 years, were found to have poor kindergarten outcomes and lower scores on a measure of academic school readiness, which was not evident for children with persistent language difficulties at other ages or with language difficulties at other times of development. Therefore, poor language skills have been shown to lead consistently to compromised school success.

Adequate language skills are important for children entering school. Children need to communicate with the teacher, follow instructions, communicate their needs, and interact with peers in an effective manner in order to be successful in school (Bulotsky-Shearer, Fantuzzo, & McDermott, 2008). Qi and Kaiser (2004) stated that in order for children to develop necessary language skills, they must be exposed to language prior to beginning school so they are more likely to succeed. It has been shown that parents can provide the context for their children to develop appropriate expressive and receptive language skills and early literacy skills by becoming involved in their child's development of language skills prior to preschool (Dearing, Simpkins, Kreider, & Weiss, 2006; Sheridan et al., 2011). The effects of parent involvement have been shown across multiple populations including low-income and at-risk populations, such as Head Start preschoolers (Sheridan et al., 2011). Sheridan et al. (2011) examined the impact of a parent engagement intervention for Head Start preschoolers, and their findings indicate that children showed marked academic improvement in language use, reading, and writing skills over the course of the two year study during which time the parent engagement intervention was being used. Therefore, parental involvement in language development has been shown to

positively affect a child's school readiness and academic performance in various language-oriented tasks.

In addition to school readiness and academic performance, there are implications for language skills in other domains of functioning as well. Findings indicate that language-delayed children from low-income households were more likely to exhibit behavioral issues and deficits in social skills (Kaiser, Hancock, Cai, Foster, & Hester, 2000; Qi & Kaiser, 2004), with the behavior issues typically being overt aggression. This aggression may possibly be due to the child's inability to communicate linguistically, therefore resorting to other behaviors that do not use verbal communication. Johnson (2005) also found that among African American, English-speaking children, comprehension of the third person singular form of verbs was inadequate and could create communication complications for the child. It was found that kindergarten retention was more likely among children with poor language skills (Winsler et al., 2012). Additionally, the measures used to assess verbal intelligence are not standardized on African American children, so when assessing language abilities, African American children are already starting out at a disadvantage and are significantly more likely to perform worse than non-African American children.

In sum, language skills are important in a child's ability to communicate his/her needs, understanding, and knowledge related to school readiness and later success. The early environment of children is a significant factor in not only providing children with a context conducive to developing appropriate language skills, but also providing children with the opportunity to succeed in an academic environment. Therefore, it is evident why language skills have been a heavily researched construct that has been frequently integrated into school readiness interventions. Because language skills are a significant means of developing and

maintaining social relationships and expressing emotions, it has been shown in the Winsler et al. (2012) study that deficits in this area of development could lead to deficits in social-emotional development. As shown, language skills can have significant implications not only on the cognitive skills needed for academic success, but also the social-emotional skills necessary for school academic achievement as well. In further examining the important skills necessary for school readiness, social-emotional skills will be discussed.

Social-Emotional Skills

Social-emotional skills encompass a child's competencies in the areas of social, regulatory, and emotional functioning that influence the child's early life experiences (Fantuzzo, Bulotsky-Shearer, Fusco, & McWayne, 2005). Fantuzzo et al. (2005) stated that social-emotional skills are an important part of child development and school readiness, specifically because these skills allow children to interact with others and to express themselves in a meaningful way. These skills can subsequently result in an improved readiness for school among preschoolers and young children (Whittaker, Harden, See, Meisch, & Westbrook, 2011).

Social-emotional skills play a large role in the development of school readiness of children. McClelland, Cameron, McDonald Connor, Farris, Jewkes, and Morrison (2007) found that preschoolers who were better able to regulate their emotions subsequently performed better in tasks of literacy, vocabulary, and math skills. The researchers believed that these findings have strong implications for early academic achievement and school readiness upon kindergarten entry. Through three studies, Bulotsky-Shearer, Fantuzzo, and McDermott (2008) also found that behavioral problems, as well as cognitive abilities, were predictive of school readiness among low-income children. Furthermore, they found that the type of behavior problem and where the problem occurs explain variance within school readiness outcomes and the developmental

trajectories of participants. Bulotsky-Shearer, Dominguez, and Bell (2011) studied similar contextual classroom behaviors and also found that Head Start children with more behavior problems had lower school readiness skills, especially boys. However, the context in which the behavior occurred and the severity of the behavior were not significant predictors of school readiness. Therefore, social-emotional skills are important for children to be prepared to begin school. For that reason, it is important to consider the environments in which these skills develop.

Research has shown that social-emotional skills are developed in primarily two main environments for young children: home and preschool. Stressors present in either of these environments will lead to maladaptive social-emotional development and poorer social-emotional skills, including both internalizing and externalizing problems in children (Anthony et al., 2005). Anthony et al. (2005) further stated that the reason these environments are significant is because the timing of social-emotional development is delicate, meaning that these skills develop rapidly in childhood, and the environment has an impact on how adaptive and functional these skills will be. Because of this, multiple risks in the family and social domains during this time can lead to poor child behaviors, inadequate self-regulatory abilities, and overall below average future academic achievement (Mistry, Benner, Biesanz, Clark, & Howes, 2010). In sum, a lack of social-emotional skills can lead to a variety of negative implications for children beginning school.

Implications for negative social or emotional behaviors as a result of poor social-emotional skills can lead to impairments for preschoolers in other domains. Past research has indicated that dysregulated behaviors and emotions exhibited by preschoolers result in poor class adjustment and poor social abilities (Miller, Gouley, Seifer, Dickstein, & Shields, 2004). These

dysregulated behaviors also resulted in low affect expression, maladaptive learning behaviors, disruptive social behaviors in the home (Fantuzzo et al., 2005), deficits in early mathematical abilities, and general classroom misconduct (Fantuzzo, Bulotsky-Shearer, McDermott, McWayne, Frye, & Perlman, 2007), meaning that these problem behaviors led to poor skill acquirement, maladaptive development, and decreased functionality. Therefore, research has clearly indicated that there are many negative outcomes for children with poor social-emotional skills. Because social-emotional functioning is a component of child school readiness, deficits in this domain may result in poor success later in life as it relates to academic achievement (Card, 1999; Heckman, 2006).

Child behaviors can be some of the most important indicators of problems in social-emotional functioning. These behaviors can be either internalizing or externalizing in nature (Randolph, Koblinsky, Beemer, Roberts, & Letiecq, 2000). In addition, both internalizing and externalizing child behaviors are also heavily influenced by many contextual factors. For example, parenting factors could potentially have a positive or negative impact upon child behaviors (Pettit & Bates, 1989).

Child behavior problems can lead to significant outcomes in contexts such as the academic environment. Berhenke, Miller, Brown, Seifer, and Dickstein (2011) found that certain internalizing behaviors, such as persistence in schoolwork and shame in failure, influenced teacher ratings of school readiness among Head Start children. Various behaviors in this study were also indicative of social-emotional functioning, learning behaviors, and academic achievement when the child was in a challenging situation. Furthermore, researchers found that approximately one quarter of children exhibit dysregulated behaviors, with those children obtaining teacher ratings that indicated poor classroom adjustment and greater instances of peer

conflict (Miller et al., 2004). Because social-emotional skills relate heavily to other skills that comprise school readiness, it is important to consider how this relationship between social-emotional skills and other school readiness domains manifests. Due to the relationship between classroom functioning and social-emotional functioning, it may be beneficial to consider how intervention can be implemented early in the child's life.

Because social-emotional skills are a significant part of a child's school readiness, many researchers have made efforts to develop interventions in order to assist children and families in developing the social-emotional skills that are developmentally expected for preschoolers. For this reason, Sheridan, Knoche, Edwards, Bovaird, & Kupzyk (2010) used the "Getting Ready Intervention" program they developed to assist children and their families with developing necessary social-emotional skills to function adaptively in preschool and to minimize problem behaviors as a means of preparation for preschool children to enter kindergarten.

Findings indicated that, when instilling emotion-based intervention programs (EBPs), emotional skills and abilities increased, leading to more appropriate affective expressions and responses as well as fewer problematic or maladaptive behaviors. Furthermore, researchers believe that Head Start incorporates appropriate social-emotional development training for preschoolers and have therefore considered Head Start an emotion-based intervention program (Izard et al., 2008). Furthermore, it has also been found that Head Start children's responses to challenges (behavioral or emotional) were predictive of school readiness. More specifically it was found that when children consistently exhibited persistence or shame in relation to a challenge, it was easier not only to predict future overt behavioral responses, but also to predict the child's readiness to begin school (Berhenke et al., 2011). Therefore, although many negative outcomes may exist, there are effective interventions to consider as well.

Because a child's social-emotional skills influence the child's behavior, both are important to consider when studying this domain of school readiness. As shown, without appropriate social-emotional skills and subsequent age- and context-appropriate behaviors, children will struggle to be completely ready to begin school and will be at risk for social problems and academic failure. In further considering the remaining manners in which a child can be prepared to enter school, the final domain of school readiness will be discussed: physical well-being and motor development.

Physical Well-Being/Motor Development

Physical well-being is a construct that includes a child's physical health/lack of illness, access to health resources (e.g., updated immunizations, regular doctor appointments, and health care coverage), and an active lifestyle. In addition, physical well-being may include meeting certain developmental milestones, such as gross and fine motor skills (Caughy, 1996). Given the broad spectrum of health and motor behaviors encompassed by "physical well-being," status on this construct could lead to hindered development in other areas of a child's life (Bzostek & Beck, 2011). For example, a relation between physical well-being and school readiness has been noted in the literature (Bzostek & Beck, 2011; Currie, 2005; Duncan et al., 2007; George, 2014; Grissmer, Aiyer, Murrah, Grimm, & Steele, 2010; Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006; Pagani, Fitzpatrick, Archambault, & Janosz, 2010; Pagani & Messier, 2012; Park, Fertig, & Allison, 2011; Taras, 2005). Physical well-being and a child's motor development can relate to academic achievement, behavior, and psychological health (Tucker, 2008). Because of the many behaviors and factors that influence physical well-being and motor development, it is important to discuss each factor individually so as to understand how each determinant affects physical well-being, motor development, and academic achievement.

The first component of physical well-being mentioned, physical health/lack of illness, is important because children must be healthy in order to attend school and gain appropriate skills. If a child is not physically well, he/she may not have the stamina to refine the basic skills expected upon school entry and to apply those skills to real life situations as well (Bzostek & Beck, 2011). For example, if a child is unwell and therefore unable to develop his/her language skills at a level that would be expected of his/her peers, he/she may have difficulties learning, communicating, socializing, and functioning in the school environment. Furthermore, a variety of health problems have been shown to affect a child's readiness for school in other domains and overall academic achievement. Those may include asthma, enuresis, encopresis, digestive problems, and various neurological or cognitive conditions (e.g., attention-deficit/hyperactivity disorder, fetal alcohol syndrome, chromosomal conditions; Currie, 2005). Children may also be exposed to various chemicals or toxins that could put them at-risk for health problems, which would then put them at-risk for inadequate school readiness. These health risks may include lead/chemical poisoning, exposure to toxins, exposure to teratogens, and exposure to pollutants (Currie, 2005). Currie (2005) also found that health problems in these areas and a lack of physical health among children can have negative implications for school readiness. Additionally, Hair et al. (2006) also found that poor child health resulted in the child being more at-risk for disadvantage as well as poorer academic adjustment. These findings indicated that children with poor health, as well as other risk factors, are more likely to be unprepared to begin school.

In addition to the specific illnesses and health issues discussed above, general physical health can be influenced by some of the same negative stressors as other school readiness factors. This means that many children who do not possess the resources for appropriate physical health

may also not possess the resources for appropriate school readiness in other domains, such as cognitive skills or emotional skills (Park et al., 2011). Further, past studies have indicated that familial instability and residential instability are important mediational variables of poorer child physical health outcomes when observing at-risk neighborhood conditions (Bzostek & Beck, 2011; Fan & Chen, 2012). Therefore, physical health and presence of illness can be a direct reason a child is unprepared for school and a proxy for other family issues related to school readiness, like access to health care.

Access to health care may be an important aspect of school readiness. Although government programs exist to make health care more accessible, many families still struggle not only to maintain appropriate physical health, but also to seek health care when physical health is poor. Findings indicate that participation in health programs that assist families with health care access and promote healthy lifestyles positively influence a child's school readiness in other domains as well (Schor, Abrams, & Shea, 2007).

Considering the child's lifestyle, as it pertains to nutrition and activity, is also an important component of supporting child health and well-being. Research has shown that children at-risk for poor school readiness, like those living in poverty, are more likely to have poorer diets with regards to nutritional content (Currie, 2005). They also may engage in excessive sedentary behavior (Shen, Reinhart-Lee, Janisse, Brogan, Danford, & Jen, 2012). Therefore, they may be starting school with health behaviors that put them at-risk for increased problems in the future.

In addition to thinking about physical well-being in the ways described above, motor development is often considered part of a child's "physical" readiness for school. Physical capabilities, in the way of gross and fine motor behaviors, are an important link to overall school

success. For example, researchers have found a consistent link between young children's motor development and overall cognition (Pagani & Messier, 2012). Therefore, "motor scales" are typically included on standardized intellectual and developmental tests (e.g., Bayley, Beery VMI, NEPSY, McCarthy, and WPPSI; Bayley, 2005; Beery, Buktenica, & Beery, 2010; Korkman, Kirk, & Kemp, 2007; McCarthy, 1972; Wechsler, 2012). According to George (2014), there are many reasons why motor development is such an important component of academic achievement. He indicates that neuronal wiring is partially responsible for this relationship because some of the areas of the brain that are responsible for cognitive abilities and tasks are also responsible for the processing of motor information as well. Piek, Dawson, Smith, and Gasson (2008) also supported this statement, indicating that motor development often precedes development in other areas (e.g., cognitive or perceptual abilities), making it a better predictor of future academic achievement than other domains of school readiness. Furthermore, George (2014) indicated that experience-dependent learning is an important reason why motor development is related to academic achievement, with his rationale being that children who have greater motor skills are better able to navigate, manipulate, and interact with their environment, molding the environment into one conducive for learning. Lastly, George (2014) indicated that children who develop motor skills early will later not need to focus on the motor activity itself. Instead, they will be able to focus on the material (e.g., learning numbers/letters) rather than the motor activity. Therefore, motor skills may relate to academic achievement via the direct relationship in brain development and also indirectly through the facilitation of skills and activities conducive to learning.

When motor development is included in the definition of physical well-being, then the relationship between motor development and other areas of school readiness must be considered.

Grissmer et al., (2010) and Pagani, Fitzpatrick, Archambault, and Janosz (2010) replicated a study led by Duncan et al., (2007), which investigated later achievement based upon school readiness during kindergarten entry. It was found that motor development was one of the strongest predictors of overall level of school achievement. Similarly, Pagani and Messier (2012) also replicated this study and found that motor skills had a strong influence on a child's verbal skills. Specifically, gross motor skills, fine motor skills, and perceptual-motor skills were all important indicators of general school readiness.

In addition to literature supporting the relation between motor skills and academic achievement more generally, a study by Westendorp, Hartman, Houwen, Smith, and Visscher (2011) found that motor development was a critical variable for school-aged children with learning disorders. Westendorp et al. (2011) found that children with learning disorders were more likely to exhibit gross motor developmental deficits when compared to their same-age peers who did not have learning disorders. This finding highlights the need to focus attention on all domains of school readiness, including physical well-being and motor development, because any one can be a predictor of a variety of school readiness and academic achievement challenges.

Based upon the wide variety of implications physical well-being and motor development can have on a child's functioning in many contexts, it is clear why physical well-being and motor development are considered an influential domain of school readiness that may potentially determine later academic achievement and school success. It is therefore important to understand the determinants of outcomes like physical well-being when considering school readiness overall.

At-Risk Populations and School Readiness

Gabalda, Thompson, and Kaslow (2010) defined risk as, "...factors that increase children's odds of experiencing emotional and behavioral problems" (p. 424). At-risk populations can be defined by a variety of characteristics, including—but not limited to—low-SES, low income, psychological difficulties, being African American (Harden, Sandstrom, & Chazan-Cohen, 2012), intimate partner violence, child maltreatment, parental psychological distress, frequent moves, school changes, use of government assistance, difficulties with adjustment (Gabalda, Thompson, & Kaslow, 2010), family functioning, peer/teacher support, poor cognitive abilities, poor social abilities, low parental education, low perceived competence, poor reading abilities, lack of parental involvement (Bulotsky-Shearer, Wen, Faria, Hahs-Vaughn, & Korfmacher, 2012), negative or violent neighborhoods, at-risk family background, children who are premature or low birth weight, and children whose families are at-risk for poor parenting (Blair, 2001).

Children from low socioeconomic backgrounds and from minority descent have been shown to be at-risk for inadequate school readiness (Gabalda et al., 2010). Social-emotional development is significantly affected by various risk factors. Miller, Gouley, Seifer, Dickstein, and Shield (2004) found that at-risk preschoolers who attended Head Start were more likely to exhibit dysregulated behavior and inadequate emotion regulation skills. This heightened level of dysregulated behavior was predictive of poor classroom adjustment, increases in peer conflicts, and poor/negative social engagement. Randolph, Koblinsky, Bemmer, Roberta, & Letiecq (2000) also found that certain risk factors were predictive of later child behavior problems. African American children who attended Head Start in a violent neighborhood were more likely to later exhibit internalizing and externalizing problem behaviors. However, within this study, other risk

factors were typically present within the environment of each participant (e.g., mother young at child's birth, lack of father figure in the home, high unemployment of the mother, lack of adequate housing), which may have contributed to the poor social-emotional functioning. However, it is always important to keep in mind that some of these differences may be a function of diversity. Children that assimilate to the dominant culture may perform better on standardized tests of school readiness. We may simply not have adequate ways of assessing school readiness in a culturally sensitive way. Therefore, it is important to study multiple domains of school readiness when trying to understand this area.

When studying at-risk populations, Vitiello, Greenfield, Munis, and George (2011) found that cognitive flexibility, when mediated by an approach to learning (attention/persistence), was related to school readiness among Head Start preschoolers. These findings also indicated that executive functioning skills in preschoolers who are at-risk for school failure or other academic difficulties acted as a buffer that was able to counteract the negative risks to which the preschooler was exposed. Park, Fertig, and Allison (2011) found that family stressors and home/environmental stressors were quite common among impoverished children and were related to poor cognitive development among these children. This relationship was even stronger for children with poor housing status, such as homelessness or lack of consistent housing. Fuhs and Day (2011) found similar results, indicating that, even if a child were from a disadvantaged home, if he/she had appropriate or high executive functioning abilities, then he/she would still be adequately ready to begin school as expected.

Findings on language development were similar to findings on cognitive development outcomes of at-risk children. Fuhs and Day (2011) also found that verbal abilities were similar to executive functioning, in that high verbal abilities predicted high levels of school readiness, even

among at-risk children. In this study, verbal abilities also predicted executive functioning, with high verbal abilities likely resulting in high executive functioning abilities in the preschooler.

Motor development and physical well-being are also affected by risk factors. Park et al. (2011) found that family stressors and home/environmental risk factors of impoverished children were also related to poor physical health outcomes and high health care use and need. These risk factors were also exacerbated by poor housing status (e.g., homelessness). Additionally, Tolbert-Kimbro, Brooks-Gunn, and McLanahan (2011) found that urban, at-risk children were at risk for a high BMI due to certain risk factors, such as neighborhood dangerousness, neighborhood chaos, low income, and low socioeconomic status. These risk factors prevented children from playing outside as much and incorporating structured play activities into the day, which caused children to opt for more sedentary activities, such as watching television.

Pagani and Messier (2012) found that urban, disadvantaged children were more likely to experience lack of gross, fine, and perceptual-motor skills. Furthermore, these skills were related to early math skills, so much that the relationship between motor skills and math skills completely explained any influence of verbal skills when assessment of receptive knowledge and numeracy were assessed. Because of the many risks that can affect school readiness, the number of risks is an important factor to consider.

Cumulative risks. It is difficult to determine which specific risk factors contribute to lack of functioning and skills in various domains of school readiness. However, many researchers (Gabalda et al., 2010; Mistry et al., 2010; Randolph et al., 2000) have agreed that the greater the cumulative risk of the child/family, the more likely the child is to have poor outcomes in various areas of school readiness and academic achievement.

Many children may be exposed to a single risk factor, but they may have acceptable outcomes in a variety of areas. For this reason, Gabalda, Thompson, and Kaslow (2010) aimed to determine if the presence of more risk factors equated to increasingly poorer outcomes. After analyzing a wide variety of risk factors, it was found that the presence of a single risk factor is typically benign. However, the presence of multiple risk factors creates a cumulative risk that greatly increases the likelihood that the child will have poor outcomes in various areas of functioning (e.g., internalizing and externalizing behavior problems).

Identifying children who are at-risk for poor outcomes is important to do early in life. By identifying these children, negative life events, such as grade retention, school difficulties, and delayed school entry, can be avoided (Blair, 2001; Winter & Sass, 2011). In order to identify those who are at greatest risk, predictors of multiple domains of school readiness must be examined. This will provide insight into areas of greatest importance for potential intervention work in the future.

Mistry, Benner, Biesanz, Clark, and Howes (2010) found that timing was an important factor to consider when assessing at-risk children and their outcomes in various facets of school readiness. Not only were children exposed to multiple risks (i.e., a high cumulative risk index) more likely to perform poorly in academic assessments of math, reading, and general knowledge, but these risks had an even stronger effect if exposure to them occurred early in life (e.g., infancy). These risks were found to significantly affect later problem behaviors in the child, as well as regulation of emotions and behaviors and academic achievement.

Protective Factors. As shown, being exposed to a variety of risks can have detrimental effects on all domains of school readiness, putting the child at an even further disadvantage than

his/her low-risk counterparts. For this reason, it is important to consider some protective factors that may shield a child from the negative potential outcomes to which they may be victim.

Although many at-risk children fare more poorly when compared to their preschool counterparts not exposed to many risks, there is hope in the form of protective factors. Whittaker, Harden, See, Meisch, and Westbrook (2011) found that positive parenting (e.g., maternal sensitivity) mediated the relationship between familial risk, parental stress, and the child's social emotional functioning. Baker, Cameron, Rimm-Kaufman, and Grissmer (2012) found that parental involvement in preparation for school, despite possible risk factors (e.g., socioeconomic status, race), had significant positive outcomes for at-risk children. Specifically, parents who read to their children, provided books at home, and provided structure to daily activities (e.g., bedtime) had better outcomes than parents who did not provide these experiences for their child. The children who had literary experiences and structured activities scored higher on domains of school readiness in kindergarten.

Many at-risk families utilize Head Start facilities in their area in order to better prepare their children for school. Head Start and other early childhood interventions are programs that are created as a means of improving the short- and long-term outcomes for at-risk children. These programs help children who experience poverty, health problems, and are members of families with inadequate parenting practices, among other risk factors (Harden, Sandstrom & Chazan-Cohen, 2012). Furthermore, these programs are structured in a way that is similar to schools. For example, children are exposed to various academic concepts that can enhance their general knowledge and cognitive abilities, as well as the opportunity to engage with others socially and be provided with nutritious foods and physical activity.

Many studies have investigated the benefits of these programs, as well as the areas within these programs that could be improved. Anderson et al. (2003) found that programs such as Head Start are relatively effective at preventing poor academic outcomes, such as need for special education, grade retention, delayed cognitive development, and inadequate readiness to learn. Lipscomb et al. (2013) also found that attending a Head Start program had positive short-term and long-term effects on school readiness for at-risk preschool children. These benefits include improved pre-academic skills in several areas and lower levels of social-emotional difficulties (e.g., better teacher-child relationship, lack of problem behaviors).

In sum, the most effective way to improve school readiness outcomes for at-risk children is to not only prevent the child from being exposed to a variety of risks, but to also expose the child to positive experiences and role models early in life. By encouraging and providing intervention for parental involvement and responsive parenting style, having adequate intervention programs/school resources, experiencing few early negative experiences, and being motivated (Anderson et al., 2003; Baker et al., 2012; Lipscomb et al., 2013; Mistry et al., 2010; Reynolds, 1991; Whittaker et al., 2011), at-risk children are far more likely to experience better outcomes than children who do not have protective factors or children who are exposed to multiple risk factors. However, more research is needed in order to be able to intervene on all these levels and provide the child and family with the best prospective school readiness outcomes possible. Because of the large impact of factors beyond the child's immediate control, it is important to consider parental factors, specifically maternal factors, when studying school readiness, as these were previously discussed and shown to act as both protective factors and risk factors in the school readiness outcomes of at-risk children. For the current study, maternal role satisfaction and maternal future orientation will be discussed as predictors of child school

readiness outcomes. More importantly, these predictors have yet to be examined together in an urban, low-income African American sample. These maternal cognitions might provide the mother with the internal resources needed to provide a more stimulating environment for her child. Maternal involvement through book reading will be discussed as a mediating variable in this relationship.

Maternal Predictors

Parents, specifically mothers, can possess a variety of positive and negative characteristics, some of which can lead to positive or negative outcomes for their children. For that reason, much of the literature focused on child outcomes includes maternal characteristics as various predictors. The three primary maternal characteristics that are the focus of the current investigation will be maternal satisfaction, maternal future orientation, and maternal sensory stimulation/involvement, the latter being a mediating variable. The predictors of maternal satisfaction and maternal future orientation have not been examined frequently and the mediating variable of involvement has implications across childhood. The first of these to be examined will be maternal satisfaction. Previous literature discussing these specific maternal characteristics will be reviewed.

Maternal satisfaction. Maternal satisfaction, also known as maternal role satisfaction or mother role satisfaction, consists of a variety of definitions. It is commonly referred to as the mother's satisfaction upon giving birth to her child. However, for the current study, maternal satisfaction was defined as the mother's subjective well-being and satisfaction with her role(s) (Berger & Spiess, 2011). This subjective well-being, also called life satisfaction, may take the form of self-satisfaction, role satisfaction, maternal self-efficacy, maternal self-esteem, and some parenting behaviors (Berger & Spiess, 2011; Isabella, 1994). Due to the many definitions of

maternal satisfaction as well as the lack of clarity in what maternal satisfaction is, it is important to study this construct in a well-defined manner. For the current study, it was defined as "... the satisfaction parents gain from themselves as a parent... satisfaction they experience from the parental role" (Sabatelli & Waldron, 1995, as cited in Ercegovac, Ljubetic, & Pericic, 2013, p. 104). It was analyzed as a predictor variable of child school readiness, as previous literature has indicated that maternal characteristics, such as satisfaction, have significant implications for child outcomes (Lerner & Galambos, 1985).

Maternal satisfaction has been found to be significantly predictive of success in many domains of school readiness. Berger and Spiess (2011) completed a longitudinal study investigating the effect of maternal satisfaction on a variety of child outcomes. Findings from this study indicate that maternal satisfaction is positively correlated with toddler verbal skills and motor development, as well as the child's social-emotional skills upon reaching school age. In addition, other researchers have found similar relationships between maternal satisfaction and other child outcomes, including attachment, mother-child interactions, child acceptance, temperament, and adjustment (Bornstein, Hendricks, Hahn, Haynes, Painter, & Tamis-Lemonda, 2003; Isabella, 1994; Lerner & Galambos, 1985). Berger and Spiess (2011) have claimed to be the first to investigate maternal satisfaction leading to specific child outcomes related to school readiness, indicating that little research has been done that has analyzed the relationship between maternal satisfaction and child outcomes related to school readiness. Berger & Spiess (2011) also believed that an underlying mechanism of the relationship between maternal satisfaction and child outcomes may lie in parenting behaviors, which is further discussed next.

Berger and Spiess (2011) stated that positive parenting behaviors typically predict maternal satisfaction. Other researchers have found that certain positive parenting behaviors are

not only predictive of maternal satisfaction, but also predictive of child school readiness outcomes. A parent's belief in his/her own abilities as a parent is one such positive parenting behavior. Evan, Nelson, Porter, Nelson, and Hart (2012) found that if mothers believed themselves to be efficacious parents, they were more able to deal appropriately with child aggression. In another study, this same efficacious belief was found to mediate the relationship between mothers' depressive symptoms (i.e., low maternal well-being) and preschoolers' school readiness/adjustment among low-income, African American mother-child dyads (Jackson, Choi, & Bentler, 2009).

Because of the lack of research examining the relationship between maternal satisfaction and child school readiness outcomes, it was beneficial to the field and the current literature base to investigate this relationship. Therefore, future research is needed in order to fully understand this construct as it relates to school readiness, with the current study being a significant contribution to this gap. As mentioned, maternal satisfaction is not only significantly predictive of many child outcomes, it is also a significant indicator of many parenting beliefs and behaviors. Because beliefs of one's competency in parenting have been discussed as an important link to maternal satisfaction (Ercegovac et al., 2013), it is important to consider what may encourage a mother to engage in competent behaviors or cognitions. For that reason, maternal future orientation was examined in the current study and further discussed.

Maternal future orientation. As previously discussed, certain maternal beliefs and behaviors can lead to many child outcomes, with efficacious beliefs having significant implications for children. Related to efficacious beliefs is the construct of future orientation, which is a cognitive ability that begins to develop in early childhood between the ages of three and five (Atance & Jackson, 2009). Atance and Jackson (2009) stated that future orientation

includes abilities such as future thinking, anticipation, planning for the future, awareness of future states (e.g., consequences, environmental cues), delay of gratification, and prospective memory. Future orientation is defined as "...the subjective (cognitive) representation of the future indicated by hopes and fears about the future" (Seginer & Shoyer, 2012, p. 311).

Furthermore, it is believed that, as an individual ages, his/her ability to engage in future orientation processes becomes more refined (Atance & Jackson, 2009). Although self-focused future orientation is becoming better understood, future orientation is rarely studied in the context of engaging in future oriented processes for others, such as for a child. For that reason, little research discussed will examine this phenomenon. Therefore, it is important that the current study not only contributed to the limited knowledge base that currently exists for other-future orientation, but also determined whether this phenomenon is appropriately considered future orientation or if it is better defined by another construct.

In order to understand what maternal future orientation is and why it is important, it is necessary to consider the effect of mothers on their child's future orientation. More specifically, Seginer and Shoyer (2012) found that mothers' future orientation for their adolescents was predictive of the adolescents' future orientation for a variety of life areas, including work/career aspirations and marriage/family. Furthermore, Seginer and Shoyer (2012) determined that maternal future orientation for their child and the child's own future orientation consisted of three main components: motivation, cognition, and behavior. By examining future orientation in this way, it is believed that a child's future orientation will be reflective of their mother's future orientation for their child, mediated by the child's self-representation, which becomes a more important mediator as the child ages and approaches adolescence/adulthood (Seginer & Shoyer, 2012). For this reason, it was important for the current study to examine maternal future

orientation for the child in the context of school readiness, because if the mother engages motivational, cognitive, and behavioral future-oriented processes aimed toward preparing the child for school, then the child may also adopt these future-oriented behaviors from the mother.

Although little research exists that examines the relationship between maternal future orientation and specific domains of child school readiness, it is worthwhile to examine how maternal future orientation may have implications for other child outcomes. Stoddard, Zimmerman, and Bauermeister (2011) found that at-risk, African American adolescents who had high levels of future orientation were likely to have greater decreases in violent behavior over time, compared to at-risk, African American adolescents who had low levels of future orientation and saw smaller decreases in violent behavior. Furthermore, future orientation was found to be a protective factor for many at-risk African American adolescents because engaging in future-oriented behaviors prevented adolescents from engaging in more risky behaviors (Stoddard, Zimmerman, & Bauermeister, 2011). This study may be somewhat related to school readiness outcomes, specifically in that adolescents with high levels of future orientation engaged in fewer violent behaviors, meaning that they were able to show more cognitive/effortful control as well as use appropriate social-emotional skills in situations where the option to become violent was present. Although studies such as the one mentioned provide important information regarding child outcomes, child outcomes specific to school readiness and child outcomes in early childhood are still lacking in the literature.

As discussed, maternal future orientation was beneficial to examine in the current study because it is uncommonly studied among young children and in the context of school readiness outcomes. For that reason, determining how predictive maternal future orientation is of child school readiness outcomes is a significant contribution to current literature.

Thus far, maternal satisfaction and maternal future orientation have been discussed in both previous research of these constructs and how they relate to the current study. Both of these constructs have a strong cognitive component in that they both are cognitive states or capacities of the mother. However, it may be important to note that in order for a thought to lead to a specific outcome for another person, the thought must be acted upon. That is, in order for maternal satisfaction and maternal future orientation to have significant meaning to child school readiness, these maternal predictors need to be acted upon in order for the effect on child school readiness to occur. In the current study, both of these maternal predictors were ways in which a mother could become involved in her child's educational preparedness. For that reason, maternal involvement via sensory stimulation (book reading) was examined as the mediating variable that is the behavioral link between maternal cognitions and child outcomes. Maternal involvement will now be further discussed.

Maternal involvement and sensory stimulation. As mentioned in the discussion of maternal future orientation, maternal involvement and sensory stimulation is the avenue by which the current study aimed to understand how and if maternal cognitions or characteristics have significant implications for child school readiness outcomes. In the context of the current study, maternal involvement and sensory stimulation was defined as shared book reading time that takes place between the mother and her child. Although this is not the typical definition of maternal involvement, in order for mothers to be involved in their child's education and preparedness for school, they must be involved in the learning process, which may include providing their child with rich and challenging conversations as well as engaging in book reading that is not only creative, but supportive and educational as well (Britto, Brooks-Gunn, & Griffin, 2006; Cristofaro & Tamis-Lemonda, 2011). Shared book reading or mother-provided narratives

are significantly predictive of many school readiness outcomes, which will be discussed at a later point. For this reason, it was important to include this behavior not only in order to add to the current body of literature, but also to examine this variable in a manner that had not yet been done, where other predictors and outcome variables brought a unique meaning to the concept of maternal involvement and shared book reading. Furthermore, this involvement/shared book reading variable is an action based on maternal beliefs that may have significant outcomes for the child's school readiness. In a vast majority of studies, the idea of maternal involvement and book reading is typically viewed as a predictor variable, rather than a variable that is predicted by maternal cognitions or beliefs. Given that this variable is the mediator between maternal cognitions and child school readiness, it will now be discussed as it relates to maternal predictors and child school readiness outcomes, respectively.

Maternal satisfaction is a significant predictor of how involved a mother will be with her child, specifically when educating her child and providing her child with a stimulating environment. Lackovic Grgin (1994) found that when parents perceive themselves as having the abilities and competence necessary to successfully complete parental duties, not only do they experience more pleasure from their role as parents, but they are also then more likely to create an environment that encourages adaptive development for their child. Furthermore, Sabatelli & Waldron (1995) found that satisfaction as a parent is also significantly correlated with higher quality parenting, with the parent demonstrating greater abilities and efforts to provide their child with a stimulating environment. Therefore, maternal satisfaction appears to be relatively intertwined with how involved the mother will be in providing her child with a stimulating environment.

Maternal future orientation for her child is also a significant consideration when examining maternal involvement. Because our expectations about the future are learned at such a young age (Nurmi & Pulliainen, 1991; Stoddard, Zimmerman, & Bauermeister, 2011), it has been found to be important for parents to provide their children with prosocial interactions and stimulating environments during childhood (Lynch, 1965; McGee, 1984; Piaget, 1932; Stotland, 1969). Seginer and Shoyer (2012) found that parental involvement in academics and their child's development influences their adolescents' motivation and achievement. Furthermore, providing a family environment in which these beliefs of future orientation are instilled leads to greater school success (Seginer, 2006; Yamamoto & Holloway, 2010; Zhang et al., 2011). Without involvement, it is clear that maternal future orientation for her child would be unlikely to take place.

Because book reading and maternal involvement involve some cognitive tasks, it is important to understand how the task of conversation or narratives affects a child's cognitive development. Page, Wilhelm, Gamble, and Card (2010) found that verbal stimulation provided by the mother had significant positive effects on the cognitive abilities of infants, even though this relationship was mediated by the fact that mothers spoke more often to older infants than to younger infants. Also, mothers who were able to provide more verbal stimulation typically engaged in behaviors such as interacting with and responding to their infants often, which relates to infant cognitive development, an important domain of school readiness. Among prekindergarten aged children, Hubbs-Tait, Culp, Culp, and Miller (2002) found that maternal cognitive stimulation was predictive of child performance on measures of perceptual abilities. Lastly, Yarrow, MacTurk, Vietze, McCarthy, Klein, and McQuiston (1984) found that parental stimulation was predictive of high levels of infant persistence in problem solving and mastery

motivation. As a whole, the literature appears to indicate that providing children with cognitive or sensory stimulation has been found to relate to higher levels of cognitive abilities and cognitive flexibility in young children prior to beginning school.

Of the domains of school readiness, it seems that providing cognitive or sensory stimulation, especially through the task of book reading, has the most significant effects on language skills. Sheridan, Knoche, Kupzyk, Edwards, and Marvin (2011) found that providing parental engagement during early childhood predicted higher levels of adaptive skills in preschool children, including skills related to language development and literacy. Parental engagement may include a variety of behaviors, but one of the most relevant of these behaviors is maternal involvement/stimulation. As previously mentioned, Hubbs-Tait et al. (2002) found that maternal cognitive stimulation predicted child perceptual scores. In the same study, it was found that maternal cognitive stimulation also predicted verbal abilities. In addition, Chapin and Altenhofen (2010) found that cognitive stimulation of children enrolled in an Early Head Start program was predictive of vocabulary. In order to better understand this significant relationship evident across literature, it is important to determine which part of the book reading or stimulation create these significant outcomes.

Narratives or conversations between mother and child are significantly predictive of later school readiness (Cristofaro & Tamis-Lemonda, 2011; Curenton, 2010). Hammer, Nimmo, Cohen, Draheim, and Johnson (2005) found that, while reading to their preschool-aged, Head Start children, mothers were most likely to read the text as written in the book, to respond to their child's questions or comments, and to ask questions, while their children were most likely to respond to their mother, produce comments, and ask questions. Although this relationship appeared to be relatively consistent across demographics, African American mothers produced

fewer comments than non-African American mothers, a finding that is relevant to the demographics chosen for the current study. In further determining the characteristics of verbally stimulating mothers, Cristofaro and Tamis-Lemonda (2011) found that children of low-income mothers who asked open-ended questions (e.g., who, what, where, when, why) and used diverse language had higher PPVT scores at 36 months, which was later predictive of school readiness. Furthermore, it was also found that use of diverse language predicted that the mother would prompt, which predicted that the child would respond. These contributions then predicted the child's later school readiness (Cristofaro & Tamis-Lemonda, 2011). Therefore, it was found that conversations between mothers and their young children predicted school readiness. Lastly, Britto, Brooks-Gunn, and Griffin (2006) found that children of low-income, African American mothers who read books to their child in a story-telling manner, who were supportive while reading, and who taught their children while reading later had higher levels of school readiness than children whose mothers did not exhibit these characteristics while book reading. Therefore, certain maternal behaviors during a book reading or narrative task can be significantly predictive of not only a child's language abilities, but also his/her school readiness. Maternal stimulation also provides important contributions to school readiness in a variety of other ways as well, such as enhancing social-emotional skills among children.

Similar to a previously mentioned study, Sheridan, Knoche, Edwards, Bovaird, and Kupzyk (2010) found that parental engagement also predicted other adaptive skills in early childhood, such as social-emotional competence and appropriate interpersonal skills, such as those related to attachment, anxiety, and withdrawal. In further examining how shared book reading can encourage appropriate development of social-emotional skills, Landry, Smith, Swank, Zucker, Crawford, and Solari (2012) found that mothers who were responsive and

exhibited involvement and interest during book reading were likely to have children that also exhibited similar, socially appropriate behaviors. In a broader context, Parker, Boak, Griffin, Ripple, and Peay (1999) found that, among Head Start families, parents' understanding of their children predicted positive child behaviors, such as independence and creativity, whereas parent irritability and authoritarianism predicted negative child behaviors, such as distractibility and hostility. Children who exhibited these behaviors also exhibited poorer language and vocabulary skills. In addition to these social skills predicted by parental engagement, it is important to note that shared book reading also influences motor and physical development of children as it relates to school readiness.

Although little research has been able to indicate a relationship between motor/physical development as predicted by parental stimulation or book reading, Yarrow, MacTurk, Vietze, McCarthy, Klein, and McQuiston (1984) found that parental stimulation was predictive of infant persistence when practicing various sensorimotor skills and tasks, such as walking. If a child is unable to develop expected motor skills, such as walking and fine/gross/perceptual motor skills, then he/she is unable to interact with the surrounding environment and with other people in the environment, such as teachers or classmates. Lacking motor skills could cause the child to be significantly unprepared to begin school.

Therefore, it is evident that parental involvement/stimulation has significant implications for all areas of school readiness for children, suggesting that the level of school readiness may likely be greatly accounted for by parental investment in the child's development. Also, previous sections of maternal predictors have mentioned that many maternal characteristics are predictive of the level of involvement/stimulation provided by the mother. For that reason, it appears that

maternal involvement/stimulation may provide a significant link between maternal characteristics and school readiness, which would provide rationale for the current study.

Theoretical Framework

Bronfenbrenner's ecological systems theory (EST; Bronfenbrenner, 1992) provides a framework for understanding the predictors of school readiness in the child and is therefore important to consider for the current study. EST posits that children are involved in various systems (i.e., microsystem, mesosystem, exosystem, macrosystem, and chronosystem) that interact in a bi-directional nature to influence child development. The child's environment and the various contexts within which they are embedded are crucial to understanding any one developmental outcome. Contexts/systems vary from direct, one-on-one interactions in the microsystem to indirect, more cultural influences of the macrosystem. Bronfenbrenner highlights the complexity in understanding development and the need to consider multiple systems of the individual when attempting to understand a phenomenon.

Although it is believed that influences on school readiness are present at all levels of Bronfenbrenner's model, the present study focused on the interaction between the child and the mother (microsystem), as well as the interaction between the mother-child and the school system, by way of examining the child's school readiness (mesosystem). These two systems represent important direct relationships to possible child outcomes and should be considered important in understanding a child's readiness for school. From here, the present study will now be discussed.

The Current Study

The purpose of the current study was to examine the relationship between maternal satisfaction, maternal future orientation, maternal involvement, and child school readiness in

low-income, African American mother-child dyads. For the purpose of this study, school readiness consisted of cognitive skills and general knowledge, language skills, social-emotional skills, and physical health/motor development. Although many maternal characteristics have been found to significantly predict child school readiness, few studies have examined the maternal characteristics of interest to the current investigation. Furthermore, the literature is limited with respect to examining these variables among low-income, African American mothers and children, even though the literature has consistently indicated that this population may be at a significantly higher risk for poorer outcomes in school readiness and future academic achievement. For this reason, the current study provides information needed to appropriately address this gap in the literature and to address needed information to intervene with populations at-risk for poor school performance outcomes.

Throughout the introduction and literature review, the importance of school readiness has been emphasized. Because of the importance of school readiness and an imperfect system in ensuring readiness, continued research in this area is crucial. The goals of the current study were to provide more information for future research as well as findings that could potentially improve children's readiness to begin school, improve mother-child relationships by way of providing information that could educate mothers about their attitudes and behaviors, and improve current preventative and interventional programs that are implemented to prepare at-risk children for school.

As previously discussed, low-income African American children who attend Head Start programs were selected as the population for this study due to the variety of unique risk factors to which these children are exposed. Not only do findings from this study provide more information to local families and programs, such as Head Start, but these data also provide

information that may be generalized to other preparatory and at-risk programs and families as well in order to provide appropriate services and resources to families who have children at-risk for poor school readiness.

Although several maternal characteristics have been studied previously as potential predictors of child school readiness, very little is known about the impact of maternal satisfaction and future orientation in predicting both the mother's behavior with her child and the child's school readiness. Furthermore, these constructs have not been examined in an urban, low-income African American sample, where greatest risk for school readiness deficits may exist. At the preschool age particularly, maternal cognitions and behaviors may represent a critical influence on child outcomes. Therefore, to more fully understand predictors of school readiness, it was crucial to examine the relationship between each maternal characteristic and each domain of child school readiness. For that reason, several hypotheses were analyzed. The domains of school readiness that were assessed are cognitive skills/general knowledge, language skills, social-emotional skills, and physical health. The conceptual model for the study can be seen in Figure 1.

Hypotheses

Study hypotheses were as follows:

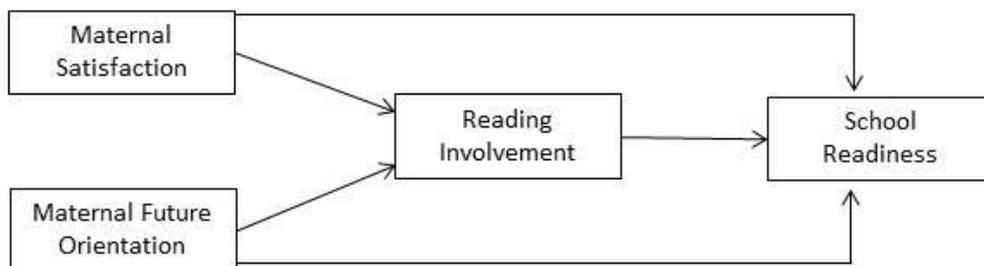
1. Maternal satisfaction will be positively related to domains of school readiness (general knowledge, cognitive skills, language, behavior, and health).
2. Maternal future orientation will be positively related to domains of school readiness (general knowledge, cognitive skills, language, behavior, health).
3. The relationship between maternal satisfaction and future orientation and child school readiness will be partially mediated by maternal involvement/book reading. In other

words, maternal cognitions and attitudes will influence maternal behaviors, which would then have implications for child functioning and outcomes specific to school readiness.

- a. Maternal satisfaction and future orientation will be positively related to maternal involvement/book reading
- b. Maternal involvement/book reading will be positively related to the child's school readiness.

Based upon the literature previously discussed, it has been indicated that these hypothesized relationships between variables have not been adequately examined both in conjunction with one another and within the population of interest. It was also crucial to examine these variables in an at-risk population in order to provide a foundation for intervention, as this population may require specialized and significant intervention and resources related to school readiness. For example, deficits in different areas of maternal involvement/characteristics or child school readiness could be addressed specifically, given the combination of variables examined in the current study. The methods for the current study will now be discussed.

Figure 1. Conceptual Model



Method

Participants

The current investigation was a secondary analysis of an urban community sample of 202 mother-child dyads that had at least one child enrolled in Head Start at the time of the study. As more fully described below, participants were part of a larger, 2-phase *Maternal and Child Health Study*. During phase 1 of the study, 337 mothers participated and during phase 2, 202 mothers participated. The current study utilized data from phase 2 and therefore consisted of 202 mother-child pairs. Mothers ranged in age from 18 to 52 years (mean age = 29.4 years, $SD = 6.5$ years) and were predominantly African American (97% African American). Children ranged in age from 3 to 5 years (mean age = 53.0 months, $SD = 7.8$ months). With regards to household income, the majority (63.7%) reported annual incomes below \$15,000 per year. Table 1 summarizes key demographic characteristics of participants.

Table 1

Demographic Characteristics of Participants (N = 202)

Mother's Age	$M = 29.4$ years, $SD = 6.5$, Range = 18–52 years
Target Child's Age	$M = 53.0$ months, $SD = 7.8$ months, Range = 3–5 years
Number of Children in home	$M = 2.62$, $SD = 1.37$, Range = 1–8
Child's Gender	52.0% Boys 48.0% Girls
Race	97% African American 3% Other/Multiracial
Education	0.5% Elementary or Less 3.5% Middle School 55.9% High School 40.1% Some College or More
Marital Status	70.3% Single 21.3% Married 4.5% Living with Partner 4.0% Divorced or Widowed
Annual Income	30.1% < \$5,000 21.9% \$5,000–\$9,999 11.7% \$10,000–\$14,999 14.8% \$15,000–\$19,999 14.3% \$20,000–\$29,999 5.6% \$30,000–\$49,999 1.5% \$50,000 or more

Procedure

This study originated from a broader longitudinal study that focused on maternal and child health among Head Start families. Data collection occurred between October 2008 and April 2009 in two phases. During phase 1 of the study, mothers were recruited through direct solicitation by study research assistants at various Head Start events, including parent meetings, pick up and drop off times, and the annual math and science fair. If a mother chose to participate in the study, she completed and signed an informed consent form and completed study survey measures, which took approximately 30 minutes to complete. The phase 1 survey included multiple maternal and child health questions. However, those relevant to the current study are the demographic questionnaire, future orientation scale, maternal involvement/reading, maternal satisfaction, and child health and child behavior. Mothers were paid \$10 for their time.

In the second phase of the study, both the mother and child participated in data collection. From those who participated in the first phase, approximately 200 mother-child pairs were randomly selected to complete a number of more intensive measures. Individual parent meetings were set up to administer the measures to the mothers, and children were assessed during class time, with the mother's permission. Assessments of school readiness, including cognitive/general knowledge and language skills were assessed during this phase. Phase 2 took approximately 45 minutes of the mother's time and 40 minutes of the child's time. Participants were paid \$40 for the completion of phase 2.

Measures from the described dataset that were relevant to the current study goals were utilized. The data used in this investigation were collected during both phases. The specific measures used in the current study are described below.

Measures

Multiple measures were used in order to assess the study variables, including self-report maternal measures as well as direct child assessments. The conceptual relationship between variables was shown in Figure 1. Individual measures are described more fully below.

Demographic questionnaire. A survey of demographic questions was administered to mothers in the study. The questionnaire included typical demographic items about the mother, child, and family. Demographic questions included mother's age, mother's education level, marital status, family income, child's age, and child's gender. These variables were examined as possible covariates for later analyses.

Maternal variables. The following are the maternal variables and measures used to examine constructs of interest in the current study.

Maternal satisfaction. Maternal satisfaction was assessed using the Parent-Child Relationship Inventory (PCRI; Gerard, 1994). Maternal satisfaction was measured through a total of 10 items, which were responded to on a 4-point Likert scale (1 = *strongly disagree* and 4 = *strongly agree*). For example, one of the items is as follows: "I get a great deal of satisfaction from having children." For all items, higher scores were indicative of higher levels of maternal satisfaction. Reverse scored items were items 9, 10, 12, 13, 16, and 17. A total summary score and subsequent average score for this measure was computed and used as the predictor variable in analyses for participants who responded to 8 or more items. Gerard (1994) reports acceptable test-retest reliability (.81) and internal consistency (.79). Internal consistency in the current sample was .75.

Maternal future orientation. Maternal future orientation was assessed through a total of 7 maternal self-report items that were developed by the investigator of the larger study. The items

on this measure pertained to the mother's thoughtfulness about her own future. For example, mothers were asked to respond to items like, "I have good plans for my future" on a 5-point Likert scale (1 = *strongly disagree* and 5 = *strongly agree*). For items 1–6, higher Likert scores were indicative of higher future orientation. The only reverse scored item was item 7. A total summary score and subsequent average score for this measure was computed and used as the predictor variable in analyses. Internal consistency for the current sample was .61.

Maternal involvement. Maternal involvement was measured through one item ("I read to my child a lot") and was scored on a 4-point Likert Scale (*Strongly Disagree, Disagree, Agree, Strongly Agree*). A higher endorsement of reading to the child was indicative of higher levels of sensory stimulation and maternal involvement. The item was scored such that a higher value indicates more reading time. Additionally, Lackovic Grgin (1994) found that parents' perceptions of their involvement or parental abilities is typically a good indicator of how involved the parent actually is in the child's education and life domains. Although research supports parental report of child reading, this is not methodologically the strongest manner in which to assess this construct. However, given the data used was secondary, it was considered the most appropriate way in which to assess and analyze this construct. The data collected permitted this information to be obtained through a single question answered by mothers in this study.

Child school readiness variables. The following are the child school readiness variables and measures used to examine constructs of interest in the current study.

Child physical health. Child physical health was measured through 1 item ("How would you rate the overall physical health status of this child?") which was the mother's rating of the child's overall health and part of the demographic survey. The item was scored on a 5-point

Likert Scale (*Excellent, Good, Average, Poor, and Extremely Poor*). It was found that in a systematic review of past research, parents are better able to accurately report child's health as it relates to physical health, when compared to social-emotional health (Eiser & Morse, 2001), which was information that was also able to be obtained through one item in this study.

The Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000) 1.5–5. Mothers completed the Child Behavior Checklist (CBCL) for children ages 1.5 to 5 years. The CBCL has been standardized on large samples of children, and has been widely used with ethnically and racially diverse groups to measure child behavioral and adjustment problems. The CBCL is composed of 103 items, with the first 100 items scored on a 3-point Likert scale (0 = *Not true of child*, 1 = *Somewhat or sometimes true*, and 2 = *Very true or often true*) (Achenbach & Rescorla, 2000). Higher scores on all items are indicative of a higher prevalence of the behavior. Six subscales are derived from parent ratings: aggressive behaviors, destructive behaviors, anxious/depressed, withdrawn, sleep problems, and somatic problems. Age normed T-scores are calculated from subscales. Scores on this index range from 30 to 100, with higher scores indicating increased behavioral problems. Achenbach (1991) reports acceptable criterion validity and excellent test-retest reliability for both the CBCL and the TRF with alpha coefficients above .90 for each scale.

These subscales can be further grouped into either internalizing problem behaviors (emotionally reactive, anxious/depressed, somatic complaints, and withdrawn) or externalizing problem behaviors (attention problems or aggressive behavior). The internal consistency reliability range of the CBCL 1.5–5 is .48–.67, and a test-retest reliability range is .68–.92. Evidence was reported of convergent, discriminant, and predictive validities (Achenbach, 2013). The externalizing and internalizing scales were used as outcomes in study analyses.

Language skills. The Wechsler Preschool and Primary Scale of Intelligence – Third Edition (WPPSI-III) was used to assess the child’s language ability. The WPPSI-III is a measure designed to assess various facets of intelligence in preschool children ages 2 years, 6 months to 7 years, 3 months of age. Scoring the WPPSI-III results in a composite score called the Full Scale Intelligence Quotient (FSIQ), which represents the child’s general intellectual ability. This measure is composed of two cognitive domains, Verbal IQ (VIQ) and Performance IQ (PIQ). For the current study, a composite language score was created using standardized coefficients first by adding subtest scaled scores on both language subtests as an assessment of language skills specifically. The subtests used to create the language composite in this study included Information and Picture Naming. Picture Naming is a supplemental subtest, meaning that it is not part of the core subtests. However, it can reliably replace Receptive Vocabulary when calculating a composite VIQ score (Wechsler, 2002). Selecting these subtests allowed for consistency across age groups. The standardized coefficients were calculated through a formulation utilizing α , β , and a constant based on the reliability and validity of the subtests (Sattler, 1992; Sattler, 2004). Additionally, the WPPSI-III is administered differentially to children depending on their age bracket (i.e., 2:6 to 3:11 and 4:0 to 7:3), with some of the same subtests used for both age brackets.

The Full Scale IQ (FSIQ) is created by summing the subtest scaled scores [$M = 100$, $SD = 15$, range = 55-145 (Wechsler, 2002)]. A score of 100 represents an average score, with 85 and 115 being one standard deviation below and above the mean, respectively. Typically, the younger age bracket is given four core subtests that create the two indices of the FSIQ, whereas the older age bracket is given seven core subtests that create the two indices of the FSIQ. Reliability of the WPPSI-III indicates that the FSIQ and VIQ both have excellent reliability (.95

or above) and test-retest reliability (.92 and .91, respectively). The WPPSI-III also appears to be sensitive in that when used to study populations of children with multiple risks, who are expected to have lower scores than children from the normative group, it was able to discriminate between high risk children and the control group based on subtest and composite scores (Wechsler, 2002).

For the larger study from which the current study sample originated, an abbreviated version of the WPPSI-III was administered, consisting of 4 core subtests being administered to all the children across age groups. This is common practice in research, as it saves time in administration while obtaining reliable estimates of cognitive abilities. According to previous research, shortened versions of the WPPSI-III are found to be valid measures of overall cognitive abilities and correlate highly with the full version scores (LoBello, 1991; Tsushima, 1994). Because the shortened version was used, WPPSI-III administration took a total of approximately 30-45 minutes to administer.

General knowledge. The Boehm III Preschool Test of Basic Concepts was used to assess the child's general knowledge/cognitive skills. The Boehm III Preschool Test of Basic Concepts is designed to assess the cognitive and general knowledge domains of school readiness. The measure is composed of 52 items measuring 26 concepts (Boehm, 2008). The test is divided into two item sets. For children ages 3.00 to 3.99, 12 concepts are tested in the first item set, and 14 concepts are tested in the second item set. For children ages 4.00 to 5.99, item set composition is reversed. Raw scores are calculated by summing the total correct responses (a correct response is given a score of 1) for both sets together. The standardized score that is reported can be either a raw score, percent correct, performance range, or percentile, all of which are calculated by using the total correct answers for both sets. The maximum score is 52, with higher scores indicating higher school readiness. For the current study, percentiles were used in analyses.

Coefficient alphas ranged from .85 to .92, and the test-retest reliability coefficients ranged from .90 to .94. This assessment was also highly valid in convergent, discriminant, predictive, concurrent, and construct validity (Beech, 1981; Boehm, 2008; Smith, 1986; Zucker & Riordan, 1990).

Data Analysis

Preliminary Analyses

SPSS Statistical Software was used to conduct all analyses for the current study. Prior to the primary hypothesis testing, individual variables were screened for normality using SPSS frequencies and Explore. Scatterplots were generated between independent and dependent variables to screen for multiple regression assumption of linearity. Data were screened for missing data. Relevant demographic characteristics such as mother's age, education, income, child's age, and gender were examined as possible covariates. Demographic characteristics that were significantly related to the model variables at $p < .20$ were included in the regression analyses and controlled for. Bivariate correlations between study variables were examined.

Hierarchical Multiple Regression

In order to test study hypotheses, hierarchical multiple regression was used. The first two hypotheses of the current study stated that maternal satisfaction and maternal future orientation would be positively related to each domain of school readiness. Therefore, a separate regression analysis was conducted for each school readiness outcome (health, language, behavior, and general knowledge) in order to test the unique contribution of each of these maternal predictors. Any demographic variables related to the study outcomes at $p < .20$ or greater was controlled for in step 1 of each regression. Step 2 of the regression included the maternal predictors, which were entered simultaneously.

In sum, I completed a set of five regression analyses, each examining a different aspect of child school readiness (child health, language, general knowledge, internalizing behaviors, and externalizing behaviors), with maternal satisfaction and future orientation being assessed simultaneously in each regression model.

Hypothesis 3 of the current study proposed that maternal involvement, by way of amount of time spent reading to the child, would mediate the relationship between maternal satisfaction, future orientation, and school readiness outcomes. As will be described more fully in the results section, preliminary data suggested that a mediation relationship did not exist. Therefore, full mediation analyses were not needed to test this hypothesis. However, follow-up hierarchical regression was used to examine the relationship between demographic characteristics, maternal predictors, and reading involvement.

Results

Preliminary Analyses

First, descriptive analyses were performed to identify instances of missing data. These analyses revealed that, of the 202 participants in the study, six people were missing information about their family incomes. With regard to study variables, some missing data was found. One respondent did not completely answer the maternal satisfaction questions. Finally, the WPPSI language composite data for one child was missing. For this subset of participants who had missing data, listwise deletion was used only for analyses where the missing variable was needed. Due to the small number of participants missing data, multiple imputation was not used.

Univariate outliers were identified in four model variables. Future orientation had two outliers, general knowledge (Boehm) had four outliers, internalizing behaviors (CBCL) had one outlier, and externalizing behaviors (CBCL) had one outlier. All outliers were winsorized, and

Mahalanobis D^2 was used to detect multivariate outliers (Field, 2013). No multivariate outliers were detected. After winsorizing, the school readiness composite was still significantly skewed. A square root transformation was used for the school readiness variable, which reduced the skewness of this variable to an acceptable level.

Descriptive Statistics and Bivariate Correlations

Bivariate correlations were performed to examine associations between independent and dependent variables, and between demographic variables and study variables. Demographic variables included maternal age, maternal education status, income, child gender, and child age. Table 2 includes means, standard deviations, and correlations for demographic variables and study variables. Mean maternal age was 29.43 years ($SD = 6.53$) and mean child age was 53 months ($SD = 7.72$). Mean maternal education fell within the high school range ($M = 3.36$, $SD = .57$), with higher values indicating higher levels of education. Mean income level fell within a low income range ($M = 2.84$, $SD = 1.70$), with higher values indicating higher income. When examining descriptive statistics of outcome data, average child health fell into the “good” range ($M = 4.63$, $SD = .54$). Scores on the language composite also fell at the lowest end of the average range ($M = 90.11$, $SD = 12.01$), which is notably below what would be expected when comparing scores to a normative sample. Average child internalizing and externalizing behavior problem t-scores fell within a normal range overall ($M = 48.57$, $SD = 11.80$; $M = 45.35$, $SD = 11.10$). However, 9% of children scored at the sub-clinical or clinical range for externalizing behaviors (> 60), and 14% of children scored at the sub-clinical or clinical range for internalizing behaviors (> 60). Lastly, average general knowledge percentile scores fell at a lower range than what would be expected when comparing percentile scores to a normative sample ($M = 20.50$,

$SD = 18.70$), which indicates that the sample is performing far below what would be expected in this measure given age level of each participant.

Correlation analyses of demographic variables and outcome variables indicated that maternal education, income, child's gender, and child's age were all significantly correlated with the language composite at $p < .05$ or better. Mothers with more education and higher incomes had children with better language scores. Female children had better language scores and younger children had better language scores. Therefore, these demographic variables were controlled for in the regression model examining the language composite outcome. Maternal education was also found to be correlated with the internalizing behaviors composite on the CBCL ($p < .05$) and was controlled for in the regression model examining the internalizing behavior outcome. Mothers with more education reported that their child had fewer internalizing behaviors.

As mentioned, table 2 includes means, standard deviations, and correlations for demographic variables and study variables. In examining predictor and outcome variables, future orientation was significantly correlated with the reading variable ($p < .05$), child health ($p < .05$), internalizing behaviors on the CBCL ($p < .001$), and externalizing behaviors on CBCL ($p < .01$). The more that mothers reported an orientation for the future, the more they reported reading to their child, the better health they reported for their child, and they reported fewer internalizing and externalizing behavior problems concerning the child. Future orientation was also correlated with maternal satisfaction ($p < .001$), such that the more future oriented the mother reported being, the more satisfied with parenting she was. Maternal satisfaction was significantly correlated with the reading variable ($p < .001$), the language composite ($p < .01$), internalizing behaviors on the CBCL ($p < .001$), and externalizing behaviors on the CBCL ($p < .001$). The

more satisfied with parenting mothers were, the more they reported reading to their child, the better language scores the child had, and fewer internalizing and externalizing behaviors were reported for the child.

Additionally, several outcome variables were correlated with one another. Child health was correlated with internalizing behaviors on the CBCL ($p < .001$) and externalizing behaviors on the CBCL ($p < .001$). Mothers who reported better health for their child also reported fewer internalizing and externalizing behavior problems. The language composite was correlated with internalizing behaviors on the CBCL ($p < .01$), externalizing behaviors on the CBCL ($p < .01$), and general knowledge from the Boehm ($p < .001$). Children with better language scores had fewer internalizing and externalizing behaviors and also scored better on the general knowledge measure. Internalizing behaviors on the CBCL were correlated with externalizing behaviors on the CBCL ($p < .001$) and general knowledge from the Boehm ($p < .05$). Children with fewer internalizing behavior problems had fewer externalizing behavior problems and scored better on the Boehm. Finally, externalizing behaviors on the CBCL were correlated with general knowledge from the Boehm ($p < .01$). Children with fewer externalizing behavior problems had better general knowledge scores.

The results of these preliminary analyses indicated significant zero order correlations between predictor and outcome variables, as well as some significant correlations between demographic variables and outcome variables, resulting in the need to complete hierarchical multiple regressions that control for relevant demographic characteristics.

What is also worth noting from these analyses is that the reading variable, which was previously hypothesized to be a mediator between future orientation, satisfaction, and school readiness outcomes, was not correlated with any outcome variables in this sample. Because the

reading item was not significantly correlated with any outcome variables, mediation analyses were not appropriate and therefore not completed. Instead, hierarchical regression analyses with demographic and predictor variables only were examined.

Table 2

<i>Means, Standard Deviations, and Zero Order Correlations of Demographic Variables and Study Variables</i>														
Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Maternal Age	29.43	6.53	-											
2. Maternal Education ^a	3.36	0.57	.25**	-										
3. Income ^b	2.84	1.7	.20**	.18*	-									
4. Child Gender ^c	1.48	0.5	-0.03	-0.03	-0.03	-								
5. Child Age (Months)	52.99	7.72	0.1	0	0	-0.01	-							
6. Reading Item	3.16	0.67	-0.1	-0.05	0.11	-0.05	-0.09	-						
7. Future Orientation	3.87	0.58	-0.06	.21**	.15*	0.01	0	.17*	-					
8. Satisfaction	3.16	0.41	-0.12	0.1	.20**	-0.02	-.18*	.26**	.32**	-				
9. Child Health	4.63	0.54	-0.01	0.09	-0.04	-0.04	-0.04	0.1	.14*	0.04	-			
10. Language Quotient	90.11	12.01	0.07	.26**	.26**	.14*	-.15*	0	0.09	.19**	0.03	-		
11. Internalizing	48.57	11.8	0.02	-.15*	-0.13	-0.02	0.1	-0.06	-.30**	-.35**	-.31**	-.23**	-	
12. Externalizing	45.35	11.1	-0.02	-0.02	-0.01	-0.04	0.05	-0.11	-.19**	-.26**	-.28**	-.21**	.75**	-
13. General Knowledge	20.5	18.7	-0.08	0.05	-0.02	0.13	-0.08	0	-0.03	0.08	0.06	.49**	-.15*	-.19**
* $p < .05$; ** $p < .01$; ^a 1 = elementary school, 2 = middle school, 3 = high school, 4 = college														
^b 1 = less than \$5k, 2 = \$5k-\$9,999, 3 = \$10k-\$14,999, 4 = \$15k-\$19,999, 5 = \$20k-\$24,999, 6 = \$25k-\$29,999, 7 = \$30k-\$49,999, 8 = \$50k+;														
^c 1 = male, 2 = female														

Hierarchical Multiple Regression Analyses

Due to the removal of the reading item from regression analyses, only hypotheses 1 and 2 were examined using hierarchical multiple regression. Regression analyses were used to examine both hypotheses 1 and 2 simultaneously. Hypothesis 1 stated that maternal satisfaction would be positively related to the child's school readiness scores. Hypothesis 2 stated that maternal future orientation would be positively related to domains of school readiness. Therefore, regressions were performed to predict child school readiness using maternal satisfaction and future orientation, while controlling for relevant demographic characteristics. Following each regression analysis, follow-up stepwise procedures were used to achieve the most parsimonious model for each outcome.

Five hierarchical multiple regressions were performed to examine the relationship between maternal predictors and child school readiness variables. The first regression analysis examined child health as the outcome. In step one of the regression, maternal education status was included due to being significantly correlated with child health. At the second step, maternal satisfaction and future orientation were included simultaneously. Table 3 summarizes key statistics from this analysis. At step one, maternal education status was entered in the regression equation, $R^2 = .008$, $F(1, 199) = 1.56$, $p = .21$. In this step, maternal education status was not a significant predictor ($\beta = .09$, $p = .21$). At step two, maternal satisfaction and future orientation were entered into the regression equation, $R^2 = .02$, $F_{inc}(3, 197) = 1.53$, $p = .21$. Inclusion of these two variables did not result in a significant change in R^2 . In this step, maternal future orientation ($\beta = .13$, $p = .09$) and maternal satisfaction ($\beta = -.01$, $p = .92$) were not significant predictors and the model was not significant overall. However, univariate statistics indicate that future orientation was marginally significant ($p < .10$). Follow-up stepwise procedures were

employed that eliminated variables that were not significant at $p > .20$. Therefore, only maternal future orientation was entered into the regression equation, $R^2 = .02$, $F(1, 200) = 3.97$, $p < .05$. In this model, future orientation ($\beta = .14$, $p < .05$) was a significant predictor of child health, indicating that higher levels of maternal future orientation predicted higher levels of child physical health, which supports the second hypothesis.

Table 3

Multiple Regression of Maternal Education Status, Maternal Satisfaction, and Future Orientation Predicting Child Overall Health

	B	SE	Beta	ΔR^2
Step 1, [$F(1, 199) = 1.56$, $p = .21$, $R^2 = .01$]				
Maternal Education Status	.08	.07	.09	
Step 2, [$F(3, 197) = 1.54$, $p = .21$, $R^2 = .02$]				
Maternal Education	.06	.07	.06	.02
Maternal Satisfaction	-.01	.10	-.01	
Future Orientation	.12	.07	.13 [†]	
Final Model, [$F(1, 200) = 3.97$, $p < .05$, $R^2 = .02$]				
Future Orientation	.13	.07	.14*	

* $p < .05$ [†] $p < .10$

The second regression analysis included the child language composite as the outcome. In step one of the regression, child age, maternal education status, child gender, and income were all included simultaneously, as they were significantly correlated with the child language composite. At the second step, maternal satisfaction and future orientation were included simultaneously. Table 4 summarizes key statistics from this analysis. At step one, child age, maternal education status, child gender, and income were entered into the regression equation,

$R^2 = .16$, $F(4, 189) = 9.24$, $p < .001$. In this step, child age ($\beta = -.14$, $p < .05$), maternal education status ($\beta = .23$, $p < .01$), child gender ($\beta = .17$, $p < .05$), and income ($\beta = .23$, $p < .01$) were significant predictors of child language. At step two, maternal satisfaction and future orientation were entered into the regression equation, $R^2 = .17$, $F_{inc}(6, 187) = .87$, $p = .42$. Inclusion of these two variables did not result in a significant improvement in R^2 . In this step, the overall model was still significant because maternal education status ($\beta = .23$, $p < .01$), income ($\beta = .21$, $p < .01$), and child gender ($\beta = .17$, $p < .05$) were significant predictors of child language, with maternal satisfaction ($\beta = .10$, $p = .19$) and future orientation ($\beta = -.02$, $p = .79$) not being significant predictors.

After these procedures, a stepwise analysis was conducted to determine the most parsimonious model. For this model, significant demographic characteristics were entered into step 1 and maternal satisfaction was entered in step 2 because maternal satisfaction was significant at $p > .20$. The final model statistics are shown in Table 4, $R^2 = .17$, $F(5, 188) = 7.75$, $p < .001$. Upon further reviewing this model, it appears that the significant relationship between demographic variables fully accounted for the significance in the model. Maternal satisfaction was still not significantly predictive of language performance ($\beta = .09$, $p = .20$). Therefore, it appears that certain demographic characteristics, such as the child being younger, higher levels of maternal education, the child being a female, and higher income levels were significantly predictive of better performance on language subtests from the WPPSI.

Table 4

Multiple Regression of Child Age (Months), Maternal Education Status, Child Gender, Income, Maternal Satisfaction, and Future Orientation Predicting WPPSI Language Deviation Quotient

	B	SE	Beta	ΔR^2
Step 1, [$F(4, 189)=9.24, p < .001, R^2 = .16$]				
Child Age (Months)	-.20	.10	-.14*	
Maternal Education	4.54	1.35	.23**	
Child Gender ^a	3.86	1.54	.17*	
Income	1.55	.46	.23**	
Child Age (Months)	-.20	.10	-.14*	
Step 2, [$F(6, 187)= 6.44, p < .001, R^2 = .17$]				
Child Age (Months)	-.18	.10	-.12 [†]	.01
Maternal Education	4.50	1.38	.23**	
Child Gender	3.89	1.54	.17*	
Income	1.43	.47	.21**	
Maternal Satisfaction	2.70	2.06	.10	
Future Orientation	-.39	1.42	-.02	
Final Step, [$F(5, 188)=7.75, p < .001, R^2 = .17$]				
Child Age (Months)	-.18	.10	-.12 [†]	.01
Maternal Education	4.50	1.38	.23**	
Child Gender	3.89	1.54	.17*	
Income	1.43	.47	.21**	
Maternal Satisfaction	2.54	1.96	.09	

^a 1 = male, 2 = female; ** $p < .01$, * $p < .05$, [†] $p < .10$

The third regression analysis examined the Boehm general knowledge outcome. In step one of the regression, child gender was included due to being significantly correlated with general knowledge. At the second step, maternal satisfaction and future orientation were included simultaneously. Table 5 summarizes key statistics from this analysis. At step one, child gender was entered into the regression equation, $R^2 = .02$, $F(1, 199) = 3.33$, $p = .07$. In this step,

child gender was not a significant predictor ($\beta = .13, p = .07$). At step two, maternal satisfaction and future orientation were entered into the regression equation, $R^2 = .03, F_{inc}(3, 197) = .98, p = .38$. This did not result in a significant improvement in R^2 . In this model, maternal satisfaction ($\beta = .10, p = .19$) and future orientation ($\beta = -.06, p = .41$) were not significant predictors of performance of the general knowledge measure. A follow-up stepwise procedure was used to determine if removal of any model variables improved the overall model. For this model, maternal satisfaction was entered into the regression equation, $R^2 = .02, F(2, 198) = 2.30, p = .10$. Upon further reviewing the model, it appears that maternal satisfaction was not significantly predictive of performance on the general knowledge measure ($\beta = .08, p = .26$). Final statistics from the analysis are shown in Table 5.

Table 5

Multiple Regression of Child Gender, Maternal Satisfaction, and Future Orientation Predicting General Knowledge (Boehm)

	B	SE	Beta	ΔR^2
Step 1, [$F(1, 199)=3.33, p >.05, R^2 =.02$]				
Child Gender ^a	.52	.28	.13 [†]	
Step 2, [$F(3, 197)= 1.76, p >.05, R^2 = .03$]				
Child Gender	.53	.28	.13 [†]	.01
Maternal Satisfaction	.49	.37	.10	
Future Orientation	-.21	.26	-.06	
Final Step, [$F(1, 198)=2.30, p >.05, R^2 =.02$]				
Child Gender	.52	.28	.13 [†]	.01
Maternal Satisfaction	.39	.35	.08	

^a 1 = male, 2 = female; ** $p < .01$, * $p < .05$, [†] $p < .10$

In the fourth regression analyses, internalizing behavior was examined as the outcome. In step one of the regression, child age, income, and maternal education status were all included due to being significantly correlated with internalizing behaviors from the CBCL. In the second step, maternal satisfaction and future orientation were included simultaneously. Table 6 summarizes key statistics from this analysis. At step one, child age, income, and maternal education status were entered into the regression equation $R^2 = .04$, $F(3, 191) = 2.77$, $p = .05$. In this step, although the overall model was significant, individual predictors were not, including child age ($\beta = .09$, $p = .20$), income ($\beta = -.11$, $p = .12$), and maternal education status ($\beta = -.13$, $p = .08$). At step two, maternal satisfaction and future orientation were entered into the regression equation $R^2 = .17$, $F_{inc}(5, 189) = 15.07$, $p < .001$. This resulted in a significant improvement in R^2 . In this model, maternal satisfaction ($\beta = -.26$, $p < .001$) and future orientation ($\beta = -.20$, $p < .01$) were significantly predictive of child internalizing behavior problems. In order to find the most parsimonious model, a follow-up stepwise procedure was conducted. For this model, maternal education was entered into the regression equation in step 1, $R^2 = .02$, $F(1, 199) = 4.97$, $p < .05$, and maternal future orientation and satisfaction were entered in step 2 simultaneously, $R^2 = .17$, $F_{inc}(3, 197) = 17.66$, $p < .001$. Statistics from the final step of this follow-up model can be seen in Table 6. Although maternal education was predictive of the outcome in step 1 ($\beta = -.16$, $p < .05$), in step 2 only maternal satisfaction ($\beta = -.28$, $p < .001$) and future orientation ($\beta = -.20$, $p < .01$) were significantly predictive of lower levels of child internalizing behavior problems. Mothers who reported greater satisfaction and more of a future orientation also reported that their child had fewer internalizing behavior problems. This finding supports both the first and second hypotheses of the study.

Table 6

Multiple Regression of Child Age (Months), Income, Maternal Education Status, Maternal Satisfaction, and Future Orientation Predicting Internalizing Behaviors (CBCL)

	B	SE	Beta	ΔR^2
Step 1, [$F(3, 191)=2.77, p < .05, R^2 = .04$]				
Child Age (Months)	.14	.11	.09	
Income	-.79	.50	-.11	
Maternal Education	-2.55	1.47	-.13 [†]	
Step 2, [$F(5, 189)= 7.94, p < .001, R^2 = .17$]				.13**
Child Age (Months)	.07	.10	.05	
Income	-.24	.48	-.04	
Maternal Education	-1.48	1.40	-.07	
Maternal Satisfaction	-7.56	2.09	-.26**	
Future Orientation	-4.06	1.43	-.20**	
Final Step, [$F(3, 197)=13.71, p < .001, R^2 = .17$]				.15**
Maternal Education	-1.81	1.35	-.10	
Maternal Satisfaction	-8.06	1.97	-.28**	
Future Orientation	-3.97	1.40	-.20**	

** $p < .01$, * $p < .05$, [†] $p < .10$

For the fifth regression analysis, externalizing behavior was examined as the outcome. No demographic variables were significantly related to child externalizing behaviors on the CBCL, so only one step was necessary for this analysis. In step one of the regression, maternal satisfaction and future orientation were included simultaneously. Table 7 summarizes key statistics from this analysis. At step one, maternal satisfaction and future orientation were entered

into the regression equation $R^2 = .08$, $F(2, 198) = 8.79$, $p < .001$. This resulted in an overall significant model. In this step, maternal satisfaction was significantly predictive of child externalizing behaviors ($\beta = -.23$, $p < .01$), but future orientation was not significantly predictive of child externalizing behaviors ($\beta = -.12$, $p = .11$). Therefore, higher levels of maternal satisfaction were significantly predictive of fewer child externalizing behavior problems, supporting the first hypothesis. No additional stepwise models were necessary for this outcome.

Table 7

Multiple Regression of Maternal Satisfaction, and Future Orientation Predicting Externalizing Behaviors (CBCL)

	B	SE	Beta	ΔR^2
Step 1, [$F(2, 198)=8.79$, $p < .001$, $R^2 = .08$]				.08**
Maternal Satisfaction	-6.14	1.95	-.23**	
Future Orientation	-2.19	1.36	-.12	

** $p < .01$, * $p < .05$

Following these five hierarchical regressions, one additional regression was completed in order to determine if predictor variables were significantly related to the reading item mediator variable, as the predictors were the only variables significantly correlated with the reading item. In step one of the regression, maternal satisfaction and future orientation were included simultaneously. Table 8 summarizes key statistics from this analysis. At step one, maternal satisfaction and future orientation were entered into the regression equation $R^2 = .08$, $F(2, 198) = 8.23$, $p < .001$. In this step, maternal satisfaction was significantly predictive of frequency of reading to the child ($\beta = .24$, $p < .01$), but future orientation was not significantly predictive of frequency of reading to the child ($\beta = -.09$, $p = .23$). Therefore, higher levels of maternal satisfaction were predictive of higher frequencies of reading to the child, partially supporting

hypothesis 3, part a (maternal satisfaction and future orientation will be positively related to maternal involvement/book reading). No additional stepwise models were necessary for this outcome. As mentioned, because the mediating variable was not significantly correlated with any outcome variables, additional analyses, including mediation analyses, were not performed. Therefore, further testing related to the third hypothesis was not needed. The overall mediation hypotheses proposed for this study were not supported by these data.

Table 8

Multiple Regression of Maternal Satisfaction, and Future Orientation Predicting Reading Item

	B	SE	Beta	ΔR^2
Step 1, [$F(2, 198)=8.23, p < .001, R^2 = .08$]				
Maternal Satisfaction	.38	.12	.24**	.08**
Future Orientation	.10	.08	.09	

** $p < .01$, * $p < .05$

Discussion

The purpose of the current study was to examine the relationship between maternal satisfaction, maternal future orientation, maternal involvement, and child school readiness in low-income, African American mother-child dyads. This study contributes to current literature by examining maternal variables as they relate to school readiness. Also, this study examined this relationship among urban, low-income, African American mother-child dyads, which are underrepresented in the current school readiness literature, who are at-risk for school readiness deficits and are an important population to target for prevention and intervention efforts.

The hypotheses of the current study were that maternal satisfaction with parenting and their future orientation would be positively related to domains of school readiness in their child. Furthermore, it was hypothesized that this relationship would be mediated by an indicator of maternal involvement, specifically, how much she reads to her child. The current data supported some aspects of these hypotheses. Zero-order correlations revealed several relationships among study variables that were consistent with the hypothesized relationships. Maternal future orientation was significantly related to child physical health, such that a mother with an orientation toward the future reported that her child was in better physical health. Maternal satisfaction with parenting was significantly correlated with child language abilities, such that more satisfaction predicted better language scores. Maternal satisfaction and future orientation were significantly correlated with child internalizing behavior, such that more satisfaction and future orientation predicted fewer internalizing problems in the child. Finally, maternal satisfaction and maternal future orientation were significantly correlated with child externalizing behaviors, such that more satisfaction and future orientation predicted fewer externalizing problems in the child. Overall, these relationships supported hypotheses that suggested that

maternal satisfaction and future orientation would be related to various school readiness domains in the preschool age child. However, contrary to hypotheses, the measure of general knowledge as it relates school readiness, the Boehm-3 Test of Basic Concepts, was not correlated with maternal satisfaction or maternal future orientation.

Zero order correlations examining the relation between study variables and the reading variable did not show support for the study's mediation hypothesis. Despite this, how much the mother reported reading to her child was shown to be positively correlated with maternal satisfaction and future orientation in the expected direction. Mothers who reported more satisfaction and future orientation reported reading to their child more frequently. However, the reading variable was not related to any school readiness outcomes. For that reason, performing mediation analyses was not appropriate. Correlational data indicated that the reading item did not mediate the relationship between maternal satisfaction, future orientation, and school readiness because there was no relationship between reading and the outcomes.

Several demographic characteristics were also found to be correlated with study variables. Maternal education, income, child's gender, and child's age were all significantly correlated with the language composite and maternal education was also found to be correlated with internalizing behaviors. Mothers with more education and higher incomes had children with better language scores and fewer internalizing problems. These relationships are consistent with relationships found in the literature that show that parent education and family income is related to better language skills (Dearing, Simpkins, Kreider, & Weiss, 2006). Also, female children and younger children had better language scores. Previous literature has shown that girls may exhibit better language skills than boys (Bornstein, Hahn, & Haynes, 2004). It is possible that younger children showed better language scores as compared to their peers because it isn't until a little

later in development that some of the deficits in language for low-income, minority children start to appear (Blair, 2001).

Five hierarchical regression models were completed to fully test the relationships between demographic characteristics and model variables in order to examine the unique contributions of variables of interest and test study hypotheses. All models examined relevant demographic characteristics and the impact of maternal satisfaction and future orientation on the five school readiness outcomes (health, language, general knowledge, internalizing and externalizing behavior). Maternal future orientation predicted higher reported child overall physical health status. Only demographic characteristics predicted language performance. More specifically, lower child age, higher levels of maternal education, being a female child, and higher income were all predictive of better performance on language measures. Although maternal satisfaction with parenting was significantly correlated with child language skills at the zero order level, the regression model suggests that this relationship is no longer significant when relevant demographic characteristics of mother and child are accounted for. No significant predictors of general knowledge were found. Maternal satisfaction and future orientation predicted internalizing behaviors on the CBCL. Fewer internalizing behavior problems were demonstrated by children of mothers who reported higher levels of maternal satisfaction and future oriented thoughts. Finally, maternal satisfaction was significantly predictive of externalizing behaviors, with fewer externalizing behavior problems demonstrated by children of mothers who reported higher levels of maternal satisfaction. Overall, these analyses provided some support for hypotheses 1 and 2 of the study. Maternal satisfaction and future orientation predicted some school readiness outcome, but not others. These maternal characteristics may be

more important predictors of physical health and behavior problems and not especially predictive of more direct observations of academic skills, like language and general knowledge.

There are several reasons why these results may have revealed some expected and unexpected relationships. When considering the child health outcome, it is likely that mothers who report being planful, organized, and future oriented in their thoughts may also demonstrate behaviors congruent with these thoughts. More specifically, mothers who are future oriented when considering their child's future may also engage in behaviors that ensure a more functional future for their child, such as maintaining child health and rating their child health as high or important to them. However, maternal satisfaction did not demonstrate a similar relationship with child health. Perhaps satisfaction is not a sufficient cognition to create behaviors that improve child health or perhaps the measure of satisfaction in the study was not adequate to assess feelings of satisfaction. Future research will be needed to more fully understand the role that satisfaction may play.

When examining the language outcome, results surprisingly revealed that any relationship between maternal predictors and child language was solely due to demographic variables. This may be a function of access to resources conducive to appropriate language development. For example, mothers with higher income may be more likely to provide their child with resources (e.g., child care, toys) that assist with language development. Mothers who also attain more educationally may also place a higher value on the importance of language development and skills. Previous research has indicated a significant relationship between gender and verbal abilities, with females typically demonstrating higher verbal and language abilities when compared to their male peers (Fiorentino & Howe, 2004; Winsler et al., 2012). Furthermore, younger children may have demonstrated improved abilities because they were

provided with easier items given their age. Although this is not typically a consideration when observing the relationship between age and language abilities, because the sample is a high-risk sample, with all children being exposed to similar environments (e.g., higher risk environment, lack of formal education excluding participating in Head Start), it may be a more significant consideration when evaluating the results of this regression model, as harder items presented to older children may have been something to which many have not been exposed.

The analysis of general knowledge surprisingly revealed a lack of any relationship between child gender, maternal predictors, and child performance on the Boehm-3, a measure of general knowledge. Although this was unexpected and inconsistent with hypotheses, there may be explanations as to why this occurred. Similar to previous rationale in other regression models, a lack of relationship between parental predictors and child outcomes may be a function of exposure or experience. Child exposure and environmental stimulation is significantly related to performance in domains related to academic achievement (e.g., language, cognitive skills, general knowledge) (Britto, Brooks-Gunn, & Griffin, 2006; Chapin & Altenhofen, 2010; Hubbs-Tait, Culp, Culp, & Miller, 2002; Landry, Smith, Swank, Zucker, Crawford, & Solari, 2012; Page, Wilhelm, Gamble, & Card, 2010; Sheridan, Knoche, Kupzyk, Edwards, & Marvin, 2011; Yarrow, MacTurk, Vietze, McCarthy, Klein, & McQuiston, 1984). Therefore, if a child's environment does not provide them with the opportunities to gain these skills at expected levels, they will therefore not perform as well in these domains, despite the presence of parental satisfaction and future oriented thoughts. Perhaps there are simply more important predictors of these skills than the maternal cognitions examined in this study. For example, access to resources, value of education within the family, or one-on-one attention provided to the child in

various environments (i.e., at home or at preschool/daycare) may also play a role in child school readiness.

The analysis of internalizing behavior revealed a significant relationship between maternal predictors and child internalizing behaviors on the CBCL. This model was consistent with expected results given the study hypotheses. What is notable here is that observed results are also found in previous literature (e.g., Berhenke, Miller, Brown, Seifer, & Dickstein, 2011; Whittaker, Harden, See, Meisch, & Westbrook, 2011). Mothers who are more satisfied with their role as a parent might display positive behaviors toward the child that would result in fewer internalizing behavior problems. Because the current data are correlational, it is also possible to interpret this relationship such that mothers would likely report higher levels of satisfaction as a parent if their child does not demonstrate internalizing behavior problems, as internalizing behavior problems would likely play additional stress on the mother, leading to lower levels of maternal satisfaction and competence (Anthony, Anthony, Glanville, Naiman, Waanders, & Shaffer, 2005; Bornstein, Hendricks, Hahn, Haynes, Painter, & Tamis-Lemonda, 2003; Bulotsky-Shearer, Wen, Faria, Hahs-Vaughn, & Korfmacher, 2012; Izard et al., 2008; Lackovic Grgin, 1994; Mantizocopoulos, 1997; Miller, Gouley, Seifer, Dickstein, & Shields, 2004). Future research would be needed to determine the most plausible direction for this relationship, specifically from a prospective, longitudinal research design using multiple methods of measure, such as both maternal report and child assessment or mother-child interaction observations. Also, mothers with future oriented thoughts would likely have children that engage in more prosocial behaviors and fewer internalizing problem behaviors, as these mothers may play a larger emphasis on behavioral expectations and self-regulatory behaviors in their children, as these behaviors may also be predictive of later success.

The final model revealed a significant relationship between maternal satisfaction and child externalizing behaviors on the CBCL. Future orientation was not found to be a significant predictor. Higher levels of maternal satisfaction were linked with fewer reports of child externalizing behavior problems. This might reveal a broader relationship between maternal satisfaction as a parent, and a child's ability to regulate their behavior and to engage in effective communication with the mother by refraining from engaging in externalizing behaviors (Bulotsky-Shearer et al., 2008). Therefore, a mother may feel more satisfied with herself as a parent when she feels effective in managing her child's externalizing behaviors. Future orientation did not demonstrate a significant relationship with externalizing behaviors, as this may account for variability in child demonstrated externalizing behaviors. Additionally, this may also explain the presence of atypical child externalizing behaviors that may later become increasingly problematic or diagnostic, as this is something that is not due to maternal behaviors and parenting skills used.

Lastly, a final regression model examined the relationship between maternal predictors and the reading item. In this model, maternal satisfaction was significantly predictive of time spent reading to the child, with higher levels of maternal satisfaction predicting increased frequency of reading to the child. It is possible that mothers who are more satisfied with themselves as parents may have relationships with their children that are effective, cooperative, and positive. This relationship would provide the space for a mother to engage in reading with her child without feeling overwhelmed or distracted from the task due to child behavioral management or resistance. Surprisingly, a relationship was not evident between future orientation and reading to the child, although the zero order correlation had been significant. It is possible that mothers who engage in future oriented thoughts may not necessarily act upon these

thoughts behaviorally. That is, a mother may be future oriented in her thought processes related to her child or in general, but may not initiate or engage in behaviors consistent with these thoughts, such as reading to her child or preparing her child to begin school in other ways. This may also be a function of a lack of resources or access to tools, as mothers who lack resources or access to resources may have future oriented thoughts, but no way of applying to thoughts to parenting behaviors. This was not consistent with the hypothesized relationship between future orientation and reading to one's child. It was expected that thinking of one's future would translate to thinking about the child's future and academic success. Perhaps a measure that attempts to assess the mother's future orientation about her child rather than generally would be more predictive of child outcomes. This should be examined in future research.

The lack of relationship between study outcomes and the reading item resulted in the conclusion that there was not a mediation relationship in the current data. This may be partially a result of the wording of the question ("I read to my child a lot") being subject to interpretation by the mothers participating in the study and the fact that there was only one item assessing time spent reading with the child. Although using one item to assess a construct has been shown to be useful in some studies (Eiser & Morse, 2001), that did not turn out to be the case in this study. A better and more complex assessment of maternal involvement with the child would likely reveal different relationships to the variables in this study. Although this study did not find support for reading as a mediator, it is still believed that maternal involvement is likely a very important pathway between maternal cognitions and school readiness (Lackovic Grgin, 1994). Future research is needed to examine the role of maternal involvement more completely through a more comprehensive assessment or measure of maternal involvement using an objective scale made up of several items.

In considering the overall results of the study, it appears that some maternal cognitions are predictive of some child school readiness behaviors, but the hypothesized stepping stone of time spent reading to the child was not supported. Because this is a high risk sample, many mother-child dyads may have limited access to resources, including learning materials, educational programs, and parenting training. As a result, mothers who may engage in high levels of future oriented thoughts and report high levels of maternal satisfaction may have no avenue through which they can demonstrate these cognitions, as lack of resources can create significant barriers in preparing their child for school in different domains.

In further considering the overall results, child performance on the Boehm, which was not significantly related to predictors, may not be an accurate depiction of child general knowledge and cognitive abilities from an urban, low-income African American sample. Although this measure was appropriately standardized, it may be that children who are similar to those in this study were still underrepresented in the standardization of the measure, with lower performance in a variety of cognitive measures being consistently demonstrated in high risk samples with measures that are standardized using normative samples (Brooks-Gunn, Klebanov, Smith, Duncan, & Lee, 2003). The scores on the Boehm in this sample were extremely low, with an average percentile score of only 20.5. The Boehm was significantly correlated with the WPPSI language scores, suggesting some validity to the Boehm assessment. However, further investigation of the utility of this measure in assessing school readiness in low-income, African American children is warranted, as this measure has yet to be standardized for this population, and may therefore not capture the general knowledge or cognitive skills possessed by children from this population. Creating a measure that is standardized for this population, or revising a current measure of cognitive skills and general knowledge to be standardized for this population

will enhance sensitivity and provide a more accurate representation of the true abilities of a child from this population. Low scores were also observed on the WPPSI-III, with the mean score of the sample being approximately 10 points below what would be expected given the standardization of the sample. For that reason, it is quite possible that the measures used in this study have not been appropriately standardized for this population, yielding scores that are an underestimate of a child's true abilities. Future research should consider standardizing such measures to be more culturally sensitive, or creating new measures to assess these abilities among an at-risk population.

To summarize, as it relates to the study hypotheses, hypothesis 1 (maternal satisfaction will be positively related to domains of school readiness) was supported by regression models, with maternal satisfaction being positively related to fewer internalizing and externalizing child behavior problems. However, maternal satisfaction was not positively related to child overall physical health, language performance, and general knowledge/cognitive skills. Hypothesis 2 (maternal future orientation will be positively related to domains of school readiness) was supported by regression models, with maternal future orientation being positively related to higher levels of child overall physical health and fewer internalizing child behavior problems. However, maternal future orientation was not positively related to language performance, general knowledge/cognitive skills, and fewer externalizing child behavior problems. Maternal satisfaction was also found to be significantly related to the reading item, which partially supported the first part of hypothesis 3 (maternal satisfaction and future orientation will be positively related to maternal involvement/book reading). However, this was the only relationship observed between the reading item and other study variables. The lack of observed relationship between the reading item and outcome variables may be a function of the reading

item being a single item. Perhaps assessing maternal involvement more comprehensively or objectively may yield different results and potentially a relationship between maternal involvement and school readiness.

Strengths and Limitations

There are a number of strengths in the present study that should first be noted. The study addresses gaps in the literature by examining school readiness as it relates to maternal predictors in an urban, low-income African American sample. Though there have been studies that have examined the impact of maternal predictors on child school readiness, as discussed in the literature review, few studies have examined the impact of maternal satisfaction and future orientation jointly influencing child school readiness. Furthermore, even fewer studies have examined this relationship among at-risk populations. For that reason, the current study provided valuable insight and information about the relationship between maternal predictors and child school readiness among an at-risk sample.

Another strength of this study was the use of multiple types of measures to comprise the construct of school readiness. Although the Boehm-3 can be used independently to assess general child school readiness (Boehm, 2008), this study utilized this measure as well as mother-reported measures of behavior problems and child health, and child verbal and language performance from subtests of the WPPSI. By using a variety of measures and methods for gathering this data, it can be said with fair certainty that an adequate sampling of a child's individual school readiness was likely obtained from each participant. However, it is possible that, because some measures used were not standardized for this population and are not culturally sensitive to this population, scores on different domains of school readiness may be an

underestimate of the child's true abilities, or may not be accurately capturing what school readiness means for this population.

Another strength of this study was that it was also able to show that although maternal variables may relate to some factors of school readiness, they did not relate to all factors, which may accurately depict the struggle to access resources that exists among this population. Because this population is typically underrepresented in school readiness studies (Gabalda, Thompson, & Kaslow, 2010; Mistry et al., 2010; Randolph, Koblinsky, Beemer, Roberts, & Letiecq, 2000), it not only fills a gap in the literature but provides significant information about how preparedness for school may be qualitatively different and require different resources and interventions than what has been demonstrated in previous literature.

Despite the number of strengths in the present study, limitations should also be noted. One such limitation is that many items were collected by maternal self-report questionnaires, making these items susceptible to subjective interpretations and response biases, such as social desirability. This may have occurred in such a way that mothers may have underreported areas of concern (e.g., poor child health, lack of reading to the child, child behaviors), and overreported future oriented thoughts and satisfaction as a parent. It may be helpful for future studies to collect data not only with multiple methods as was done in the current study, but with multiple methods for each domain of school readiness and maternal predictors. For example, instead of child health consisting of one self-reported item, future researchers could measure child health via measures of body mass index (BMI), blood pressure, etc., or medical records could also be obtained. Similarly, another method for assessing maternal involvement or reading would also be beneficial, such as an objective measure or behavioral observation of maternal involvement through book reading, or a measure that more comprehensively measures book reading (i.e., a

measure that utilizes more than a single item). Collecting observational data or a more varied report of involvement could have improved results in the current study.

Another limitation is that the current study is not generalizable to other populations, as the population chosen was unique and specific. Although examining a low-income, African American population is a strength on the one hand, it also limits generalizability to others groups. As a result, findings from this study may not be applicable to populations outside of urban, low-income African American families participating in Head Start.

Lastly, a limitation of the current study is that secondary data was utilized. This restricted variable selection to answer study questions to a certain degree. Future research may consider examining school readiness among this population using different domain variables; one could examine more maternal predictors and possible mediators of the relationships between parental cognitions and school readiness. Future research may also consider studying these variables in a longitudinal research design, rather than a cross-sectional research design.

Implications of the Current Study

Policy and clinical implications can be drawn from the results of the current study. More specifically, results support the impact maternal attitudes have on child school readiness, with maternal attitudes being important to note early in a child's life, as a significant factor related to the school entry gap, which is consistent with the impact of the microsystem on child development in Bronfenbrenner's ecological theory (Bronfenbrenner, 1979). Because of this impact, it will be helpful for interventionists and school support staff who work with low-income African American families to consider maternal attitudes, availability of resources, and barriers when preparing children to begin school. By applying this model, individuals working within the Head Start system can prepare for and anticipate the need for parent education regarding

attitudes, access to resources in the community, and necessary preparations to make in order for their children to be ready to begin school. It may be the case that improvements in satisfaction alone as a parent may be a valuable influence on how ready a child is for the start of school. As Head Start has continued to do, preparing children for participation in a structured, formal education system is also important to ensure that children possess the necessary skills and knowledge to successfully navigate an academic environment. Furthermore, when concerns arise as it relates to child school readiness, having accessible resources outside of Head Start facilities (i.e., social services, other preschool or daycare programs) will also be helpful to families who may exhaust the resources provided by Head Start. By engaging in these precautionary steps, Head Start facilities can become better equipped to handle at-risk families who may be subject to a general lack of resources and a lack of child school readiness.

Additionally, prevention and intervention efforts should focus more broadly on child and family factors, rather than child academic performance and maternal attitudes alone. For example, assisting families with social services, psychological services, and access to other helpful resources and programs can be a means of not only minimizing barriers unique to this population, but also of increasing positive parenting attitudes and behaviors as well as child abilities and performance in a variety of school readiness domains. As it applies to clinical prevention and intervention, clinicians presented with these client obstacles should focus on creating intervention programs that address all members of the family and work toward increasing the positive behaviors mentioned that are conducive to child school readiness, while decreasing the impact of risk and other barriers that may prevent children from being prepared for school. For example, clinicians may address parent attitude difficulties (i.e., lack of maternal satisfaction, lack of planning behaviors, and lack of responsiveness/sensitivity) and increase

parental support and involvement with the child (Burchinal Campbell Bryant 1997; Oxford Lee 2011; Walker 1994). Clinicians may also then address child difficulties (i.e., child behavior problems, any existing cognitive deficits, child health) while educating the parent and providing parenting skills that are conducive to improvements in areas of child school readiness.

Bronfenbrenner's ecological theory of child development emphasizes the importance of the development of the child as embedded within family and environmental systems (Bronfenbrenner, 1979). Because of this, effective interventions and prevention methods should consider many factors outside of the child in order to facilitate school readiness, such as maternal attitudes, access to resources and richness of the environment, and quality time dedicated to preparing the child to begin school at a young age. Additionally, it is important to consider the daycare and preschool environments to which the child is exposed, as these can also have a significant impact on development and subsequent school readiness. These environments are especially impactful for marginalized or at-risk children, as the quality of daycare or preschool settings may be lower and therefore not prepare children to begin school as comprehensively as what would be expected. Therefore, considering the many layers of influence as it relates to child school readiness is crucial in structuring prevention and intervention programs or resources for Head Start children and their families

Also, future policies and programs should focus on prevention methods, such as increasing positive maternal attitudes, decreasing barriers and inaccessibility of resources, and increasing child exposure to and involvement in early education programs. Addressing these risks can buffer the negative effects of risk factors commonly observed among this population. Also, providing this information to soon-to-be or early mothers can also be beneficial, as maternal attitudes and lack of access to resources can become increasingly impactful as a

function of time (Benasich & Brooks-Gunn, 1996). For example, prevention programs can identify at-risk expecting mothers and provide them with support, services, and resources that will be beneficial to themselves and their future children.

Suggestions for Future Research

Several directions for future research can be drawn from the results of the current study. One such direction can be to replicate this study with larger samples, as well as using other low-income, ethnically diverse populations of families in order to ensure generalizability.

Next, further studies should explore additional domains of school readiness, as other areas of school readiness may be a more accurate measure and indicator of a child's preparedness to begin school in an at-risk environment. Also, consideration of other measures as they relate to school readiness will be helpful to consider for this population, such as examination of variables of parental support/responsiveness, and emotional maturity (Webster-Stratton et al., 2008).

Lastly, future research should consider the use of multimethod measurement of study variables. For example, not only obtaining self-reported levels of child behaviors, but also observing and measuring child behaviors in vivo may be helpful in obtaining comprehensive, accurate measures of school readiness. Furthermore, future studies may consider looking at family history as it relates to maternal attitudes, lack of resource access, and school readiness of older siblings raised with the same parents. These data will be helpful in not only understanding if maternal attitudes and lack of resources are long-standing barriers, but also in determining if this profile of risk factors has significantly impacted other individuals present in the same environment prior to school (i.e., siblings).

Conclusions

In sum, the present study has examined the effects of maternal thoughts and child school readiness outcomes in a sample of urban, low-income African American mother-child dyads. Results indicate that maternal satisfaction and future orientation were predictive of different domains of child school readiness, with higher levels of maternal satisfaction and future orientation predicting higher levels of school readiness as measured by the different domains examined. Although previous research has examined the relationship between parental factors and child school readiness, this study added to the literature by not only examining maternal predictors that have not been examined thoroughly in child school readiness literature, but by also examining this relationship among an urban, low-income African American sample. Despite the limitations to the current study, results provide meaningful information about the impact of maternal thoughts on child school readiness among an at-risk population.

References

- Achenbach, T. M. (2013). Measure profile: Child Behavior Checklist (CBCL).
- Achenbach, T. M., & Rescorla, L. A. (2000). Child Behavior Checklist for Ages 1 1/2 -5.
- Anderson, L. M., Shinn, C., Fullilove, M. T., Scrimshaw, S. C., Fielding, J. E., Normand, J....
Carande-Kulis, V. G. (2003). The effectiveness of early childhood development programs: A systematic review. *American Journal of Preventive Medicine*, 24(Suppl3), 32-46.
- Anthony, L. G., Anthony, B. J., Glanville, D. N., Naiman, D. Q., Waanders, C., & Shaffer, S. (2005). The relationships between parenting stress, parenting behaviour, and preschoolers' social competence and behaviour problems in the classroom. *Infant and Child Development*, 14(2), 133-154.
- Atance, C. M., & Jackson, L. K. (2009). The development and coherence of future-oriented behaviors during the preschool years. *Journal of Experimental Child Psychology*, 102(4), 379-391.
- Baker, C. E., Cameron, C. E., Rimm-Kaufman, S. E., & Grissmer, D. (2012). Family and sociodemographic predictors of school readiness among African American boys in kindergarten. *Early Education and Development*, 23(6), 833-854.
- Baron, R. M., & Kenny, D. A., (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Bayley, N. (2005). Bayley Scales of Infant and Toddler Development ®, Third Edition (Bayley-III®). *Pearson Education: PsychCorp*.

- Beech, M. C. (1981). Concurrent validity of the Boehm Test of Basic Concepts. *Learning Disability Quarterly*, 4(1), 53-60.
- Beery, K. E., Buktenica, N. A., & Beery, N. A. (2010). Beery-Buktenica Developmental Test of Visual-Motor Integration, Sixth Edition The (BEERY™ VMI). *Pearson Education: PsychCorp*.
- Benasich, A. A. & Brooks-Gunn, J. (1996). Maternal attitudes and knowledge of child-rearing: Associations with family and child outcomes. *Child Development*, 67(3), 1186-1205.
- Bender, S. L., Fedor, M. C., & Carlson, J. S. (2011). Examining protective factors and risk factors in urban and rural Head Start preschoolers. *Journal of Community Psychology*, 39(8), 908-921.
- Berger, E. M., & Spiess, C. K. (2011). Maternal life satisfaction and child outcomes: Are they related? *Journal of Economic Psychology*, 32(1), 142-158.
- Berhenke, A., Miller, A. L., Brown, E., Seifer, R., & Dickstein, S. (2011). Observed emotional and behavioral indicators of motivation predict readiness in Head Start graduates. *Early Childhood Research Quarterly*, 26(4), 430-441.
- Berk, L. (2013, December 6). Is it cognitively burdensome for young children to learn two languages? [Web log post]. Retrieved from <http://languagesalive.me/2013/12/06/is-it-cognitiveley-burdensome-for-young-children-to-learn-two-languages/>.
- Blair, C. (2001). The early identification of risk for grade retention among African American children at risk for school difficulty. *Applied Developmental Science*, 5(1), 37-50.
- Boehm, A. E. (2008). Technical Report: Boehm-3 Preschool.

- Bornstein, M. C., Hahn, C. S., & Haynes, O. M. (2004). Specific and general language performance across early childhood: Stability and gender considerations. *First Language, 24*(3), 267-304.
- Bornstein, Hendricks, Hahn, Haynes, Painter, & Tamis-Lemonda (2003). Contributors to self-perceived competence, satisfaction, investment, and role balance in maternal parenting: A multivariate ecological analysis. *Parenting: Sciences and Practice, 3*(4), 285-326.
- Britto, P. R., Brooks-Gunn, J., & Griffin, T. M. (2006). Maternal reading and teaching patterns: Associations with school readiness in low-income African American families. *Reading Research Quarterly, 41*(1), 68-89.
- Brooks-Gunn, J., Klebanov, P. K., Smith, J., Duncan, G. J., & Lee, K. (2003). The black-white test score gap in young children: Contributions of test and family characteristics. *Applied Developmental Science, 7*(4), 239-252.
- Bronfenbrenner, U. (1992). Six theories of child development: Revised formulations and current issues. *Ecological Systems Theory*, Vasta, Ross (Ed.), pp. 187-249. London, England: Jessica Kingsley Publishers, 285 pp.
- Brown, T. (1999). Why Vygotsky? The role of social interaction in constructing knowledge. *Lev Vygotsky: Critical Assessments, Volume 3*, P. Lloyd and C Fernyhough. London, Routledge: 57-66
- Bulotsky-Shearer, R. J., Fantuzzo, J. W., & McDermott, P. A. (2008). An investigation of classroom situational dimensions of emotional and behavioral adjustment and cognitive and social outcomes for Head Start children. *Developmental Psychology, 44*(1), 139-154.
- Bulotsky-Shearer, R. J., Dominguez, X., & Bell, E. R. (2011). Preschool classroom behavioral context and school readiness outcomes for low-income children: A multilevel

- examination of child- and classroom-level influences. *Journal of Educational Psychology*, *104*(2), 421-438.
- Bulotsky-Shearer, R. J., Wen, X., Faria, A. M., Hahs-Vaughn, D. L., & Korfmacher, J. (2012). National profiles of classroom quality and family involvement: A multilevel examination of proximal influences on Head Start children's school readiness. *Early Childhood Research Quarterly*, *27*(4), 627-639.
- Burchinal, M., Campbell, F., Brayant, D., Wasik, B., & Ramey, C. (1997). Early intervention and mediating processes in cognitive performance of children of low-income African American families. *Child Development*, *65*(5), 935-954.
- Bzostek, S. H., & Beck, A. N. (2011). Familial instability and young children's physical health. *Social Science and Medicine*, *73*(2), 282-292.
- Card, D. (1999). The causal effect of education on earnings. In O. Ashenfelter & D. Card (Eds.), *Handbook of labor economics* (Vol. 3, pp. 1801-1863). Amsterdam, the Netherlands: Elsevier.
- Caughy, M. O. (1996). Health and environmental effects on the academic readiness of school-age children. *Developmental Psychology*, *32*(3), 515-522.
- Chapin, L. A., & Altenhofen, S. (2010). Neurocognitive perspectives in language outcomes of early Head Start: Language and cognitive stimulation and maternal depression. *Infant Mental Health Journal*, *31*(5), 486-498.
- Cherry, K. (2014). Language development in early childhood. [Web log post]. Retrieved from http://psychology.about.com/od/developmentalpsychology/ss/early-childhood-development_4.htm#step-heading.

- Cristofaro, T. N., & Tamis-Lemonda, C. S. (2011). Mother-child conversations at 36-months and at pre-kindergarten: Relations to children's school readiness. *Journal of Early Childhood Literacy, 12*(1), 68-97.
- Curenton, S. M. (2010). Narratives as learning tools to promote school readiness. *Early Education and Development, 21*(3), 287-292.
- Currie, J. M. (2005). Health disparities and gaps in school readiness. *The Future of Children, 15*(1), 117-138.
- Dearing, E., Kreider, H., Simpkins, S., & Weiss, H. B. (2006). Family involvement in school and low-income children's literacy: Longitudinal associations between and within families. *Journal of Educational Psychology, 98*(4), 653-664.
- Dilworth-Bart, J. E. (2012). Does executive function mediate SES and home quality associations with academic readiness? *Early Childhood Research Quarterly, 27*(3), 416-425.
- Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., Pagani, L. S., Feinstein, L., Engel, M., Brooks-Gunn, J., Sexton, H., Duckworth, K., & Japel, C. (2007). School readiness and later achievement. *Developmental Psychology, 43*(6), 1428-1446.
- Eiser, C., & Morse, R. (2001). Can parents rate their child's health-related quality of life? Results of a systematic review. *Quality of Life Research, 10*(4), 347-357.
- Ercegovac, I. R., Ljubetic, M., & Pericic, M. (2013). Maternal self-competence and mother-child interaction. *Hellenic Journal of Psychology, 10*(2), 102-120.
- Evans, C. A., Nelson, L. J., Porter, C. L., Nelson, D. A., & Hart, C. H. (2012). Understanding relations among children's shy and antisocial/aggressive behaviors and mothers' parenting: The role of maternal beliefs. *Merrill-Palmer Quarterly, 58*(3), 341-374.

- Fan, Y., & Chen, Q. (2012). Family functioning as a mediator between neighborhood conditions and children's health: Evidence from a national survey in the United States. *Social Science and Medicine*, 74(12), 1939-1947.
- Fantuzzo, J. W., Bulotsky-Shearer, R. J., Fusco, R. A., & McWayne, C. M. (2005). An investigation of preschool classroom behavioral adjustment problems and social-emotional school readiness competencies. *Early Childhood Research Quarterly*, 20(3), 259-275.
- Fantuzzo, J. W., Bulotsky-Shearer, R. J., McDermott, P., McWayne, C. M., Frye, D., & Perlman, S. (2007). Investigation of dimensions of social-emotional classroom behavior and school readiness for low-income urban preschool children. *School Psychology Review*, 36(1), 44-62.
- Field, A. *Discovering statistics using IBM SPSS Statistics*. (4th ed.) Sage.
- Fiorentino, L., & Howe, N. (2004). Language competence, narrative ability, and school readiness in low-income preschool children. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, 36(4), 280-294.
- Fuhs, M. W., & Day, J. D. (2011). Verbal ability and executive functioning development in preschoolers at Head Start. *Developmental Psychology*, 47(2), 404-416.
- Gabalda, M. K., Thompson, M. P., & Kaslow, N. J. (2010). Risk and protective factors for psychological adjustment among low-income African American children. *Journal of Family Issues*, 31(4), 423-444.
- George, W. (2014). Fine motor skills and academic achievement. [Web log post]. Retrieved from <http://www.psychologytoday.com/blog/psyched/201402/fine-motor-skills-and-academic-achievement>.

- Gerard, A. B. (1994). Parent-Child Relationship Inventory (PCRI) Manual. Los Angeles, WPS.
- Grissmer, D., Aiyer, S. M., Murrah, W. M., Grimm, K. J., & Steele, J. S. (2010). Fine motor skills and early comprehension of the world: Two new school readiness indicators.
- Hair, E., Halle, T., Terry-Humen, E., Lavelle, B., & Calkins, J. (2006). Children's school readiness in the ECLS-K: Predictions to academic, health, and social outcomes in first grade. *Early Childhood Research Quarterly, 21*, 431-454.
- Hammer, C. S., Nimmo, D., Cohen, R., Draheim, H. C., & Johnson, A. A. (2005). Book reading interactions between African American and Puerto Rican Head Start children and their mothers. *Journal of Early Childhood Literacy, 5*(3), 195-227.
- Harden, B. J., Sandstrom, H., & Chazan-Cohen, R. (2012). Early Head Start and African American families: Impacts and mechanisms of child outcomes. *Early Childhood Research Quarterly, 27*(4), 572-581.
- Heckman, J. J. (2006, June 30). Skill formation and the economics of investing in disadvantaged children. *Science, 312*, 900-1902.
- Hess, R. D., Holloway, S. D., Dickson, W. P., & Price, G. G. (1984). Maternal variables as predictors of children's school readiness and later achievement in vocabulary and mathematics in sixth grade. *Child Development, 55*(5), 1902-1912.
- Hubbs-Tait, L., Culp, A. M., Culp, R. E., & Miller, C. E., (2002). Relation of maternal cognitive stimulation, emotional support, and intrusive behavior during Head Start to children's kindergarten cognitive abilities. *Child Development, 73*(1), 110-131.
- Isabella, R. A. (1994). Origins of maternal role satisfaction and its influence upon maternal interactive behavior and infant-mother attachment. *Infant Behavior and Development, 17*(4), 381-387.

- Izard, C. E., King, K. A., Trentacosta, C. J., Morgan, J. K., Laurenceau, J. P., Krauthamer-Ewing, E. S.,... & Finlon, K. J. (2008). Accelerating the development of emotion competence in Head Start children: Effects on adaptive and maladaptive behavior. *Development and Psychopathology, 20*(1), 369-397.
- Jackson, A. P., Choi, J. K., & Bentler, P. M. (2009). Parenting efficacy and the early school adjustment of poor and near-poor Black children. *Journal of Family Issues, 30*(10), 1339-1355.
- Janus, M., & Duku, E. (2007). The school entry gap: Socioeconomic, family, and health factors associated with children's school readiness to learn. *Early Education and Development, 18*(3), 375-403.
- Johnson, V. E. (2005). Comprehension of third person singular /s/ in AAE-speaking children. *Language, Speech, and Hearing Services in School, 36*(2), 116-124.
- Justice, L. M., Pence Turnbull, K. L., Bowles, R. P., & Skibbe, L. E. (2009). School readiness among children with varying histories of language difficulties. *Developmental Psychology, 45*(2), 460-476.
- Kaiser, A. P., Hancock, B. T., Cai, X., Foster, E. M., & Hester, P. P. (2000). Parent-reported behavioral problems and language delays in boys and girls enrolled in Head Start classrooms. *Behavioral Disorders, 26*(1), 26-41.
- Konold, T. R., & Pianta, R. C. (2005). Empirically-derived, person-oriented patterns of school readiness in typically-developing children: Description and prediction to first-grade achievement. *Applied Developmental Science, 9*(4), 174-187.
- Korkman, M., Kirk, U., & Kemp, S. (2007). NEPSY – Second Edition (NEPSY-II). *Pearson Education: PsychCorp.*

- Lackovic-Grgin, K. (1994). Self-concept of young people. *Jastrebarsko, Croatia: Naklada Slap*.
- Landry, S. H., Smith, K. E., Swank, P. R., Zucker, T., Crawford, A. D., & Solari, E. F. (2012). The effects of a response parenting intervention on parent-child interactions during shared book reading. *Developmental Psychology, 48*(4), 969-986.
- Lerner, J. V., & Galambos, N. L. (1985). Maternal role satisfaction, mother-child interaction, and child temperament: A process model. *Developmental Psychology, 21*(6), 1157-1164.
- Lipscomb, S. T., Pratt, M. E., Schmitt, S. A., Pears, K. C., & Kim, H. K. (2013). School readiness in children living in non-parental care: Impacts of Head Start. *Journal of Applied Developmental Psychology, 34*(1), 28-37.
- Lobello, S. (1991). A short form of the Wechsler Preschool and Primary Scale of Intelligence – Revised. *Journal of School Psychology, 29*, 229-236.
- Lynch, W. F. (1965). *Images of hope: Imagination as healer of hopeless*. Baltimore: Helica Press.
- Mantzicopoulos, P. Y. (1997). The relationship of family variables to Head Start children's preacademic competence. *Early Education and Development, 8*(4), 357-375.
- McClelland, M. M., Cameron, C. E., McDonald Connor, C., Farris, C. L., Jewkes, A. M., & Morrison, F. J. (2007). Links between behavioral regulation and preschoolers' literacy, vocabulary, and math skills. *Developmental Psychology, 43*(4), 947-959.
- McCarthy, D. A. (1972). The McCarthy Scales of Children's Abilities (MSCA).
- McGee, R. (1984). Hope: A factor in crisis resolution. *Advances in Nursing Science, 6*, 34-43.
- McWayne, C. M., Cheung, K., Hahs-Vaughn, D. L., & Green Wright, L. E. (2012). Patterns of school readiness among Head Start children: Meaningful within-group variability during transition to kindergarten. *Journal of Educational Psychology, 104*(3), 862-878.

- Miller, A. L., Gouley, K. K., Seifer, R. E., Dickstein, S., & Shields, A. (2004). Emotions and behaviors in the Head Start classroom: Associations among observed dysregulation, social competence, and preschool adjustment. *Early Education and Development, 15*(2), 147-165.
- Mistry, R. S., Benner, A. D., Biesanz, J. C., Clark, S. L., & Howes, C. (2010). Family and social risk, and parental investments during the early childhood years as predictors of low-income children's school readiness outcomes. *Early Childhood Research Quarterly, 25*(4), 432-449.
- National Institute of Mental Health. (2002). *A good beginning: Sending American's children to school with the social and emotional competence they need to succeed*. Bethesda, MD: Author.
- National Research Council & Institute of Medicine. (2001). *Eager to learn: Educating our preschoolers*. Washington, DC: National Academy Press.
- Nurmi, J., & Pulliainen, H. (1991). The changing parent-child relationship, self-esteem, and intelligence as determinants of orientation to the future during early adolescence. *Journal of Adolescence, 14*, 35-51.
- Oxford, M. L., & Lee, J. O. (2011). The effect of family processes on school achievement as moderated by socioeconomic context. *Journal of School Psychology, 49*(5), 597-612.
- Pagani, L. S., Fitzpatrick, C., Archambault, I., & Janosz, M. (2010). School readiness and later achievement: A French Canadian replication and extension. *Developmental Psychology, 46*(5), 984-944.

- Pagani, L. S., & Messier, S. (2012). Links between motor skills and indicators of school readiness at kindergarten entry in urban disadvantaged children. *Journal of Educational and Developmental Psychology, 2*(1), 95-107.
- Page, M., Wilhelm, M. S., Gamble, W. C., & Card, N. A. (2010). A comparison of maternal sensitivity and verbal stimulation as unique predictors of infant social-emotional and cognitive development. *Infant Behavior and Development, 33*(1), 101-110.
- Park, J. M., Fertig, A. R., & Allison, P. D. (2011). Physical and mental health, cognitive development, and health care use by housing status of low-income young children in 20 American cities: A prospective cohort study. *American Journal of Public Health, 101*(Suppl1), S255-S261.
- Parker, F. L., Boak, A. Y., Griffin, K. W., Ripple, C., & Peay, L. (1999). Parent-child relationship, home learning environment, and school readiness. *School Psychology Review, 28*(3), 413-425.
- Pettit, G. S., & Bates, J. E. (1989). Family interaction patterns and children's behavior problems from infancy to 4 years. *Developmental Psychology, 25*(3), 413-420.
- Piaget, J. (1932). *The moral judgment of the child*. New York: Harcourt Brace.
- Piek, J. P., Dawson, L., Smith, L. M., & Gasson, N. (2008). The role of early fine and gross motor development on later motor and cognitive ability. *Human Movement Science, 27*(5), 668-681.
- Qi, C. H., & Kaiser, A. P. (2004). Problem behaviors of low-income children with language delays: An observation study. *Journal of Speech, Language, and Hearing Research, 47*(3), 595-609.

- Randolph, S. M., Koblinsky, S. A., Beemer, M. A., Roberts, D. D., & Letiecq, B. L. (2000). Behavior problems in African American boys and girls attending Head Start programs in violent neighborhoods. *Early Education and Development, 11*(3), 339-356.
- Reynolds, A. J. (1991). Early schooling of children at risk. *American Educational Research, 28*(2), 392-422.
- Rimm-Kaufman, S. (2004). School transition and school readiness: An outcome of early childhood development. In: Tremblay R.F., Barr R. G., Peters, R. De V. eds. *Encyclopedia on Early Childhood Development* [online]. Montreal, Quebec: Centre of Excellence for Early Childhood Development; 2004: 1-7.
- Romano, E., Babchishin, L., Pagani, L. S., & Kohen, D. (2010). School readiness and later achievement. Replication and extension using a nationwide Canadian survey. *Developmental Psychology, 46*(5), 995-1007.
- Rouse, H. L., & Fantuzzo, J. W. (2009). Multiple risks and educational well being: A population-based investigation of threats to early school success. *Early Childhood Research Quarterly, 24*(1), 1-14.
- Sabatelli, R. M., & Waldron, R. J. (1995). Measurement issues in the assessment of the experiences of parenthood. *Journal of Marriage and the Family, 57*(4), 969-980.
- Sattler, J. M. (1992). *Assessment of Children* (3rd ed.). Rv&Upd.
- Sattler, J. M. (2004). *Assessment of Children: WISC-IV and WPPSI-III Supplement*. (1st ed.).
- Schor, E. L., Abrams, M., & Shea, K. (2007). Medicaid: Health promotion and disease prevention for school readiness. *Health Affairs, 26*(2), 420-429.
- Seginer, R. (2006). Parents' educational involvement: A developmental ecology perspective. *Parenting, 6*, 1-48.

- Seginer, R., & Shoyer, S. (2012). How mothers affect adolescents' future orientation: A two-source analysis. *Japanese Psychological Research, 54*(3), 310-320.
- Shen, B., Reinhart-Lee, T., Janisse, H., Brogan, K., Danford, C., & Jen, K. L. C. (2012). African American preschool children's physical activity levels in Head Start. *Research Quarterly for Exercise and Sport, 83*(2), 168-174.
- Sheridan, S. M., Knoche, L. L., Edwards, C. P., Bovaird, J. A., & Kupzyk, K. A. (2010). Parent engagement and school readiness: Effects of the getting ready intervention on pre-school children's social-emotional competencies. *Early Education and Development, 21*(1), 125-156.
- Sheridan, S. M., Knoche, L. L., Kupzyk, K. A., Edwards, C. P., & Marvin, C. A. (2011). A randomized trial examining the effects of parenting engagement on early language and literacy: The Getting Ready Intervention. *Journal of School Psychology, 49*(3), 361-383.
- Smith, E. F. (1986). The Boehm Test of Basic Concepts: An English standardisation. *British Journal of Educational Psychology, 56*(2).
- Smith, E. F. (1986). The validity of the Boehm Test of Basic Concepts. *British Journal of Educational Psychology, 56*(3), 332-345.
- St. Clair-Thompson, H. L., & Gathercole, S. E. (2006). Executive functions and achievements in school: Shifting, updating, inhibition, and working memory. *The Quarterly Journal of Experimental Psychology, 59*(4), 745-759.
- Stoddard, S. A., Zimmerman, M. A., & Bauermeister, J. A. (2011). Thinking about the future as a way to succeed in the present: A longitudinal study of future orientation and violent behaviors among African American youth. *American Journal of Community Psychology, 48*(3-4), 238-246.

- Stotland, E. (1969). *The psychology of hope*. San Francisco: Jossey-Bass.
- Taras, H. (2005). Physical activity and student performance at school. *Journal of School Health*, 75(6), 214-218.
- Tolbert-Kimbrow, R., Brooks-Gunn, J., & McLanahan, S. (2011). Young children in urban areas: Links among neighborhood characteristics, weight status, outdoor play, and television watching. *Social Science and Medicine*, 72(5), 668-676.
- Tsushima, W. (1994). Short form of WPPSI and WPPSI-R. *Journal of Clinical Psychology*, 50(6), 877-880.
- Tucker, P. (2008). The physical activity levels of preschool-aged children: A systematic review. *Early Childhood Research Quarterly*, 23(4), 547-558.
- Vitiello, V. E., Greenfield, D. B., Munis, P., & George, J. (2011). Cognitive flexibility, approaches to learning, and academic school readiness in Head Start preschool children. *Early Education and Development*, 22(3), 388-410.
- Walker, D., Greenwood, C., Hart, B., & Carta, J. (1994). Prediction of school outcomes based on early language production and socioeconomic factors. *Child Development*, 65(2 Spec No), 606-21. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8013242>.
- Webster-Stratton, C., Reid, M. J., & Stoolmiller, M. (2008). Preventing conduct problems and improving school readiness: Evaluation of the Incredible Years Teacher and Child Training Programs in high-risk schools. *Journal of Child Psychology and Psychiatry*, 49(5), 471-488.
- Wechsler, D. (2002). *The Wechsler Preschool and Primary Scale of Intelligence (3rd edition): Technical and interpretative manual*. San Antonio, TX: The Psychological Corporation.

- Wechsler, D. (2012). Wechsler Preschool and Primary Scale of Intelligence™ - Third Edition (WPPSI™ - III). *Pearson Education: PsychCorp*.
- Westendorp, M., Hartman, E., Houwen, S., Smith, J., & Visscher, C. (2011). The relationship between gross motor skills and academic achievement in children with learning disabilities. *Research in Developmental Disabilities, 32*, 2773-2779.
- Welsh, J. A., Nix, R. L., Blair, C., Bierman, K. L., & Nelson, K. E. (2010). The development of cognitive skills and gains in academic school readiness in children from low-income families. *Journal of Educational Psychology, 102*(1), 43-53.
- Whittaker, J. E. V., Harden, B. J., See, H. M., Meisch, A. D., & Westbrook, T. R. (2011). Family risks and protective factors: Pathways to early Head Start toddlers' social-emotional functioning. *Early Childhood Research Quarterly, 26*(1), 74-86.
- Winsler, A., Hutchinson, L. A., DeFeyter, J. J., Bleiker, C., Manfra, L., Hartman, S. C.,... & Levitt, J. (2012). Child, family, and childcare predictors of delayed school entry and kindergarten retention among linguistically and ethnically diverse children. *Developmental Psychology, 48*(5), 1299-1314.
- Winter, S. M., & Sass, D. A. (2011). Healthy and ready to learn: Examining the efficacy of an early approach to obesity prevention and school readiness. *Journal of Research in Childhood Education, 25*(3), 304-325.
- Yamamoto, Y., & Holloway, S. (2010). Parental expectations and children's academic performance in sociocultural context. *Educational Psychology Review, 22*, 189-234.
- Yarrow, L. J., MacTurk, R. H., Vietze, P. M., McCarthy, M. E., Klein, R. P. & McQuiston, S. (1984). Developmental course of parental stimulation and its relationship to mastery motivation during infancy. *Developmental Psychology, 20*(3), 492-503.

- Zhang, Y., Haddad, E., Torres, B., & Chen, C. (2011). The reciprocal relationships among parents' expectations, adolescents' expectations, and adolescent achievement: A two-wave longitudinal analysis of the NELS data. *Journal of Youth and Adolescence, 40*, 479-489.
- Zucker, S., & Riordan, J. (1990). One-year predictive validity of new and revised conceptual language measurement. *Journal of Psychoeducational Assessment, 8*(1), 4-8.