

**PATERNAL INVOLVEMENT AMONG AFRICAN-AMERICAN FATHERS IN  
TWO-PARENT FAMILIES: INFLUENCES IN EARLY CHILD DEVELOPMENT**

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## **ABSTRACT**

**DARLENE MICHELLE HEAD-REEVES: Paternal Involvement among African-American Fathers in Two-Parent Families: Influences In Early Child Development**

(Under the direction of Lynne Vernon-Feagans)

The primary focus of this research project concerned the patterns and frequency of paternal involvement among resident African American fathers and the effect of involvement on young children's development. Using data from the Early Childhood Longitudinal Study – Birth Cohort, I examined involvement of co-resident African American and European American fathers in their infants' lives, evaluated how well the measures used to assess father involvement in the ECLS-B captured fathering across racial groups, and examined relationships between various dimensions of father involvement during infancy and children's subsequent development. Black fathers reported engaging in caregiving activities and being more affectively engaged with their child compared to White fathers. SEM analyses indicated that the measures of paternal involvement in the ECLS-B did not function similarly across ethnic groups, highlighting the need to evaluate the validity of paternal involvement measures across groups. SEM analyses showed no relationships between paternal involvement and cognitive development for children of co-resident Black fathers. However, among children of White fathers, paternal capital was significantly related to cognitive development. Paternal child care was positively associated with child engagement, attention and temperament while caregiving was inversely related to temperament and self-regulation of children of Black fathers. Child care was positively related to toddlers' temperament for children of White fathers. Finally, paternal capital and language/literacy activities were positively associated with engagement and attention, but paternal play was negatively related to these outcomes for children of White fathers.

## **DEDICATION**

This dissertation is dedicated to my father, Joe Louis Head (1944-2000). You supported me, encouraged me, and inspired me. I loved your enthusiasm for life, your down-to-earth attitude, and your strong sense of family. Most of all, I loved that you were always there for me. No matter how tough things would get, mistakes I made, and disappointments, I knew I could always count on you to be there. There are so many memories I have of you looking out for me –big things like putting me through college (thanks to Mom, too) and little things like having my favorite foods in the fridge when I came home to visit. Those memories sustain me when I miss you most. I know saying “I love you” was not in your comfort zone, but you must have told me a million times “you mean the world to me,” and I will remember those words as long as I live. Daddy, you truly inspired this dissertation, because fathers like you have been invisible in research and policy; and the world needs to know that there are African American fathers who quietly go about the business of being incredible dads day in and day out.

## **ACKNOWLEDGEMENTS**

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## CHAPTER I

### Statement of the Problem

Social scientists have long-studied the development of children in ethnic and racial minority groups. Drawing from diverse disciplinary traditions, researchers have investigated various factors and processes that contribute to or undermine ethnic and racial minority children's optimal development. In recent years, scholars have focused on the role that minority fathers play, or fail to play as some research literature suggests, in their children's development. Interest in minority fathers' involvement has been mirrored in the socio-political arena by policy mandates such as the Healthy Marriage and Responsible Fatherhood initiatives (ACF, 2007) which were grounded in empirical evidence documenting strong associations between family structure (i.e., married, two-parent families) and adaptive functioning across a wide range of developmental outcomes (McLanahan & Sandefur, 1994). Such policies have been directed towards African American<sup>1</sup> families because of higher rates of non-marital childbearing and single-mother-headed households and the implicit assumption that these structural markers are fundamentally tantamount to the absence of African American fathers in families (Haskins, 2009). Despite prevailing notions in social science, politics, and pop culture of the 'absent' Black father, however, some scholars have asserted that many African American fathers *have been*

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<sup>1</sup> The ethnic and racial designations, African American and Black and European American and White, respectively, are used interchangeably.

present and actively involved in their children's and families' lives but often have been invisible to those outside of the familial and community contexts in which these men have fathered in complex and multifaceted ways (Burton & Snyder, 1998; Connor & White, 2006). A primary goal of the current study was to build on extant research to enrich understanding of how African American fathers have been involved in the lives of young children and influence early child development.

Decades of research on the role of fathers in child development has provided persuasive evidence that fathers can and have played a formative role in children's functioning and well-being across developmental domains (Lamb, 1997, 2004). Significant increases in women's labor force participation as well as changes in patterns of family formation over the last few decades (e.g., increasing rates of mother-headed families and divorce) have invigorated interest further in understanding fathers' changing and expanding roles within families. As such, scholars have made significant conceptual advances in father research over the past decade (Day, 2003; Hawkins & Dollahite, 1997; Tamis-LeMonda & Cabrera, 2002). More specifically, scholars have shifted from characterizing fathering one-dimensionally as breadwinner or in terms of absence or presence in the home, to a greater appreciation of fathering as complex, multidimensional, and culturally-situated. These advancements have engendered a host of more nuanced research questions and hypotheses regarding the nature, variations, and consequences of fathering for young children (Lamb, 2004). For example, researchers have begun to explore how fathering has been interpreted and defined across racial, ethnic and

socioeconomic groups (Jarrett, Roy, & Burton, 2002; Roopnarine, 2004); the numerous roles that fathers have played within the family context, e.g. playmate and care provider (Christiansen & Palkovitz, 2001); and the interrelationships between various dimensions of fathering and developmental trajectories of fathers, mothers, and families, as well as children (J. H. Pleck, 1997).

Despite an ever-growing empirical research base and theoretical advances, however, there remains more to be learned about fatherhood and paternal influences on young children's development. In previous years, research participants primarily consisted of affluent and middle-class White families, while few studies included families of minority groups and diverse socioeconomic contexts to examine the meaning of fathering and consequences of father involvement for children. Scholars have begun to redress this limitation in the extant research by examining fathering among low-income, non-resident fathers (e.g., N. J. Cabrera, Mitchell, Ryan, Shannon, & Tamis-LeMonda, 2008; Coley, 2001; Coley & Chase-Lansdale, 1999; Coley & Hernandez, 2006). This has been a growing body of research, but has lacked studies of middle-class and two-parent African American families. An emphasis on European American, middle-class fathers from small convenience samples on the one hand and the focus on socially and economically disadvantaged, non-resident African American fathers on the other hand potentially engenders a biased picture of White families as higher functioning and Black families as beset by dysfunction and pathology. Although recent studies have debunked some myths about low-income and minority fathers' involvement, a literature base comprised largely of

studies of socially disadvantaged fathers by its very nature can perpetuate a deficit perspective of Black family life (Connor & White, 2006; Gadsden, 1999).

Current research has been limited also by lack of attention to the question of whether dimensions and processes of fathering that are salient in White, middle-class families are similar across ethnic and socioeconomic lines and whether these processes work in the same way. For example, fathers' resource contributions to the household and family have been linked to positive outcomes for children in middle-class European American families (Amato, 1998; Christiansen & Palkovitz, 2001). Are similar patterns and strength of association evident among families with African American fathers who historically have had lower income and education levels than European American fathers? Research scholars have moved the field forward by advancing multidimensional models of paternal involvement, but few studies have assessed whether such models function similarly across ethnic groups and whether predictive associations between paternal involvement and child outcomes are congruent in direction and strength across diverse groups.

Another important limitation of extant research has been the failure to account for both mothering and fathering simultaneously in models of fathers' contributions, taking a systems view of fathers' effects on children (for recent exceptions, see Pancsofar & Vernon-Feagans, 2006; Ryan, Martin, & Brooks-Gunn, 2006). While it has been widely acknowledged that fathering has occurred in a family context and that fathers have influenced children through family systems, many analytical models have focused on either mothers or fathers without assessing the relations between maternal and paternal factors (Amato,

1998; Parke, 2002). Excluding maternal factors in studies of paternal influences has made it difficult to determine if fathers have unique effects on children beyond maternal contributions.

Current research on fathers has been characterized also by an examination of fathers' impact on older children and adolescents, but comparatively fewer studies of African American fathers of infants and toddlers; methodological features such as small, non-representative samples; cross-sectional research design; and procedures and instruments developed and tested primarily with European American, middle-class families (Day & Lamb, 2004; Marsiglio, 1995; Marsiglio, Amato, Day, & Lamb, 2000).

In summary, while the extant research base has suggested that fathers have played important roles in children's development, research supporting this conclusion for African American fathers and their children in two-parent families has been limited. As recently as 2001, Coley stated

Although the assumption that fathers' involvement enhances children's development seems perfectly reasonable, there is actually relatively little evidence to support it, especially when considering low-income and minority fathers or fathers who do not reside with their children. (p. 749)

Research scholarship is needed to enhance understanding of the nature and effects of fathering in two-parent African American families for two important reasons. First, while single mother-headed households have been more prevalent among African Americans than two-parent households, the latter comprises a sizable minority of African American households and therefore is inherently worthy of study (ACF, 2009; Roopnarine, 2004). Secondly, research with this population can inform policies and interventions designed to promote marriage and father involvement among African Americans.

## **Study Goals**

Family systems and ecological theories of development, which have underscored the interplay of multiple domains and systems in contributing to children's optimal development, undergirded the current study. Guided by these theoretical frameworks, I utilized a nationally representative sample of children born in 2001 from the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B; Flanagan & West, 2004) to describe socio-demographic characteristics and involvement of the fathers in children's lives with a particular focus on co-resident African American fathers.

I hoped to achieve four major goals through this research project. To address the lack of scholarship focusing on African American fathers in two-parent families, my first goal was to present the types and frequency of involvement of co-resident African American and European American fathers in their infants' lives. Second, I wanted to evaluate how well the measures used to assess father involvement in the ECLS-B captured fathering across these racial groups. In doing so, I hoped to provide insight to the question of whether measures typically developed and administered with White, middle-class fathers can be used reliably with other racial groups. Third, I was interested in examining relationships between various dimensions of father involvement during infancy and children's subsequent development and further, exploring how similar or divergent the strength and direction of these relationships were across fathers' racial/ethnic group. Finally, I wanted to address some of the limitations in current fatherhood research. Unlike many studies, in this research project I explored paternal influences during infancy and toddlerhood with two-

parent African American families rather than families with older children and/or non-residential fathers. I assessed a longitudinal model of paternal influences on child outcomes, rather than a cross-sectional model, to specify directionality of effects. I used data that were drawn from multiple sources, which addressed the problem of shared method variance. Finally, I included select maternal variables in statistical models to reflect the idea that fathering is embedded in family systems and to evaluate fathers' influences on children's development beyond mothers' contributions.



## **CHAPTER II**

### **Literature Review**

Vigorous scholarship in recent decades has generated numerous substantive themes regarding fathers in the lives of their families and children. Of particular relevance to the current study are lines of inquiry that have explored the conceptualization and measurement of fathering and fathers' effects on families and children. In the first half of the literature review, I discuss theoretical and operational definitions of paternal involvement, followed by an examination of paternal involvement during infancy in two-parent African American families. I conclude this section by exploring why and in what ways paternal involvement might be different across racial/ethnic groups. In the latter portion of the literature review, I move to a discussion of paternal influences on children's development during the first two years of life and then conclude with my research questions and hypotheses.

#### **Conceptualizations of Paternal Involvement**

**Historical perspectives.** Historically, developmental research examined the role of women and mothers in young children's development. This approach reflected gender role prescriptions of fathers as breadwinners and mothers as keepers of hearth and family (Parke, 1996). To the extent that fathers and fathering were studied in the early to mid 20<sup>th</sup> century, the emphasis was on understanding the role of fathers in gender identity development, particularly of

sons (E. H. Pleck & Pleck, 1997). Moreover, prior to the groundbreaking work of Lamb and his colleagues in the mid 1980s (Lamb, Pleck, Charnov, & Levine, 1985), father involvement generally was viewed as a unidimensional construct; fathers were present or absent, good provider or deadbeat. Widespread social trends beginning in the 1960s to the present in women's labor force participation, divorce, family size, and non-marital childrearing sparked an interest in studying other aspects of fathering beyond economic provisioning and socialization of masculine sons.

**Tripartite framework of paternal involvement.** With the dramatic social changes of the 1960s as a backdrop, researchers sought to explore whether and how much fathers have been involved in their children's lives in light of women's changing roles in and outside the family. In the mid-80s, Lamb, Pleck, and colleagues (1985; 1987) proposed a tripartite typology of father involvement that set the stage for the burgeoning interest in father research by providing a framework that allowed researchers to assess quantity of father involvement relative to mothers and at the same time was multidimensional in nature, thus expanding simpler notions of father involvement. Lamb and his colleagues posited that father involvement can be characterized by three major dimensions: 1) engagement - direct interaction with the child in caregiving, play, and leisure activities; 2) accessibility - physical availability to the child; and 3) responsibility - taking responsibility for the care of the child, e.g. participating in decisions about child care and arranging for sick care (Lamb, et al., 1985, 1987).

Since its inception the tripartite typology has been widely used to examine types and frequency of father involvement in absolute terms as well as relative to mothers' involvement; although as Palkovitz (2002) noted, in practice most studies have focused narrowly on father-child interactions that are a subset of the engagement domain. Nonetheless, the three-pronged model has continued to be employed frequently in father involvement research (Bronte-Tinkew, Carrano, & Guzman, 2006; Bronte-Tinkew, Carrano, Horowitz, & Kinukawa, 2008a; Hofferth, 2003) and when the phrase 'paternal or father involvement' has been used in research, often it has referred to the three-part typology or a variant of the typology. Notably, the framework was one of the organizing principles for father involvement questions in three large-scale studies of early childhood – The Early Head Start National Research and Evaluation Project (EHS), the Fragile Families and Child Well-Being Study (FF), and the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B; Andreassen, Fletcher, & National Center for; N. Cabrera et al., 2004). Each of these studies integrated a range of interview and/or questionnaire items that reflected the three domains of the tripartite framework. In the current study, I incorporated questionnaire items in the ECLS-B father survey that tapped the engagement and responsibility domains to operationalize father involvement.

**Cognitive, affective, and behavioral domains of fathering.** While the model proposed by Lamb and colleagues has been a useful tool for understanding and measuring important dimensions of father involvement, many scholars have suggested that there are aspects of fathering and other ways of thinking about fathering that have not been reflected adequately by the

tripartite framework. Researchers conducting work in this area often have used different terminology to describe their research (e.g., generative fathering and fatherhood) and have focused on areas such as the quality of father-child interactions rather than quantity of engagement, fathers' personal growth and contributions to the next generation, and psychological and emotional aspects of fathering (Dollahite & Hawkins, 1998; Hawkins & Dollahite, 1997; Hawkins & Palkovitz, 1999; Roy, 2004). For example, Palkovitz (1997) described 15 categories of parental involvement across at least three domains of functioning: cognitive, affective, and behavioral. The behavioral domain has been captured by Lamb and colleagues' typology (1985), particularly the engagement dimension and has included activities and behaviors such as caregiving (e.g., bathing and feeding), child-related household work (e.g., cooking and laundering), and shared activities (e.g., playing games and eating meals together). Other dimensions of fathering that fall under the rubric of cognitive and affective domains have not been captured as well by the tripartite model. For example, thought processes such as hoping, worrying, or dreaming about one's child; beliefs about one's role as father; and planning for the future reflect cognitive processes. Affective processes can include sense of commitment and responsibility to the child and feelings of love, affection, and devotion for one's child. Affective and cognitive processes often are not readily observed and measured, but are salient and meaningful in the eyes of parents. The ECLS-B study used in the current research project was not particularly well-suited to exploring affective and cognitive processes in great depth given the use of a survey questionnaire for assessing father involvement. However, a few items

that reflected Palkovitz' expanded definition of father involvement were included in the father survey of the ECLS-B (e.g., items probing perception of fatherhood, fathers' beliefs about fathers' roles and how frequently fathers think and talk about his child); these constructs were incorporated in the current research project (Palkovitz, 1997).

**Paternal capital as involvement.** Early formulations of fathering emphasized the fathers' role as breadwinner to the exclusion of other important roles that fathers have played in families, such as caregiver, monitor, disciplinarian, etc. As the previous discussion suggests, an *exclusive* focus on the material resources fathers bring to families has not captured the complexity of fathering; however, fathers' financial provisioning in addition to human and social capital have continued to be important aspects of fathering (Christiansen & Palkovitz, 2001). In a review of literature on paternal influences supplemented with analyses of a 12-year longitudinal study of parents and young adult offspring, Amato (1998) examined the role of fathers' financial capital (paternal earnings), human capital (paternal education), and social capital (co-parental relationship). Amato reported that paternal education is positively associated with a host of academic (e.g. grade point average, cognitive and achievement test scores, and school attendance) and socio-emotional outcomes (e.g. self-esteem, life skills, and social competence). Similarly, in a study of African American fathers' contributions to their 3 year-olds' development, Black, Dubowitz, & Starr (1999) found that fathers' role as financial provider contributed significantly to children's language skills and behavioral problems. Christiansen and Palkovitz (2001) argued that providing should be considered a

form of paternal involvement. Asserting that the “good provider” role still matters, Christiansen and Palkovitz (2001) noted that in the research literature, providing is characterized narrowly in economic terms, but “men experience providing as multi-dimensional and as having affective and cognitive components as well” (p. 91). Further, these researchers conceived of providing as overlapping forms of financial, human, and social capital. Traditionally, providing has been viewed as financial capital but could also be seen as human capital in the sense of fathers’ modeling a work ethic, and social capital by relationships derived from fathers’ employment. The focus on paternal breadwinning roles has decreased as researchers have explored other roles that fathers have enacted in children’s lives; however, the studies just reviewed have suggested that paternal contributions in the form of financial, human, and social capital continue to be important resources that fathers contribute to families and children.

In summary, current perspectives of paternal involvement generally have emphasized the multi-dimensional nature of involvement and various avenues of research have developed since the mid-1980s that have reflected in varying degrees the complexity of fathering. Some scholars have focused on behavioral domains captured by the Lamb, Pleck, Charnov and Levine’s (1985; 1987) tripartite typology; these scholars ask “what do fathers do and how much do they do?” Other researchers have explored cognitive and affective aspects of fathering; these scholars often ask such questions as “what does fathering mean, how do fathers think and feel about their roles, and what thoughts and feelings constitute involvement?” Others have examined fathering in diverse

social contexts with an emphasis on social, cultural, and economic influences on fathering. The field of fatherhood scholarship continues to expand into new conceptual arenas. Next, I discuss one area of fatherhood research that has not been studied extensively – fathering among co-residential Black fathers.

### **Paternal Involvement in Two-Parent African American Families**

As noted in the introduction, researchers have studied African American fathers of infants and young children, which can be seen in the growing body of research addressing child development in “fragile families,” i.e., low-income or poor, minority, and single-parent families (McLanahan, 2009). In contrast, paternal involvement during infancy in two-parent African American families has not been widely studied. Findings from smaller-scale studies have shown that co-resident Black fathers have shared caregiving and household tasks with mothers, but like fathers from other ethnic groups, have spent less time in various child care and household activities relative to mothers. Hossain and Roopnarine (1993) conducted a study of 40 African American dual-earner families with infants in which the authors examined relative involvement of mothers and fathers in household labor and child care. They found that fathers in full-time dual-earner households spent 35% as much time as mothers in primary caregiving and fathers spent 50% as much time in primary caregiving in households in which the father worked full-time and the mother worked part-time. In an extensive observational study, Ahmeduzzaman (1992) and Roopnarine, Fouts, Lamb, and Lewis-Elligan (2005) examined social experiences of infants in 62 two-parent African American families across low, middle, and high socioeconomic (SES) levels. In this study there were no significant

differences in paternal availability across the three SES groups, however fathers in the low SES group carried their infants more than fathers in the middle and high SES groups. When examined as a proportion of caregiver presence, the authors reported that fathers vocalized more and showed more affection to infants than mothers. In a follow-up study, Fouts, Roopnarine, and Lamb (2007) found that infants in the high-SES group received more verbal affection and soothing responses from their parents than infants in the low and middle SES groups. In a much older study of 54 middle-income married Black fathers, Cazenave (1979) found that black fathers reported frequent engagement in various paternal activities. Over two-thirds of the respondents reported often engaging in play activities with their baby, 49% often took children to the doctor or dentist, 40% changed diapers, and 30% did babysitting often.

The above studies consisted of small, racial and ethnic homogenous samples that allowed for more detailed exploration of fathering in two-parent African American families. Next I describe larger-scale studies with diverse national samples in which racial and ethnic differences in paternal involvement have been examined.

### **Racial/Ethnic Differences in Paternal Involvement during Early Childhood.**

Studies exploring racial/ethnic difference in paternal involvement during infancy and toddlerhood have shown somewhat mixed findings with results dependent on the specificity with which paternal involvement is defined. Studies assessing overall involvement or engagement have shown few differences between African American and European American fathers. In contrast, studies



in which particular aspects of fathering such as household work, caregiving, and literacy activities were examined have shown Black-White differences.

Hofferth (2003) used the Panel Study of Income Dynamics (PSID)<sup>2</sup> to explore racial/ethnic differences in father involvement in a large sample of 1,229 two-parent families with children ranging in age from 0 to 12 years. After controlling for child and household characteristics, there were no significant differences between Black and White fathers in the number of overall hours a father was engaged with his child. White fathers reported more warmth and less control compared to Black fathers controlling for child, household, and demographic characteristics. Yeung, Sandberg, Davis-Kean, and Hofferth (2001) also used the Panel Study of Income Dynamics (PSID;  $N = 1,761$ ) to examine number of hours fathers were engaged and accessible to children on weekdays and weekends in six categories of involvement: personal care, play and companionship, social activities, achievement related activities, household tasks, and other activities. Black, White, and Latino fathers did not differ significantly in number of hours involved on weekdays in any of the involvement categories. On weekends, Black fathers spent less time in achievement activities, personal care, and play/companionship than White and Latino fathers. Black fathers spent significantly more time in household activities on weekends than White and Latino fathers.

In a recent study of 204 ethnically diverse families (Mexican, Dominican, and African American), Tamis-LeMonda, Kahana-Kalman, and Yoshikawa (2009) examined paternal involvement in the prenatal period until children were 2 years

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<sup>2</sup> Although the PSID studies included children up to 12 years of age, they are reviewed here because approximately one-fourth of the sample children were 2 years old or younger at the time of the study.

old. Mothers recorded father engagement in caregiving, social interaction, and frequency of father-infant outings in a time diary when the infant was 1 and 6 months old. At 14 months of age, mothers reported the amount of time the father spent with the child, eating meals with the child, and type and frequency of activities with the child. The authors found no ethnic differences in prenatal involvement; fathers had uniformly high scores on prenatal involvement across groups. At 14 months, there were no significant differences across the three groups in the total time spent with the child or overall shared activities; however Mexican fathers ate meals with the child more frequently than African American and Dominican fathers. In the shared activity of telling stories, African American and Dominican fathers told stories to the child more frequently than Mexican fathers.

Using data from the Early Head Start Research and Evaluation Project, Duursma, Pan, and Raikes (2008) investigated predictors and outcomes of paternal involvement in shared book-reading with toddlers in a sample of 577 to 639 low-income residential fathers. When children were 24 and 36 months old, more White fathers reported reading with their child daily (17%) compared to African American (5%) and Hispanic (7%) fathers. Also using data from the Early Head Start study, Shears (2007) investigated paternal caregiving, physical play, social skills, and cognitive growth fostering in a sample of 485 co-resident fathers and father figures of two-year old children. Shears found that African American fathers reported more frequent caregiving, social skills, and cognitive growth fostering activities than European American and Latino fathers controlling for education and income. In another national study, the NICHD

Study of Early Child Care (2000), fathers reported caregiving activities with children ranging in age from 6 to 36 months. In this study, fathers' ethnicity was not related to paternal involvement in caregiving.

All of the above studies compared average or proportional differences in frequency of paternal involvement activities across racial/ethnic groups. In a study examining predictors of paternal involvement with preschool-aged children, Coley and Hernandez (2006) postulated a multidimensional model of father involvement and tested for measurement invariance across European American, African American, and Latino fathers. Multi-group measurement model equivalence analyses showed that the model was invariant across the three groups. This is one of the few studies in which the validity of paternal involvement measures and constructs has been assessed for use across diverse ethnic groups.

The foregoing discussion highlighted several ways in which paternal involvement have corresponded and varied across African American and European American fathers during early childhood. Next I consider factors that have contributed to similarities and differences in the enactment of fathering across racial groups.

**Contributing factors in racial/ethnic differences in paternal involvement.** Several scholars have critically analyzed fathering from an African American perspective with a keen focus on larger socio-historical, structural, and macroeconomic forces that impinge on fathering in the African American community (e.g., Anderson, 1990; e.g., Burton & Snyder, 1998; Jarrett, et al., 2002; Wilson, 2003). Others have focused more on cultural

influences on paternal involvement (Bowman, 1990, 1993; Hofferth, 2003). Few of these empirical and theoretical works addressed paternal involvement during infancy in two-parent Black families per se, but they constitute an important body of work examining racial/ethnic differences in fathering and were included here as a guide for considering the processes that have contributed to variations in fathering among African American and European American fathers.

***Structural and socio-historical factors.*** Through extensive ethnographic work, social scientists have explored mechanisms through which structural and macroeconomic forces have hindered fathering in African American families. Addressing Black fathers in the inner-city, Wilson (2003) powerfully argued that the structural realities of limited work opportunities for African American males, many of whom lack the requisite skills for high-paying employment in an information and technological age, have economically marginalized many of these men and have been a major factor in declining marriage rates in the inner-city. Wilson (2003) asserted that fatherhood norms “include an obligation to provide adequate and consistent material support for [one’s] spouse and children” (Wilson, 2003; pg. 27). For many inner-city fathers, pervasive joblessness has impeded the ability to achieve the provider role, which in turn has undermined fathers’ confidence and self-efficacy and potentially exacerbates tensions in the father-mother partner relationship. This cycle can lead fathers in the inner-city to disengage from active and consistent involvement with the children in the fathers’ lives.

Socio-historical and structural disparities in education, employment, and income can play out in paternal involvement among African American dads in

other ways as well. Bowman (1990; 1993) posited a theoretical model grounded in provider role strain theory in which he linked economic marginality, adaptive cultural resources, and family life quality of Black husband-fathers. In particular, Bowman (1993) argued that economic marginality deriving from structural and macroeconomic forces has contributed to provider role strain among Black fathers. Adaptive cultural resources within the Black community such as kinship bonds and para-kin networks, flexible family roles, religious orientations, and ethnic coping orientations have evolved in response to economic inequality, which can attenuate the harmful effects of economic disparities. Bowman (1990) further postulated that fathers' perceptions of provider role barriers and the extent to which fathers' sense of male identity is tied to being a good provider may distinguish maladaptive from adaptive coping behaviors. Economic marginality may lead fathers who believe being a good provider is unattainable and that achieving this role is what it means to be a man, to disengage from their children. In recent work, researchers have found that African American fathers endorse other roles as equally or more important than being a provider, such as caregiver, disciplinarian, role model, and co-provider (Hamer & Marchioro, 2002). Such fathers may be more likely to be actively involved in the face of financial hardship and difficulty being the economic provider.

***Cultural norms and ideals.*** Differences in paternal involvement may derive from variations in cultural beliefs and values as well. For example, cultural influences on paternal involvement among Black fathers may be seen in the importance of social fathers and extended family and fictive kin networks in African American communities (Garcia-Coll & Pachter, 2002 Stack & Burton,

1993). Other males in the extended family and fictive kin networks, such as grandfathers, uncles, brothers, and partners may take on fathering roles of children who are not their biological offspring. Fagan (2000) and others have asserted that variations in parenting are adaptations to the social and political environments in which parents raise their children. Social fathering may be one such example of African American communities responsively adapting to meet the needs of children who may not have connections with their biological fathers due to non-marital childrearing and other societal factors such as higher unemployment, higher incarceration rates, and higher death rates (Sudarkasa, 1997).

In addition to providing social fathers, extended kin networks and non-family systems often have operated in African American and other ethnic minority communities to provide a web of support for families and a child-rearing system that has represented a viable alternative to the two-parent nuclear family more common among European American families. In such a framework, responsibility for raising children may be spread among multiple individuals in the extended kin network. The role of members of the nuclear family unit, i.e. mom and dad, may be moderated by the availability of other caregivers in the extended family system.

Cultural norms and values can explain similarities in paternal involvement across Black and White fathers. Staples (1991) has suggested that many African Americans endorse majority-group cultural values of traditional two-parent families. He hypothesized that there is a cognitive dissonance of the traditional family form that many African Americans espouse and the ability to enact that

ideology in the face of economic barriers. However, when there are minimal negative social conditions, "...family ideology prevails" (Staples, 1991, pg. 34). This would suggest that in the context of the Black middle-class where economic pressures are less pronounced, African American paternal involvement may be very similar to involvement in White, middle-class families.

In summary, it would be surprising, perhaps, to not find variations in paternal involvement across African American and European American fathers given the likelihood of substantial differences in the social, cultural, and economic experiences of these fathers. However, there is great range at the individual level within racial/ethnic groups in socio-cultural and socioeconomic situations and the literature reviewed would seem to suggest that the more divergent fathers' experiences are, the more distinct their enactment of fathering would be and conversely, the more similar fathers' experiences are, the more congruent fathering might be across groups.

### **Paternal Influences on Young Children's Development**

A major impetus of paternal involvement research has been the goal of understanding fathers' contributions to children's development. Here, I move beyond conceptualization and assessment of paternal involvement to a consideration of paternal influences in early child development.

As stated earlier, a decades-long tradition of research has explored fathering and children's development. Notwithstanding the limitations of this body of research as described previously, there has been considerable evidence that fathers can be powerful influences in children's lives. A brief review of research on the effects of paternal involvement in early childhood is presented

below, followed by a review of studies of paternal influences on infants and toddlers in African American families.

**Fathers' contributions to cognitive and socio-emotional development.** Several small-scale older studies found that father involvement during infancy and toddlerhood enhanced young children's cognitive, social, and emotional development and well-being (Clark, 1978; Wachs, Uzgis, & Hunt, 1971). Further, recent reviews of the literature have pointed to the conclusion that various dimensions of fathering – involvement, quality of father-child relationship and interactions, financial contributions, and provision of resources – can convey advantages for children's cognitive development and academic achievement, social competence, and psychological well-being from infancy through young adulthood (Marsiglio, et al., 2000; Parke, 1996; J. H. Pleck, 1997). However, researchers have noted important caveats to the conclusion that "positive involvement is generally beneficial to children" (Marsiglio, et al., 2000, p.1183). Much of the research conducted through the late 1990s has been characterized by a single data source, which may contribute to shared method variance; failure to account for maternal parenting or the mother-child relationship when examining fathers' influences; and a reliance on correlational studies in which the directionality of effects has been ambiguous. Relatively fewer studies had been conducted with fathers of infants and, as noted previously, the core of this body of literature was grounded in samples of White, middle-class families.

In the past decade research scholars have made significant progress in addressing these issues and some recent studies have found small to moderate



relations between early paternal involvement and infants' and toddlers' cognitive and socio-emotional development. For example, in a study of 350 participants, Mezulis, Hyde, and Clark (2004) examined whether father involvement moderated the effect of maternal depression during a child's infancy on child behavior problems in kindergarten. The authors found that fathers' self-reported warmth and control interacted with the quantity of time fathers spent caring for the infant to moderate the impact of maternal depression on child internalizing behaviors in kindergarten. This study suggested that paternal involvement during infancy may have a long-term impact on children's outcomes particularly when maternal parenting is adversely affected by depression. With important maternal and paternal variables considered simultaneously and a longitudinal design, this study exemplified the progress researchers have made in improving methodological limitations of older studies. However, 93% of the study participants were White, thus it is unclear whether these results would be found in samples of racial/ethnic minorities.

In other recent studies, many of which have been conducted with data from the Early Childhood Longitudinal Study – Birth cohort and Early Head Start studies, researchers have examined the impact of early paternal involvement on child development from toddlerhood to kindergarten entry controlling for or in concert with maternal variables. Some of these studies included research participants from racial/ethnic minority groups, albeit largely low-income families and accounted for maternal influences, but few examined differences or similarities in patterns of relationships between paternal involvement and child outcomes across racial/ethnic groups.

Using Early Head Start Father Studies data, Martin, Ryan, and Brooks-Gunn (2007) examined the joint influence of maternal and paternal parenting behaviors and quality with children aged 2 to 5 years old on cognitive outcomes at 5 years of age. The sample consisted of 343 co-resident fathers of whom 60% were White, 19% Black, 16% Hispanic, and 5% other races. Martin and colleagues (2007) found that children of highly supportive fathers obtained higher scores on math and language measures and children of unsupportive-negative fathers had lower math and language scores.

Duursma, Pan, and Raikes (2008) examined effects of low-income fathers' shared book-reading with their 2-year olds on cognitive development and receptive and expressive vocabulary at 3 years. The study sample was drawn from Early Head Start program participants and consisted of 639 co-resident fathers at 24 months (51% White, 27% Black, 18% Hispanic) and 577 co-resident fathers at 36 months (61% White, 30% Black, and 5% Hispanic). Father-child shared book-reading at 24 months, father ethnicity and primary language, and child cognitive scale scores at 24 months were significant predictors of child cognitive scores at 36 months. Children whose fathers read to them daily, spoke English as the primary language, and were White, on average, had higher cognitive scale scores at 3 years of age. Father-child shared book-reading did not significantly predict receptive and expressive vocabulary at 36 months.

Cabrera, Shannon, and Tamis-LeMonda (2007) summarized findings across three studies in which they had examined effects of paternal supportiveness and intrusiveness (observed in father-child interactions), father

education, and family income on their children's cognitive and socio-emotional development at 24, 36, and 64 months (pre-K). The study sample included 1,685 families at 2 and 3 years and 2,115 families at pre-K. The majority of fathers were White in each of the studies reviewed (60%, 60%, and 51%, respectively). Higher paternal education was significantly related to a range of child outcomes at each time point – emotion regulation at 24 and 36 months, mental scale scores and vocabulary at 36 months, and letter-word recognition, problem solving skills, and vocabulary at 64 months. Family income was significantly related to engagement at 36 months, emotion regulation at pre-K and all cognitive outcomes at pre-K. Paternal supportiveness and intrusiveness also were significantly related to several child outcomes at 24 to 64 months. Father supportiveness was modestly related to cognitive outcomes at 2 and 3 years ( $p < .06$ ), but not at pre-K and significantly predicted emotion regulation at 2-years controlling for paternal education, family income and maternal engagement. Father intrusiveness was positively related to orientation-engagement at 2 years and negatively related to emotion regulation at 2-years and vocabulary at pre-K.

Shannon, Tamis-LeMonda, and Cabrera (2006) interviewed and observed 74 fathers with their infants at 8 and 16 months. They examined both concurrent and predictive associations between fathers' responsiveness and negativity and infants' mastery and social-communicative abilities. Analyses of concurrent relationships showed that paternal responsiveness at 8 and 16 months was positively related to infants' social-communication at 8 and 16 months respectively. They reported a marginal predictive relationship ( $p = .07$ )

between paternal responsiveness at 8 months and infant sociability at 16 months controlling for infant age and infant scores at 8 months.

Bronte-Tinkew, et al. (2008a) used the Early Childhood Longitudinal Study – Birth cohort (ECLS-B) to examine concurrent associations between resident father involvement and two infant outcomes – babbling and exploring objects with a purpose. The study sample included all 6,270 co-resident fathers of whom 63% were non-Hispanic White, 8% non-Hispanic Black, 23% Hispanic, and 5 % other races/ethnicities. Controlling for a range of paternal, maternal, and child characteristics; fathers’ physical care, warmth, and cognitive stimulation significantly reduced the odds of a delay in babbling and exploring objects. Paternal nurturance was not significantly related to either infant outcome.

In another study using data from the ECLS-B, Cabrera, Shannon, West, & Brooks-Gunn (2006) examined father engagement in literacy, caregiving, and physical play in relation to Latino infants’ overall mental development. The study sample was comprised of 1,099 Latino infants, mothers, and fathers. The study authors found no association between father engagement and infant scores.

**African American fathers and young children’s development.** A few studies have explored paternal influences of African American fathers in young children’s development. Results from this small set of studies on the impact of fathering on young children’s cognitive and social emotional development were mixed. In a sample of 54 African American families with children aged 1 to 3 years old, Kelley, Smith, Green, Berndt, and Rogers (1998) examined relations between children’s development and paternal sensitivity, paternal attitudes

about restrictiveness, and paternal attitudes about warmth. Paternal sensitivity, assessed through observation of father-child free play, was positively related to children's social and motor skills. Fathers' self-reported attitudes about restrictiveness in childrearing was negatively related to toddlers' communication skills, daily living skills, social skills, motor skill, and cognitive development. Self-reported paternal attitudes about warmth were not significantly related to cognitive development or any of the socio-emotional outcomes measured.

In a larger study, Black, et al. (1999) examined cognitive development, socio-emotional development, and the home environment of 175 three year-olds in low-income African American families. Paternal nurturance (assessed through free play observations) and economic contributions predicted higher receptive language scores. Father involvement, measured through fathers' self-report of child-care and household responsibilities, was not significantly related to cognitive development, socio-emotional functioning, or to the quality of the home environment.

Fagan (2000) explored variations in parenting styles and paternal child care involvement of 73 African American and Puerto Rican American parents. He also examined relations between parenting styles and paternal child care involvement with the social competence of children enrolled in Head Start. Contrary to his hypothesis, Fagan (2000) found that greater paternal involvement in caregiving was negatively related to teachers' rating of child social competence for Puerto Rican fathers and not significantly for African American fathers.

In a large ethnically diverse sample of 985 low birth weight preterm infants, Yogman, Kindlon, and Earls (1995) assessed the effects of father involvement on cognitive and behavioral outcomes of infants followed longitudinally from birth to 36 months of age. Yogman, et al. (1995) reported that high levels of father involvement as indexed by maternal report of involvement in play and caregiving predicted higher IQ scores for the African American subsample only. In contrast, father involvement did not predict behavioral problems in any of the racial/ethnic groups in the study.

In summary, the bulk of paternal involvement research had been conducted with White middle-class families prior to the last decade and this research consistently, although not uniformly, has documented relations between various dimensions of involvement and child outcomes. Researchers have made great strides in the last decade in paternal involvement scholarship by including more socioeconomically and ethnically diverse samples and by addressing methodological issues. The growing body of work from more recent studies has shown predictive relationships between early paternal involvement and child outcomes. Associations have been small to modest and some studies have not found significant relationships between paternal involvement and child outcomes at all. Few studies have examined patterns of associations across racial/ethnic groups and there continues to be a paucity of research with co-resident African American fathers, particularly with very young children.

### **Research Questions and Hypotheses**

Guided by family systems and ecological theories of human development, I addressed the following questions in this study.

1) In what ways and to what extent are two-parent, co-residential African American and European American fathers involved in their infants' lives?

Previous research has shown variation across co-resident Black and White fathers in particular aspects of paternal involvement, but less so in global assessments of involvement. In some previous studies, co-resident European American fathers have been found to engage in literacy, achievement-related, or cognitively stimulating activities more frequently than co-resident African American fathers. In contrast, in some studies, African American fathers were found to engage in household related tasks and caregiving more frequently relative to European American fathers. I expected to find similar patterns of variation in paternal involvement depending on the specific aspect of involvement being considered.

2) Does a multi-dimensional model of paternal involvement across six domains of involvement function similarly for African American and European American fathers?

There is little guidance on this question in extant research. I am currently aware of only one study in which the researchers specifically assessed measurement invariance of a multi-dimensional model of early paternal involvement across ethnic groups (Coley & Hernandez, 2006). The model was shown to function comparably across Latino and African American fathers; however the groups evaluated were both racial/ethnic minorities and the finding of invariance may not extend to comparisons of racial minority and majority groups. Given the dearth of research addressing this issue, I did not specify a directional hypothesis.

3) Does paternal involvement during infancy have a unique effect on children's cognitive and socio-emotional development beyond paternal capital resources, maternal factors, and child covariates?

Extant research relevant to this question has shown mixed findings, particularly when effects of paternal involvement during infancy on subsequent development have been examined. Moreover, studies that have included co-resident African American fathers typically have not examined predictive associations across racial/ethnic groups. Still, taking a broad view of decades of research with two-parent White middle-class families, which have consistently shown associations between various aspects of paternal involvement and child outcomes, in tandem with Staples' (1991) hypothesis that Black middle-class families may share similar cultural values regarding family life, I expected to find some predictive associations in the current study. More specifically, I expected that particular dimensions of paternal involvement would be associated with particular developmental domains, e.g., paternal engagement in cognitively stimulating activities such as reading stories would predict cognitive development.

4) Are predictive relationships between paternal involvement and child cognitive and socio-emotional outcomes comparable across African American and European American fathers?

As discussed previously, some current research has shown that White fathers have engaged in achievement-related activities more often relative to Black fathers, while Black fathers have engaged in caregiving activities more often than White fathers. It may be that particular domains of involvement are



more salient in certain groups in that fathers may invest more in the domains that they value and are most skilled. To that end, I expected predictive relationships between paternal involvement and child outcomes to be stronger for the domains that previous research has shown to be more prominent among Black and White fathers.

## **CHAPTER III**

### **Method**

#### **Early Childhood Longitudinal Study-Birth Cohort**

The current research study entailed secondary data analysis of the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B) sponsored by the U.S. Department of Education and other federal agencies (Nord, Edwards, Andreassen, Green, & Wallner-Allen, 2006). The ECLS-B was a longitudinal study of the home, family, childcare, and educational experiences of a nationally representative sample of children born in the United States in 2001. A multi-method, multi-source study, the ECLS-B provided data in four substantive areas: 1) children's health status and well-being from birth through the first 6 years of life, 2) children's physical, cognitive, social, and emotional development over early childhood, 3) children's transitions into and out of early care and education settings and into formal school at kindergarten and first grade, and 4) children's school readiness. A range of instrumentation was used in the ECLS-B to collect information across these substantive themes including birth certificates; computer-assisted personal interviews (CAPI) and self-administered questionnaires of primary and other caregivers; direct child assessments; and observations of children at home and in child care settings. The sample was followed prospectively from birth through first grade and data were collected at five time points – when children were approximately 9-months old (2001-02), 2-

years old (2003-04), preschool-aged / 4-years old (2005-06) and at kindergarten entry (fall 2006). A follow-up data collection was conducted in the fall of 2007 for approximately 25% of the sample that had not yet entered kindergarten by the 4<sup>th</sup> data collection wave or who were repeating kindergarten in the 2007-08 school year. The current research project used data collected from the first two waves of the study – 9-months/baseline and 2-years of age – to examine children’s cognitive and socio-emotional development in the first two years of life in relation to paternal involvement. Sources of data included the parent interview (CAPI) completed by biological mothers at both time points, the resident father questionnaire (RFQ) completed at baseline, and direct child assessment and observations at both time points.

**ECLS-B sample.** The ECLS-B employed a clustered, list frame design to select a nationally representative probability sample of children born in 2001 in the United States. The target population for the ECLS-B included all children born in the U.S. in 2001, but excluded children born to mothers under 15 years of age, children who died before the baseline assessment at 9-months, and children who were adopted before the baseline assessment. Using criteria defined by the National Center for Health Statistics (NCHS), 96 primary sampling units (PSU) defined as counties or groups of contiguous counties were identified for the study. Registered births within the PSUs (i.e. birth certificates) were sampled from the NCHS vital statistics system across 36 strata defined by child race, birth weight, and plurality. The core sampling frame of the ECLS-B consisted of approximately 14,000 births sampled from birth certificates. The target sample was reduced by non-response; for example, respondents could

not be located, refused to participate or could not be in the study for other reasons such as death or adoption of the focal child. At an overall weighted response rate of 74.1 percent, the final sample for the ECLS-B study consisted of 10,688 completed cases for the 9-month data collection (Nord, et al., 2006).

**Analytic sample.** To conduct the current research study, the following criteria were used to determine the analytic sample: 1) African American or European American father of the focal child; 2) fathers who co-resided with his spouse/partner and the focal child at baseline as reported by mothers; 3) fathers who completed the resident father questionnaire at the 9-month data collection; 4) fathers who were identified as the biological father by the child's mother; and 5) child outcome data available from the 2<sup>nd</sup> wave of data collection. Applying these criteria, the analytic sample for this study consisted of 3,770 children and their co-resident African American ( $n = 464$ ) and European American fathers ( $n = 3306$ ).

**Resident father non-response.** A substantial number of co-resident fathers did not complete the resident father questionnaire (RFQ). Among resident fathers, 300 Black fathers and 796 White fathers did not respond to the RFQ. Demographic characteristics of RFQ non-respondent fathers was collected from the primary respondent (all biological mothers for the current study) which allowed comparisons of co-resident fathers who completed the RFQ to those who did not. RFQ respondents and non-respondents were compared within racial groups (African American and European American) to determine if they differed significantly on demographic characteristics (see Table 1 for descriptive statistics). Black fathers who completed the RFQ were remarkably similar to

Black fathers who did not complete the questionnaire. One-way analysis of variance comparisons indicated no significant mean differences on age ( $F(1, 90) = .277, p = .635$ ), employment status ( $F(1, 90) = .514, p = .475$ ), occupational prestige ( $F(1, 88) = .826, p = .366$ ), or household income ( $F(1, 90) = .080, p = .777$ ). Likewise, crosstab analyses for two dichotomous variables, poverty status (*at or above poverty* or *below poverty threshold*) and marital status (*married* or *not married*) also indicated no significant differences between African American fathers who completed the RFQ and those who did not complete it ( $F(1, 68) = .015, p = .904$  and  $F(1, 68) = 2.151, p = .147$ , respectively). African American RFQ respondents were found to differ in one respect from non-respondents – the former completed more schooling on average than non-respondents ( $F(1, 90) = 12.895, p \leq .001$ ).

In contrast, European American fathers who completed the Resident Father Questionnaire were strikingly different from European American RFQ non-respondents. On average, White RFQ respondents completed more schooling ( $F(1, 90) = 76.577, p < .001$ ); worked more ( $F(1, 90) = 6.917, p < .01$ ) and worked at higher level jobs ( $F(1, 88) = 22.051, p < .001$ ); and had higher household income ( $F(1, 90) = 41.282, p < .001$ ) than White RFQ non-respondents. Further, European American fathers who did not complete the RFQ were nearly twice as likely to live in poverty ( $F(1, 90) = 24.537, p < .001$ ) and less likely to be married ( $F(1, 90) = 43.675, p < .001$ ) than White fathers who completed the RFQ. European American RFQ respondents and non-respondents did not differ significantly in age ( $F(1, 90) = 0.633, p < .428$ ). See Table 1 for comparisons.

## **Measures and Analysis Variables**

The variables used in the present study were taken from the ECLS-B Longitudinal 9-Month-Two-Year Restricted-Use Data File which contained data from the various instruments used in the ECLS-B study (e.g. Parent CAPI, Resident Father Questionnaire). The data file included single-item variables as well as derived and composite variables that were created and added to the data file to facilitate analysis of the survey data. As described below, the current study incorporated single-item and composite variables available in the data file as well as composites derived by the author for this research project. Tables 2, 3, 4, and 5 provide summary statistics of the variables described below by fathers' race. Table 2 shows descriptive statistics of paternal socio-demographic and involvement variables. Fathers' beliefs and attitudes about fathering are presented in Table 3. Maternal parenting variables and control variables are shown in Table 4 and child outcomes summary statistics are shown in Table 5.

### **Paternal Capital and Socio-demographic Characteristics.**

**Father's race/ethnicity.** Mothers identified the co-resident father's race/ethnicity in the parent interview (CAPI). Mothers indicated whether the resident father was a member of one or more of 15 race categories. Mothers' responses were used to create a race/ethnicity composite variable for resident fathers with eight categories (composite X1HFRACEvariable available in the ECLS-B data file). Cases coded 1 (*White, non-Hispanic*) or 2 (*Black or African American, non-Hispanic*) were selected for the analysis sample.

**Educational attainment.** Fathers reported the highest grade or year of school completed in the resident father questionnaire. Nine response categories ranged from 1 (*8<sup>th</sup> grade or below*) to 9 (*Doctorate or professional degree*).

**Employment Status.** Resident father's employment status was a derived composite variable available in the ECLS-B data file. Fathers and mothers' report of father work status, job characteristics, work shift and hours were used to derive resident father employment status. Employment status ranged from 1 (*35 hours or more per week*) to 4 (*Not in the labor force*).

**Occupational prestige.** Occupational prestige was also a derived composite variable available in the ECLS-B data file. Fathers' report of type of work, employer, responsibilities, job title, and type of business were used to create occupational categories which were coded using the Standard Occupational Classification Manual (Nord et al., 2005). Occupation codes were then recoded as the average of the corresponding prestige scores used in the 2000 Census occupational categories. The occupational prestige score ranged from 27.10 to 64.20. Lower scores represented jobs in food preparation and service industries while higher scores reflected management, engineering or healthcare practitioner occupations.

**Gross annual income.** Fathers' annual income was a composite variable derived from one or more of the following five items: fathers' report of earnings before taxes and other deductions for all jobs, unit of pay of reported earnings, fathers' report of total hours worked per week for all jobs, and mothers' report of fathers' earnings before taxes and deductions and unit of pay of reported earnings. Fathers' gross annual income was calculated using fathers' or mothers'

responses to these items. For example, if a father reported his earnings as \$500 per week, annual salary was calculated as  $\$500 * 52$  weeks. Approximately 14% of cases ( $n=526$ ) were missing data from fathers' report of income. Mothers also reported fathers' gross earnings and unit of pay and the majority of cases missing data from fathers' report was available from mothers ( $n=441$ ). Of the total sample, only 2.3% of cases were missing fathers' income data from either mothers' or fathers' report. To address skew and kurtosis, annual income was transformed by taking Log10 of the original variable. The transformed variable was continuous and ranged from -1.05 to 3.64.

### **Paternal Involvement**

In the 9-month resident father questionnaire, fathers were asked about the frequency with which they engaged in caregiving activities, language and literacy activities, and physical play and interaction. Fathers also were asked how often they looked after their child when the mother was away or busy doing other things and how often they took primary responsibility when the child needed attention. To assess affective and cognitive dimensions of paternal involvement, fathers were asked questions about their emotional attachment to the child (e.g., how often the father thought about his child), as well as questions about paternal attitudes and beliefs about fathering.

I created five composites representing behavioral dimensions of father involvement and one composite representing cognitive and affective dimensions of involvement from 28 items in the RFQ for descriptive analyses.<sup>3</sup> For each of the derived composites I conducted a reliability analysis using Cronbach's alpha

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<sup>3</sup> These items were incorporated in structural equation modeling (SEM) analyses, but were used as individual item indicators rather than composites in measurement and structural model testing.



to assess scale properties; reliability statistics are provided for each composite. In addition to the composites, I included three questions that assessed paternal beliefs and attitudes in descriptive analyses. Items and composites are discussed below and descriptive statistics of paternal involvement, beliefs, and attitudes by father's race are shown in Tables 2 and 3.

**Caregiving activities.** Six items assessed how frequently dads were involved in caregiving behaviors. Fathers were asked how often in the past month they 1) changed the child's diaper, 2) prepared meals or bottles, 3) fed the child, 4) washed or bathed the child, 5) put the child to sleep, and 6) dressed the child. Items were scored on a 6-point scale and were summed to create a composite index of caregiving ( $\alpha=.889$ ). Response categories ranged from 1 (*not at all*) to 5 (*more than once a day*). Higher scores indicated more frequent involvement in caregiving activities.

**Language and literacy activities.** Fathers' engagement in behaviors that were believed to promote cognitive development was assessed with three items in which fathers were asked the frequency in which they 1) read books, 2) told stories, and 3) sang songs with their child. Items were scored on a 4-point scale and were summed to create a composite index of language and literacy activities ( $\alpha=.622$ ). Response categories ranged from 1 (*not at all*) to 4 (*every day*). Higher scores indicated that the father frequently engaged in language and literacy activities.

**Physical play and interaction.** Five items measured how frequently fathers played and engaged in physical interaction with their children. Fathers were asked how often in the past month they 1) played peek-a-boo, 2) held the

child, 3) tickled the child or other playful things like blowing on child's belly, 4) took the child outside for a walk or to play in the yard, park, or playground or 5) took the child on errands. Four items were scored on a 6-point scale; responses ranged from 1(*not at all*) to 5 (*more than once a day*) and one item was scored on a 4-point scale; responses ranged from 1 (*not at all*) to 4 (*every day*). Responses were summed to create a composite index of physical play and interaction ( $\alpha = .650$ ). Higher scores reflected more frequent play and physical interaction with the child. In post-hoc analyses, I standardized each of these items because the latter item is measured on a slightly different scale. I then summed these items as a standardized measure of paternal play and interaction. Cronbach's alpha was also .650 for the standardized composite.

**Child care.** Four questions examined fathers' involvement in and responsibility for child care. Fathers were asked how much they were involved in making the decision about the child's current child care arrangement (for those children who received child care on a regular basis from someone other than the father and/or his spouse) or how much fathers were involved in the decision not to use any child care (for children without non-parental care). Three response categories ranged from 1 (*a great deal*) to 3 (*not at all*). Fathers were asked whether they regularly looked after the child while his spouse/partner did other things outside of the home, 1 (*yes*) or 2 (*no*), and if yes, how many hours each week the father usually cared for the child when his spouse/partner was not at home. Fathers indicated how often in the past month they looked after the child while their spouse/partner did other things. Six response categories for this item ranged from 1 (*never*) to 6 (*almost every day*). Responses were summed across

these items to create a composite of paternal child care involvement ( $\alpha = .544$ ). Higher scores indicated greater involvement in child care.

**Responsibility.** Five items assessed how often the father took primary responsibility for the child when needed. Fathers were asked "*When the following things happen or need to be done, how often are you the one who does them? Do you always, often, sometimes, rarely, or never do them?*" Fathers responded to each of the following items: 1) get up with your child when he/she wakes up during the night, 2) soothe your child when he/she is upset, 3) take your child to the doctor, 4) stay home to care for your child when he/she is ill, and 5) take your child to or from the sitter or day care center. Items were reverse-scored on a 5-point scale and were summed to create a composite index of paternal responsibility ( $\alpha = .709$ ). Higher scores indicated that the father frequently took primary responsibility for the child when the need arose.

**Affective engagement** Five items probed father's affective and cognitive engagement in fathering. Fathers were asked "How often do you feel the following ways or do the following things": 1) talk about the child a lot, 2) carry pictures of the child everywhere, 3) often finds himself thinking about the child, 4) think holding and cuddling the child is fun, and 5) think it's more fun to get the child something new rather than something new for himself. Items were scored on a 4-point scale and were summed to create a composite index ( $\alpha = .619$ ). Response categories ranged from 1 (*never*) to 4 (*all of the time*). Higher scores indicated frequent cognitions and affective feelings about the child.

**Fathers' beliefs and attitudes.** Three questions probed fathers' beliefs and attitudes about fathering and the role of fathers in children's lives. In one

question, fathers rated seven item statements that assessed a range of beliefs about fathering on a 4-point scale anchored by response categories 1(*strongly agree*) and 4(*strongly disagree*). For example, fathers rated the following statement: "The activities a father does with his children don't matter. What matters more is whether he provides for them." The upper portion of Table 3 shows the percentage of fathers who strongly agreed with each of seven statements by fathers' race. The second question that probed paternal beliefs and attitudes asked fathers to select and rank the three most important things he does as a father from a series of six items. Fathers were instructed to select only three items and rank them as 1 (*most important*), 2 (*second most important*), and 3 (*third most important*). I collapsed the six items into one new variable such that the item selected most important among the original six variables was coded the most important item in the new variable. The middle portion of Table 3 shows the percentage of fathers who ranked each of six statements as most important by fathers' race. The third question that tapped paternal attitudes assessed fathers' self-concept. Fathers were asked to rate themselves on a 5-point scale ranging from 1(*not very good at being a father*) to 5 (*a very good father*). I collapsed the responses into three categories: 1 (*not very good at or has trouble being a father*), 2 (*average or better than average father*), or 3 (*a very good father*). The lower portion of Table 3 shows the percentage of fathers who rated themselves in each of the three categories by fathers' race.

## **Maternal Parenting**

**Maternal language and literacy activities.** Like fathers, mothers were asked about the frequency with which they read books, tell stories, and sing songs with their child. Items were scored on a 4-point scale and were summed to create a composite index of maternal language and literacy activities ( $\alpha = .597$ ). Response categories ranged from 1 (*not at all*) to 4 (*every day*). Higher scores indicated that the mother frequently engaged in language and literacy activities.

**Maternal physical play and interaction.** Three items measured how frequently mothers played and engaged in physical interaction with their children. Mothers were asked how often in the past month they 1) played peek-a-boo, 2) tickled the child or other playful things like blowing on child's belly, and 3) took the child outside for a walk or to play in the yard, park, or playground. Items were scored on a 6-point scale and responses ranged from 1 (*not at all*) to 5 (*more than once a day*). Responses were summed to create a composite index of physical play and interaction ( $\alpha = .443$ ). Higher scores indicated more frequent physical play and interaction.

**Maternal sensitivity and responsiveness.** Mothers' parenting was assessed at the 9-month data collection with the Nursing Child Assessment Teaching Scale (NCATS; Nord, et al., 2005). The NCATS was an observational coding instrument in which a parent-child dyad is observed engaging in a semi-structured teaching activity. Mothers selected a task that the focal child did not know how to do and then she and the child were observed as the mother taught the child the task. Parent behaviors and interaction patterns including parental

sensitivity to cues from the child, responsiveness to the child's distress, fostering cognitive growth, and promoting socio-emotional development were scored (*yes, observed*) or (*no, not observed*) across 50 items. Two sample items were "pausing as the child initiates action" and "rearranging toys." A total parent score was derived by summing the (*yes, observed*) responses and was available in the ECLS-B data file. The total parent scale score ranged from 15 to 49 and higher scores reflected greater sensitivity and responsiveness as well as more teaching-oriented behaviors. Summary statistics of maternal parenting variables are shown in Table 4.

### **Child Developmental Outcomes**

**Cognitive development.** Three aspects of toddlers' cognitive development were assessed in the current study – overall mental ability, language development, and vocabulary knowledge. Each of these measures are discussed below and Table 5 shows summary statistics for each dimension by fathers' race.

**Overall mental ability.** Overall mental development was measured with the Bayley Short Form-Research Edition (BSF-R), a revised form of the Bayley Scales of Infant Development, Second Edition (BSID-II; Nord, et al., 2005). The BSID-II was a standardized assessment of developmental status for children from birth to 42 months of age. It was comprised of two scales – a mental scale that measured children's cognitive development, e.g. memory, means-end behavior, exploratory competence, expressive and receptive communication and a motor scale that assessed children's fine and gross motor skills. Based on field tests of the full BSID-II, 19 items were adapted as the core set of mental scale

items, nine items created as a single ceiling set, and five items created as a single basal set to be used in the BSF-R. The mental scale core set of items was designed for children 17 to 37 months old, while the basal items could be used for children as young as 12 months old and the ceiling items could be used up to 42 months of age. Item Response Theory (IRT) calibration and scoring were used to derive three basic scores for both the mental scale – scale scores, standardized T-scores, and proficiency probabilities. Scale scores were measures of overall mental ability. Standardized T-scores measured ability at a single-point in time relative to other children of the same age. Proficiency probabilities were criterion-referenced indicators of status for a specific skill. The current study used the 2-year BSF-R mental scale scores in analyses examining the relation between fathering and children’s cognitive development. The BSF-R mental scale score was continuous and ranged from 92.61 to 173.29. Higher scores indicated greater overall mental ability.

***Vocabulary.*** Vocabulary knowledge was measured indirectly by mothers who indicated whether their child was able to say each word on a list of 50 common words that toddlers might use. Two response options included 0) *yes* and 1) *no*. The original 50 items were reverse-coded and summed to create an index of child’s vocabulary usage. The index ranged from 0 to 50 and higher scores indicated more vocabulary knowledge.

***Language development.*** The 2-year Parent CAPI Instrument included questions about children’s language use. Language use and development was measured using five items. Mothers were asked to describe how her child

communicates; response options included 1) *one-word sentences*, 2) *2-3 word phrases*, 3) *short sentences*, or 4) *long sentences*. Mothers indicated whether her child had begun to combine words, add 's' to talk about more than one thing, add 's' to talk about ownership, add 'ing' to verbs, and add 'ed' to talk about the past. Response options included 1) *not yet*, 2) *sometimes*, or 3) *often*. The latter four dichotomous items were reverse-coded and all five items were summed to create an index of child's language development. The index ranged from 0 to 14 and higher scores indicated more developed language skills.

**Socio-emotional development.** Four dimensions of toddlers' socio-emotional development were assessed in the current study through direct observation and maternal report: engagement during interaction, sustained attention during interaction, self-regulation, and temperament. Each of these measures are discussed below and Table 5 shows summary statistics for each dimension by fathers' race.

**Engagement and attention.** Toddlers' ability to engage and sustain their attention during a social interaction was measured at the 2-year round of data collection with the Two Bags Task, a modified version of the Three Bags Task used in the Early Head Start Research and Evaluation Study and the NICHD Study of Early Child Care (Nord, et al., 2006). To reduce the data collection burden, two activities were used in the ECLS-B study instead of three. The Two Bags Task entailed a 10-minute semi-structured dyadic interaction between a mother and her child in which the mother-child dyad was asked to play with two sets of toys, each placed in an individual numbered bag. The research



participants were instructed to play with the materials within the bags in any manner they preferred, but to play with the toys in numerical order. In the 2-year data collection the first bag contained the children's book "Good Night, Gorilla," by P. Rathmann (1994) and the second bag contained a set of toy dishes. The 10-minute dyadic interaction was videotaped and subsequently coded for the quantity and quality of a range of parent and child behaviors. For the present study, ratings of the child's behaviors and interactions were included as developmental outcome variables and a direct measure of children's socio-emotional functioning. A 7-point Likert-type rating scale was used to assess children's behaviors or interactions in three domains: child engagement of parent, child's sustained attention, and child's negativity toward parent. The former two scales were used in the current study. The child engagement scale measured the degree to which the child initiated and sustained interaction with his parent and conveyed positive regard or affect to the parent. Scores ranged from 1 to 7. Higher scores reflected consistent and sustained positive engagement of the parent and lower scores indicated that the child displayed no affect toward the parent. The child sustained attention scale measured how well the child maintained attention and involvement with objects. Scores ranged from 1 to 7 and higher scores indicated sustained focus and involvement, while lower scores reflected apathy, boredom, or disinterest.

***Self-regulation and temperament.*** Several items were adapted from the Infant/Toddler Symptom Checklist (ITSC; Nord, et al., 2006; Nord, et al., 2005) to measure children's temperament and self-regulatory abilities. The ITSC was a screening measure used by non-professionals, including parents, to

identify infants and toddlers who may have had underlying regulatory disorders. The full ITSC assessed children's functional behaviors related to self-regulation, attention, sleep, feeding, sensitivity to tactile, auditory and visual stimulation, and socio-emotional functioning with 34 non-overlapping items for children 19-30 months in age. Seven items were selected for inclusion in the ECLS-B based on statistical analyses which showed that the selected items successfully differentiated between children with and without regulatory disorders in the 19-30 month age group. In the parent CAPI mothers indicated whether their child 1) is frequently irritable or fussy; 2) goes easily from a whimper to an intense cry; 3) is unable to go to wait for food or toys without crying or whining; 4) is easily distractible or has fleeting attention; 5) needs a lot of help to fall asleep; 6) tunes out from activity and is difficult to reengage; and 7) can't shift focus easily from one project or activity to another. Response categories included 1 (*never*), 2 (*used to be*), 3 (*sometimes*), or 4 (*most times*). Scores on these seven items each ranged from 0 to 3. In addition to the seven ITSC items, mothers were asked how much time they spend calming the child on a typical day: 1 (*less than one hour*), 2 (*one to two hour*), or 3 (*three or more hours*) and to rate how difficult overall her child is to raise ranging from 1 (*not at all difficult*) to 5 (*very difficult*) The nine items were reverse-scored and incorporated in structural equation modeling (SEM) analyses as individual item indicators of temperament and regulatory abilities.

### **Control Variables.**

**Maternal educational attainment.** Mothers reported the highest grade or year of school completed in the 9-month parent CAPI. Nine response

categories ranged from 1 (*8<sup>th</sup> grade or below*) to 9 (*Doctorate or professional degree*).

**Child assessment age at 2-year data collection.** Age of assessment at the 2-year data collection was a derived variable available on the ECLS-B data file. Assessment age was calculated as the number of days between the child's birth date (taken from the birth certificate or parent CAPI) and the date of the direct child assessment (taken from the date in the child assessment booklet) divided by the average number of days in a month. Assessment age was thus reported in decimal months and ranged from 20.10 to 38.20 months.

**BSF-R Mental Scale Score at 9-months.** As described previously, the Bayley mental scale score was a measure of a child's overall cognitive ability. The 9-month Bayley Short Form – Research Edition (BSF-R) consisted of a core set of 11 items, a single basal set of nine items and a single ceiling set of nine items. Scores ranged from 37.41 to 116.50 and higher scores indicated more advanced overall mental ability (Nord, et al., 2005).

**Self-regulation and temperament at 9-months.** Similar to the self-regulation and temperament items at the 2-year data collection described earlier, self-regulation and temperament was assessed with items adapted from the Infant/Toddler Symptom Checklist (ITSC; Nord, et al., 2005). Mothers reported how often their infant is fussy or irritable, easily goes from a whimper to crying, demands attention and company, wakes up 3 or more times at night, needs help to fall asleep, is easily startled by loud sounds, and cries for food or toys. Responses were scored on a 4-point scale including the categories 1 (*never*), 2 (*used to be*), 3 (*sometimes*), or 4 (*most times*). Mothers also

reported how difficult it is on average to raise their child. A 5-point scale ranged from 1 (*not at all difficult*) to 5 (*very difficult*). These eight items were reverse-scored and summed to create a composite index of self-regulation and temperament at baseline ( $\alpha = .628$ ). Higher scores indicated more difficult temperament and lower self-regulation.

**Marital status.** The marital status of parents in the household was a derived variable available on the ECLS-B data file. Mothers' report of marital status and relationship to household father were used to determine whether the parents in the household were married, separated, divorced, widowed, or never married. For the current study, the derived variable was dichotomized into married or not married.

## **CHAPTER IV**

### **Results**

#### **Analysis Overview**

**Strata, clusters, and sampling weights.** As discussed previously, the ECLS-B study utilized a complex sampling design to select a nationally representative probability sample of children born in 2001 in the United States (Nord, et al., 2006; Nord, et al., 2005). To account for the ECLS-B study design, sampling weights, strata, and cluster variables available in the ECLS-B data file were incorporated in statistical analyses for this research project. Sampling weights were designed to enable inferences from the sample to the target population; strata and cluster variables were designed to increase precision of standard errors for significance testing. Descriptive analyses of the sample characteristics and comparisons of paternal involvement across ethnic groups were conducted in SPSS Version 18 with the Complex Samples add-on module, which allowed for the use of sampling design variables. Structural equation models were conducted primarily in Mplus Version 5.21 which has the capability to analyze complex sample data across multiple groups with both observed and latent variables.

**Structural Equation Modeling (SEM).** Multi-group structural equation modeling (SEM) was used to assess measurement models of paternal involvement across African American and European American fathers. Following measurement model testing, I examined structural models of predictive relations

between paternal involvement and child cognitive and socio-emotional development.

**Estimation method.** In both measurement and structural model testing, parameter estimates were obtained by Weighted Least Squares Means and Variance Adjusted (WLSMV) estimation which is the default estimation method for analyses with categorical indicators in Mplus Version 5.21 (Muthen & Muthen, 1998-2007). This estimation method produced standard errors and mean- and variance-adjusted chi-square test statistics using a full weight matrix. WLSMV estimation did not allow for conventional chi-square difference testing (i.e., computing the difference in chi-square values and the difference in degrees of freedom) because the chi-square difference test statistic was not distributed as chi-square. As such, chi-square difference testing of nested models was conducted with the DIFFTEST function in Mplus 5.21.

**Model fit criteria.** Measurement and structural model fit was evaluated with the chi-square test statistic, Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993), and the Comparative Fit Index (CFI). The chi-square test statistic was reported by convention, however, it has been noted that chi-square is sensitive to sample size and large correlations which may result in rejection of the null hypothesis (i.e. that the model is correct) even when there are small differences in the observed and model-implied covariance matrices (Kline, 2005). The RMSEA index has been used widely in SEM research because it is less sensitive to sample size than the chi-square statistic and it is parsimony-adjusted in that less complex models are favored over more complex models with similar explanatory power (Browne & Cudeck, 1993; Kline, 2005). I

followed Browne & Cudek's (1993) interpretive norms that  $RMSEA \leq .05$  indicated *close fit*; RMSEA values ranging from .05 to .08 and .08 to .10 indicated *fair fit* and *mediocre fit*, respectively; and  $RMSEA > .10$  indicated *poor fit*. The Comparative Fit Index (CFI) has been reported commonly in SEM research as well. The CFI assessed the improvement in fit of the researcher-specified models relative to baseline models in which the observed variables were assumed to be unrelated in the population. Browne and Cudeck (1993) suggested that CFI values greater than .90 indicate reasonably good model fit and values ranging from .80 to .90 indicate acceptable fit. Hu and Bentler (1999) proposed a more stringent criterion of .95 for CFI to indicate good fit, but other researchers have suggested that well-fitting complex models may be rejected at the .95 cut-off (Marsh, Hau, & Wen, 2004). I followed Hu and Bentler's (1999) suggested criterion of .95 for the individual measurement models, and followed the less stringent criterion of .90 for the more complex models that included both measurement and structural components.

### ***Specification and invariance testing of measurement models.***

Overall, I utilized a model-building approach to specify and test cross-group measurement invariance of several paternal involvement constructs explored in the current study. More specifically, I began with an a priori model of paternal involvement based on extant literature, which included seven latent constructs manifested by 28 observed indicators. After I confirmed the overall configural structure of the paternal involvement factors (i.e., the number of factors and manifest indicators with no cross-loadings), I then examined cross-group measurement invariance of each latent construct as separate measurement

models. In the last phase of specification and measurement invariance testing, I essentially came full circle in that I combined the previously tested individual measurement models into one overall measurement model of paternal involvement with seven latent constructs and 24 manifest indicators. An alternative approach would have been to specify measurement models and evaluate cross-group measurement invariance with all latent constructs in one overall measurement model. However, as Vandenberg and Lance (2000) noted in their review of studies in which measurement invariance/equivalence had been investigated, there was lack of consensus across studies in the ordering or sequencing of measurement invariance/equivalence tests as well as which aspects of measurement invariance were evaluated (e.g., configural, metric, or scalar). Vandenberg and Lance (2000) suggested that the apparent inconsistency in approaches to measurement invariance or equivalence testing is not especially problematic given that research studies have different aims and purposes. These authors did assert, however, that any and all forms of measurement invariance/equivalence testing should be evaluated before undertaking cross-group equivalence of structural relationships. Without clear guidelines or recommendations from extant literature on measurement equivalence testing of paternal involvement constructs and given that the individual latent factors of various aspects of paternal involvement using the set of items in the current study has not been established in extant research, evaluating the latent constructs individually to confirm adequate model fit overall as well as for each group seemed an appropriate choice for the current study.



## **Paternal Involvement during Infancy among African American and European American Fathers**

My first research question asked “in what ways and to what extent are two-parent, co-residential African American and European American fathers involved in their infants’ lives? To address this question, I conducted one-way Analysis of Variance models of mean level differences in involvement between Black and White fathers and crosstab analyses of paternal beliefs about fathering and children. Table 2 shows summary statistics of paternal involvement composites by fathers’ race. As seen in Table 2 African American and European American fathers differed in several aspects of paternal involvement. African American fathers reported engaging in caregiving activities such as changing diapers and bathing the infant more frequently than European American fathers ( $F(1,89) = 37.86, p < .001$ ). African American fathers cared for their infants while the mother was away or busy and took primary responsibility for the child when needed (e.g., stayed home with the child when he/she was ill) more often than European American fathers ( $F(1,89) = 35.77, p < .001$ ;  $F(1,89) = 14.23, p < .001$ ). African American fathers reported thinking and talking about their infants more frequently than European American fathers ( $F(1, 89) = 10.71, p < .01$ ). There were no reported differences in frequency of language and literacy activities or physical play and interaction between the two groups ( $F(1, 89) = 0.27, p = .60$ ;  $F(1, 89) = 1.32, p = .25$ ).

I also examined cross-ethnic group variation in paternal capital characteristics. There were significant differences across African American and European American fathers across all aspects of paternal capital measured. As

shown in Table 2 European American fathers reported more years of education, more work hours, more prestigious occupations, and higher gross income than co-resident African American fathers.

As with paternal involvement and capital, statistical analyses showed cross-ethnic variation in paternal beliefs and attitudes about fathering. African American fathers and European American fathers had similar beliefs about fathers' effects on children but differed in their beliefs about paternal roles. I conducted crosstab analyses to compare the percentage of fathers in each group who strongly agreed with each of several statements concerning paternal roles and effects. Because the adjusted *F*-statistic calculated in the crosstab analyses were omnibus test statistics, I examined adjusted residuals of individual cells to determine if the percentage of fathers who strongly agreed with each statement differed significantly by fathers' race (see Table 3). More African American fathers than European American fathers strongly agreed that a) fathers and mothers should be equally involved in the care of their child (73% and 45%); b) encouragement and emotional support for the child's mother is one of the most important things a father can do for his child (62% and 44%); c) expressing affection toward infants can be difficult for men (6% and 3%); and d) financial provision is more important than activities a father does with his child (9% and 2%). The majority of fathers in both groups strongly agreed that father-child play is essential, fathers have long-term effects on children, and that fatherhood is rewarding.

I conducted an omnibus crosstab analysis comparing fathers' beliefs about the most important thing they do for their children across ethnic groups and

again examined adjusted residuals of individual cells to determine in which categories fathers differed in their ranking of the most important thing they do (see Table 3). The overall adjusted  $F$ -test was significant ( $F(4,361) = 5.19, p < .001$ ). The majority of African American (60%) and European American (64%) fathers ranked *showing love and affection* as most important, which did not differ significantly ( $p = .224$ ). Protecting the child was the second category most frequently selected as the most important thing a father does; there was no significant difference across groups with 24% of European American fathers and 21% of African American fathers ranking it highest ( $p = .217$ ). Although less than 15% of either ethnic group identified financial provision or moral guidance as most important, about twice as many African American fathers as European American fathers ranked one of these categories highest, both statistically significant differences (financial provision  $p = .041$ ; moral guidance  $p = .014$ ). Few fathers across ethnic groups endorsed playing with the child or teaching the child as the most important thing they do (respectively, 0.5% and 0.2% of African Americans; 2% and 1% of European Americans), however, European American fathers were slightly more likely to rank one of these items as most important ( $p = .009$ ).

Finally, I examined fathers' self-ratings as a father. Significantly more African American than European American fathers reported seeing themselves as very good fathers (62% and 46%); more European American than African American fathers viewed themselves as an average or better than average father (51% and 35%).

## **Paternal Involvement Measurement Models**

The second research question I considered in the current study asked, “Does a multi-dimensional model of paternal involvement across six domains of involvement function similarly for African American and European American fathers?” To address this question I proposed a model of paternal involvement during infancy and evaluated the model within and across ethnic groups using a Confirmatory Factor Analysis framework.

**A priori paternal involvement measurement model.** Drawing from extant research I specified a multi-dimensional model of early paternal involvement (see Figure 1). The a priori measurement model included six latent factors with 28 manifest indicators (latent constructs and manifest variables are shown in Table 6.) As shown in Table 6, the six latent factors correspond to the paternal involvement composites described earlier (Caregiving, Language and Literacy Activities, Physical Play and Interaction, Child Care, Responsibility, and Affective Engagement) and the 28 item indicators consisted of the individual items used to construct the composites. I conducted a preliminary Confirmatory Factor Analysis (CFA) in SPSS v. 18 with varimax rotation to examine the factor loadings of the 28 items on the extracted factors, which was fixed at six latent factors. Two items (how often take child on errands and involvement in child care decision) did not load well on any factor and were dropped from subsequent analyses. Two other items (play peek-a-boo and take child outside to walk or play) did not load well on any factor, but were retained after the preliminary analyses because these items were conceptually related to the latent construct Physical Play and Interaction and to facilitate measurement model

testing. Rotated factor loadings for the remaining 24 items ranged from .506 to .834. Items with factor loadings lower than the more typical .70 were retained in the short term to be included in measurement model testing in Mplus where I could determine if the estimates were statistically significant and examine overall model fit with as many of the paternal involvement items as possible for multi-group analyses.

**Measurement model trimming and testing for measurement invariance.** The preliminary analyses supported a six-factor multi-dimensional model of paternal involvement. The next step in my analyses entailed evaluation of the paternal involvement latent factors as individual measurement models across the full sample followed by measurement invariance testing of individual measurement models across ethnic groups. These analyses proceeded in a series of steps which I describe here.

First, I specified and evaluated three of the six latent factors (Caregiving, Responsibility, and Affective Engagement) as individual measurement models, i.e., three separate one-factor CFA models. The remaining three latent factors (Language and Literacy Activities, Physical Play and Interaction, and Child Care) were evaluated simultaneously as a three-factor CFA because the individual measurement models were under- or just-identified due to the small number of indicators for these latent factors. I examined overall model fit and parameter estimates of the measurement models and trimmed or modified the model as needed to improve model fit.

Next I evaluated the measurement models in each ethnic group to ensure good model fit in each group before proceeding to measurement invariance

testing. If the model did not fit well in either group, I re-specified the overall model using the parameter estimates, proportion of variance in the indicators explained by the underlying constructs, and modification indices to determine model re-specifications.

When the measurement models were finalized (i.e., good model fit and significant parameter estimates in the overall and individual ethnic groups), I began testing for measurement invariance of the models across African American and European American fathers. I examined metric invariance (factor loading invariance) and scalar factorial invariance (intercept or threshold invariance) in the current study which addressed the question of whether the latent factors had the same meaning across African American and European American fathers and whether comparisons of group means are meaningful (Gregorich, 2006). To test for measurement invariance I analyzed an unconstrained measurement model first, in which factor loadings and thresholds were allowed to vary freely across groups and then analyzed the nested model, in which the factor loadings and thresholds were equality-constrained. The chi-square difference test statistic was used to determine if the more constrained nested model significantly worsened model fit. Non-significant depreciation in model fit provided evidence of measurement invariance and no further testing for invariance was conducted. On the other hand, a significant decrease in model fit indicated that the model was not invariant across groups and further testing for partial measurement invariance was conducted.

When full measurement invariance was not supported, partial measurement invariance was tested by relaxing equality constraints one path at

a time. This was done by testing the chi-square difference between the partially invariant model, i.e. the model with one path free to vary, and the fully invariant model, i.e., the model with all factor loadings and thresholds equality constrained. A significant chi-square difference indicated that allowing the specified path to vary freely improved model fit and that the path was not invariant across the groups.

Next I present the measurement model analysis findings. Paternal involvement latent constructs and manifest variables are listed in Table 6 and results of measurement invariance testing are presented in Table 7. Figures 1 and 2 show the final individual measurement models for each paternal latent factor and the full multi-dimensional model of paternal involvement and capital. Maternal parenting and child development measurement models are shown in Figures 3 and 4.

**Measurement model analysis results.** I began by conducting a CFA of the latent factor Caregiving represented by six categorical indicators (see Table 6). Model fit indices were mixed – RMSEA indicated poor fit, while other fit indices indicated moderate to good fit ( $\chi^2 (7) = 445.45, p < .0001$ ; CFI = .94; TLI = .98; RMSEA = .13). Modification indices indicated correlated error terms for two pairs of indicators (*prepare food* and *feed bottle*; *wash child* and *dress child*) would substantially improve model fit. I re-ran the model with the error terms for these indicators freed to co-vary, which improved model fit  $\chi^2 (5) = 122.62, p < .0001$ ; CFI = .99; TLI = .99; RMSEA = .08). I then ran the model separately by ethnic groups. The model did not converge for the African American group because one of the indicators (*put child to sleep*) had a

truncated distribution for that group. I trimmed the indicator from the measurement model and ran the model for the overall sample and by ethnic groups. The final Caregiving measurement model was specified as one latent factor with five categorical indicators and two correlated error terms (see Figure 1). The final model had very good fit for the overall and ethnic sub-samples (overall sample:  $\chi^2 (3) = 12.17, p < .01$ ; CFI = .99; TLI = .99; RMSEA = .03; Black subsample:  $\chi^2 (3) = 6.75, p < .10$ ; CFI = .99; TLI = .99; RMSEA = .02; White subsample:  $\chi^2 (3) = 10.63, p < .05$ ; CFI = .99; TLI = .99; RMSEA = .03). Next I evaluated the model for measurement invariance across Black and White fathers. This analysis indicated partial measurement invariance for the two ethnic groups. As shown in Table 7 the constrained Caregiving model with factor loadings and thresholds held equal across groups significantly worsened model fit relative to the unconstrained measurement non-invariance model ( $\chi^2_{\text{DIFF}} (9) = 19.71, p < .05$ ). Without evidence of full metric and scalar invariance, I tested for partial measurement invariance by relaxing equality constraints for one indicator at a time. Allowing the factor loading and threshold for the indicator *prepare food* to vary freely across groups significantly improved model fit ( $\chi^2_{\text{DIFF}} (3) = 21.99, p < .001$ ). Relaxing equality constraints for the remaining four indicators did not significantly change model fit.

Next I conducted a CFA of the latent factor Responsibility represented by four categorical indicators (see Table 6). Model fit indices were variable – the chi-square test was significant and RMSEA indicated poor fit, but CFI indicated good fit ( $\chi^2 (2) = 100.21, p < .0001$ ; CFI = .96; TLI = .91; RMSEA = .12). Modification indices indicated that allowing the error terms for *soothe child* and



*get up with ill child* to co-vary would decrease the model chi-square and improve model fit. I specified correlated error terms for the two indicators, which substantially improved model fit  $\chi^2 (1) = 0.13, p = .719$ ; CFI = 1.00; TLI = 1.00; RMSEA = .00). I then ran the model separately by ethnic groups. Model fit indices showed very good model fit for both African American and European American fathers respectively ( $\chi^2 (1) = 0.93, p = .334$ , CFI = 1.00, TLI = 1.00, RMSEA = .00;  $\chi^2 (1) = 1.07, p = .301$ ; CFI = 1.00; TLI = 1.00; RMSEA = .00). The final Responsibility measurement model was specified as one latent factor with four categorical indicators and one correlated error term (see Figure 1). This model was tested for measurement invariance. The constrained Responsibility model significantly worsened model fit compared to the unconstrained model ( $\chi^2_{\text{DIFF}} (9) = 23.11, p < .01$ ; see Table 7). Follow-up partial measurement invariance testing showed that freeing the factor loadings and thresholds of two indicators (*stay home* and *take to doctor*) significantly improved model fit relative to the fully constrained model ( $\chi^2_{\text{DIFF}} (5) = 16.59, p < .01$ ). Relaxing equality constraints for the remaining two indicators did not significantly improve model fit.

Next I conducted a CFA of the latent factor Affective Engagement represented by four categorical indicators (see Table 6). Model fit indices showed acceptable fit for the overall sample ( $\chi^2 (2) = 33.90, p < .001$ ; CFI = .98; TLI = .94; RMSEA = .07). I then ran the model separately by ethnic groups. Model fit indices showed very good model fit for African American fathers and acceptable fit for European American fathers respectively ( $\chi^2 (2) = 0.94, p = .625$ , CFI = 1.00, TLI = 1.03, RMSEA = .00;  $\chi^2 (2) = 33.99, p < .001$ ;

CFI = .97; TLI = .94; RMSEA = .07). The final Affective Engagement measurement model was specified as one latent factor with four categorical indicators (see Figure 1) and was tested for measurement invariance. The constrained Affective Engagement model did not significantly depreciate model fit compared to the unconstrained model ( $\chi^2_{\text{DIFF}}(2) = .112, p = .9453$ ), which indicated metric and scalar invariance for the latent construct across African American and European American fathers (see Table 7).

Next I conducted a CFA of three latent factors: Language and Literacy Activities, Physical Play and Interaction, and Child Care. These latent factors had two to four indicators each (see Table 6). Measurement models with two indicators are under-identified and cannot be analyzed statistically without other observed variables in the model. Measurement models with three indicators are just-identified and although parameter estimates can be derived, model fit indices are not calculated for these models. As such, I combined the latent factors into one CFA, which enabled me to examine model fit indices and parameter estimates for the under- and just-identified models. Model fit indices for the 3-factor CFA indicated good model fit for the overall sample  $\chi^2(18) = 183.31, p < .001$ ; CFI = .98; TLI = .98; RMSEA = .05). Despite overall good model fit, two indicators (*father regularly babysits* and *hours father babysits*) were highly correlated ( $r = .997$ ). I trimmed *father regularly babysits* from the model which slightly improved the chi-square and RMSEA values, but depreciated fit slightly as measured by CFI ( $\chi^2(16) = 129.74, p < .001$ ; CFI = .96; TLI = .96; RMSEA = .04). Examination of the parameter estimates revealed a non-significant factor loading for African American fathers for the *hold child*

indicator. I trimmed this indicator from the model which improved model fit for the overall sample  $\chi^2 (13) = 77.87, p < .001$ ; CFI = .972 TLI = .97; RMSEA = .04) and showed very good model fit with both African American and European American fathers respectively ( $\chi^2 (10) = 11.89, p = .293$ , CFI = .99, TLI = .99, RMSEA = .01;  $\chi^2 (13) = 65.84, p < .001$ ; CFI = .97; TLI = .97; RMSEA = .03). The final measurement model was specified as three latent factors (Language and Literacy Activities, Physical Play and Interaction, and Child Care) with eight indicators and no correlated error terms (see Figure 1). This model was tested for measurement invariance. The constrained model significantly worsened model fit compared to the unconstrained model ( $\chi^2_{\text{DIFF}} (13) = 40.71, p < .01$ ; see Table 7). Follow-up partial measurement invariance testing showed that freeing the factor loadings and thresholds of five indicators (*read stories, sing songs, tickle child, frequency father babysits, and hours father babysits*) significantly improved model fit relative to the fully constrained model ( $\chi^2_{\text{DIFF}} (7) = 33.28, p < .001$ ). Relaxing equality constraints for the remaining three indicators (*tell stories, play peek-a-boo, and take child outside to play*) did not significantly improve model fit.

Next I conducted a CFA of the latent factor Paternal Capital represented by four continuous indicators (*father education, employment status, occupational prestige score, and Log10 of father income*). Model fit indices were variable; RMSEA indicated poor fit but CFI suggested good fit for the overall sample ( $\chi^2 (2) = 31.15, p < .001$ ; CFI = .97; TLI = .91; RMSEA = .12). I examined the parameter estimates and R-square values for the indicators; all parameters were significant but R-square for the indicator *employment* was low

( $R^2 = .04$ ) relative to R-square estimate for the other indicators (R-square ranged from .22 to .75). I then ran the model without *employment*; standardized and un-standardized estimates were significant and R-Square estimates ranged from .21 to .79. The final measurement model for Paternal Capital included three indicators (*education*, *occupational prestige*, and *father's annual gross income*). Because paternal capital has been considered a form of paternal involvement (as described in the literature review), I also tested measurement invariance across racial groups. However, I used a slightly different approach for invariance testing because the final paternal capital model was just-identified with only three indicators and chi-square difference testing was not possible with this model. I ran the Paternal Capital model separately by ethnic groups and examined estimates; loadings and intercepts were significant in each group and R-Square estimates ranged from .20 to .79. I then ran the model with factor loadings invariant (with these parameters constrained across groups, the model was identified and fit statistics were available). The model had very good fit ( $\chi^2 (2) = 0.199, p = .905, CFI = 1.00, TLI = 1.00, RMSEA = .00$ ). I then constrained the intercepts to be equal in addition to the factor loadings. The more constrained model had good fit ( $\chi^2 (4) = 11.6, p < .001, CFI = .99, TLI = .99, RMSEA = .03$ ) and the chi-square difference was non-significant indicating measurement invariance on factor loadings and intercepts ( $\chi^2_{DIFF} = 2.408$ ).

After establishing each of the measurement models individually I combined all of the paternal involvement and paternal capital measurement models into one multi-dimensional model with seven latent constructs and 24

indicators. Following the results of measurement invariance testing I relaxed cross-group equality constraints on 16 parameters (eight factor loadings, seven thresholds, and one intercept) and ran the model simultaneously across African American and European American fathers. Initially, I retained correlated error terms that had been found to improve model fit in individual measurement model testing. This model showed very good fit to the data ( $\chi^2 (81) = 334.97, p < .001$ , CFI = .96, TLI = .97, RMSEA = .04). I then ran the multi-dimensional model without correlated error terms and this model also had good fit to the data ( $\chi^2 (80) = 370.43, p < .001$ , CFI = .96, TLI = .96, RMSEA = .04). Given that the latter model had good fit to the data and was more parsimonious than the model with correlated error terms I retained the latter model as the final multi-dimensional model of paternal involvement. Figure 1 shows standardized factor loadings for each group with cross-group unconstrained factor loadings in bold and Figure 2 shows standardized covariances among the paternal involvement and paternal capital latent factors.

### **Other Measurement Models**

The full structural equation model (SEM) in which I examined structural relationships between paternal factors and child outcomes included other measurement models in addition to measurement models of paternal constructs. As shown in Figures 3 and 4, I specified and evaluated maternal parenting and child cognitive and socio-emotional development measurement models before I conducted the full SEM to ensure adequate fit of each of the measurement components. There was little overlap in the assessment of parenting across

mothers and fathers in the ECLS-B study, e.g., mothers were observed interacting with their children, but there was no comparable assessment with fathers and children. However, both mothers and fathers were asked about the frequency with which they engaged in language and literacy activities and physical play and interaction with their children. I used these items as manifest indicators of paternal and maternal parenting latent constructs. Thus, I specified and evaluated a maternal parenting measurement model as two latent constructs with three indicators each (Maternal Language and Literacy Activities and Maternal Physical Play and Interaction) which were comparable to the paternal versions of these constructs. I conducted a CFA of the measurement model which showed very good model fit ( $\chi^2(6) = 31.35, p < .001, CFI = .98, TLI = .96, RMSEA = .03$ ) and significant parameter estimates. Finally, the third measure of maternal parenting, sensitivity and responsiveness, was incorporated as a single observed variable in the structural models predicting child socio-emotional development (see Figure 3).

I examined young children's cognitive and socio-emotional development in relation to paternal involvement in the current study. The measurement model of toddler development was specified as four latent constructs – Cognitive Development, Socio-Emotional Functioning (engagement and attention), Temperament and Self-Regulation with 13 manifest indicators (see Figure 4). First I conducted a preliminary Exploratory Factor Analysis (EFA) with varimax rotation and an unspecified number of factors to extract to determine the factor structure. The preliminary analysis included 16 observed variables, but three were dropped from the model because they did not load well on any of the

extracted factors. I then specified and tested the four-factor measurement model which showed very good model fit ( $\chi^2 (25) = 95.15, p < .001, CFI = .97, TLI = .98, RMSEA = .03$ ). The final child development model consisted of four latent factors and 13 indicators - Cognitive Development (*BSF-R Mental Scale Score, vocabulary, language development*); Socio-Emotional Functioning (*engagement, sustained attention*); Temperament (*fussy, whimper/cries easily, difficulty to raise, time to calm, unable to wait*); Self-Regulation (*tunes out easily, easily distracted, can't shift focus*). The child development measurement model is shown in Figure 4.

I did not evaluate these models for measurement invariance because the primary focus of the current study was to explore differences and similarities in paternal involvement and its effects across African American and European American fathers. The extent to which measures of maternal parenting and child outcomes are invariant across racial/ethnic groups are important research questions worth studying, but these questions are beyond the scope of the current study, particularly given my interest in cross-ethnic variation in paternal involvement.

In addition, the study sample was predicated on the father's race, not the child or the mother's race. Thus, the father sub-samples were mutually exclusive by race, but the children and partners of the focal subjects were not mutually exclusive by race and in some cases the child and partner's race differed from that of the father. More specifically, among co-resident African American fathers, 13% of their children and 18% of their partners were

identified as a race other than African American. Among co-resident European American fathers, 7% of their children and 8% of their partners were identified as a race other than European American. In the current context, then, examining measurement invariance of child or maternal constructs would not address child or mother cross-ethnic differences, but instead would evaluate the extent to which maternal parenting constructs and child outcome measures are invariant across the children and partners of co-resident African American and European American fathers. Such an analysis begs the question of how similar or dissimilar are children of interracial families relative to children in non-interracial families. That is, measurement invariance testing across groups of children of African American and European American fathers presumes a degree of homogeneity of these children based on their fathers' race. However there may be important intra-group differences between Black and non-Black children of Black fathers or White and non-White children of White fathers. These issues are worthy of study, but are complex and nuanced research questions that require more in-depth study than can be undertaken in the current research.

### **Early Paternal Involvement and Young Children's Cognitive and Socio-Emotional Development**

My final two research questions concerned whether fathers have a unique effect on young children's development and whether predictive relationships are similar across African American and European American fathers. Specifically, I asked first, "does paternal involvement during infancy have a unique effect on children's cognitive and socio-emotional development beyond paternal capital



resources, maternal factors, and child covariates;" and second, "are predictive relationships between paternal involvement and child cognitive and socio-emotional outcomes comparable across African American and European American fathers?" I was not able to directly address the fourth research question because, as discussed previously, findings from measurement model testing suggested that the latent constructs assessed in the current study may have tapped different underlying constructs across African American and European American fathers as indicated by non-invariant factor loadings and thresholds for several manifest indicators of the paternal involvement latent factors. Of the 42 parameter estimates evaluated for measurement invariance, over a third of the parameters were found to be non-invariant across the groups, which suggested substantively different measurement models across ethnic groups. Findings from cross-group structural invariance testing may not be interpretable or meaningful if the latent factors in the model seemingly represent different underlying constructs. Thus, without evidence of measurement invariance, I examined structural relationships of paternal involvement and child outcomes within each ethnic group, but not across the groups. These analyses are described next.

I examined cognitive and socio-emotional outcomes in separate structural models and each set of analyses began with a model that included only paternal involvement and paternal capital predictors and child outcomes. I then added in maternal parenting variables. The latent factors, Language and Literacy Activities and Physical Play and Interaction, were included in the cognitive outcomes model. In the socio-emotional outcomes model, the observed

measure (i.e., not latent) of maternal sensitivity and responsiveness was incorporated in addition to the other maternal parenting variables. I also added in control variables - maternal education and marital status, child's assessment age at Wave 2, baseline mental scale score (cognitive development model only), and baseline self-regulation composite score (socio-emotional development model only). Next, I present the findings from the cognitive outcomes models followed by results of the socio-emotional outcomes models for African American and European American fathers respectively.

### **Effects of paternal involvement during infancy on cognitive**

**outcomes.** The first model I tested, child cognitive development regressed on paternal involvement and paternal capital within the African American group had good overall model fit ( $\chi^2 (39) = 74.78, p = .0005, CFI = .95, TLI = .95, RMSEA = .02$ ) and as expected measurement parameters were significant. However, none of the paternal involvement factors significantly predicted child cognitive development. Likewise, paternal capital was not a significant predictor of child cognitive development. Although none of the paternal variables predicted cognitive development in the first model, for completeness I added maternal and child covariates to the model. The model converged and had fair to good model fit ( $\chi^2 (47) = 89.79, p < .001, CFI = .91, TLI = .91, RMSEA = .02$ ). As in the previous model none of the paternal variables significantly predicted toddler cognitive development. In addition, none of the maternal covariates (Maternal Language and Literacy Activities, Maternal Physical Play and Interaction, maternal education, and marital status) were significant predictors of cognitive development. The only significant predictors of cognitive development in the

model with African American fathers and their children was the age at which the child had been assessed and the baseline measure of cognitive development. Together, these predictors explained 22% of the variance in toddlers' cognitive development at 2 years of age. The cognitive development outcomes model for children of African American fathers is shown in Figure 5.

Next, I examined structural relationships between paternal involvement and child cognitive development within the European American group. I entered all paternal involvement and paternal capital variables, however this model did not converge and output warnings indicated that the model may have been unidentified. To determine which variables might be causing the lack of convergence, I began testing with a trimmed model that included only Paternal Capital and Paternal Language and Literacy Activities and then added paternal involvement predictors one at a time. If the model converged, I added an additional predictor to the model; if the model did not converge I removed the predictor that had been added in the previous step. Following this pattern, the model converged with all added paternal involvement predictors except Paternal Physical Play and Interaction and Child Care latent factors. The final paternal involvement – cognitive development structural model for the European American group included five paternal latent factors (Paternal Capital, Caregiving, Paternal Language and Literacy Activities, Responsibility, and Affective Engagement) as predictors of the latent construct Cognitive Development. This model converged and had good overall model fit ( $\chi^2 (49) = 276.06, p < .001, CFI = .97, TLI = .97, RMSEA = .04$ ). In this model, Paternal Capital and Paternal Language and Literacy Activities significantly predicted

cognitive development; the remaining paternal variables were not statistically significant. I then added maternal and child covariates to the previous model. This model did not converge and review of the estimated correlation matrix of latent variables in the model showed a high estimated correlation between the paternal and maternal language and literacy latent factors ( $r = .96$ ). Because I focus primarily on paternal involvement rather than maternal involvement, I decided to keep the paternal latent construct in the model. However, rather than remove the maternal language and literacy construct from the model completely, I entered the observed composite measure of maternal language and literacy activities instead of the latent factor. Using the observed measure assumes there is no measurement error unlike using the latent measure in which measurement error is specifically modeled. Although this is not ideal, I determined that it was important to include this aspect of maternal parenting to adequately address my research question of paternal involvement effects above and beyond maternal influences. Moreover, observed measures in which no measurement error is assumed is the mainstay of linear regression. The re-specified model converged and had good overall model fit ( $\chi^2 (60) = 311.40, p < .001, CFI = .96, TLI = .96, RMSEA = .03$ ). Paternal Capital significantly predicted cognitive development beyond the effects of the covariates Maternal Language and Literacy Activities, Maternal Physical Play and Interaction, maternal education, age at assessment at Wave 2, and the baseline measure of cognitive development, which were all significant predictors of cognitive development as well. Together these predictors explained 15% of the variance in cognitive development of children in the European American sub-sample. The

cognitive development outcomes model for children of European American fathers is shown in Figure 6.

**Effects of paternal involvement during infancy on socio-emotional outcomes.** As with cognitive outcomes, I tested structural relationships between paternal involvement and socio-emotional outcomes within the African American group first. Socio-emotional development was conceived of as three latent constructs (Social-Emotional Functioning, Temperament, and Self-Regulation) and all paternal variables were specified to predict each of the latent factors separately. The initial model had good overall fit ( $\chi^2 (42) = 68.22, p < .001, CFI = .95, TLI = .95, RMSEA = .01$ ). Paternal capital was a significant predictor of toddlers' temperament and social-emotional functioning. Paternal Language and Literacy Activities and Child Care were marginally predictive of social-emotional functioning ( $p = .057$  and  $.099$ , respectively). The remaining structural paths from paternal involvement constructs to child socio-emotional constructs were non-significant. I then added all maternal and child covariates to the model; the model converged and had fair to good model fit ( $\chi^2 (49) = 82.33, p = .002, CFI = .91, TLI = .91, RMSEA = .01$ ). In the full model with paternal variables and covariates, Paternal Child Care involvement significantly predicted temperament and social-emotional functioning and Paternal Responsibility significantly predicted socio-emotional functioning as well. Infants' baseline self-regulation scores were significantly related to self-regulation and temperament as toddlers. Maternal sensitivity and responsiveness were significantly related to social-emotional functioning and maternal education predicted toddlers' self-regulation. Maternal education was significantly

associated with fathers' paternal capital. The model explained 27%, 48%, and 24% of the variance in toddlers' social-emotional functioning, temperament, and self-regulation, respectively within the African American sub-sample. The socio-emotional development outcomes model for children of African American fathers is shown in Figures 10, 11, and 12.

Next I examined socio-emotional outcomes with the European American group. Again I began with the full set of paternal variables as predictors of socio-emotional development. The socio-emotional outcomes model converged and had good model fit ( $\chi^2 (65) = 259.30, p < .001, CFI = .96, TLI = .97, RMSEA = .03$ ). In this model, Paternal Capital significantly predicted Self-Regulation, Temperament, and Social-Emotional Functioning of toddlers; Paternal Language and Literacy Activities was also a significant predictor of Temperament and Social-Emotional Functioning. Following the same procedure as with other models, I added maternal and child covariates to the paternal model. The model converged and had good model fit ( $\chi^2 (71) = 254.64, p < .001, CFI = .95, TLI = .95, RMSEA = .03$ ). Among the paternal variables, Child Care significantly predicted temperament; and Paternal Capital and Paternal Language and Literacy Activities significantly predicted social-emotional functioning. Paternal Physical Play and Interaction was inversely related to socio-emotional functioning. Of the maternal variables, maternal sensitivity and responsiveness significantly predicted all three socio-emotional outcomes; maternal education predicted self-regulation and temperament; and maternal physical play and interaction predicted social-emotional functioning. Infants' self-regulation scores predicted self-regulation and temperament as toddlers and

assessment age predicted social-emotional functioning. The model explained 10%, 26%, and 11% of the variance in toddlers' social-emotional functioning, temperament, and self-regulation, respectively within the European American sub-sample. The socio-emotional development outcomes model for children of European American fathers is shown in Figure 8.

### **Post-hoc Analyses**

As discussed previously, measurement invariance testing showed evidence of partial measurement invariance, i.e., some factor loadings, intercepts, and thresholds varied by ethnic group, which suggests that the paternal involvement latent constructs may have different meaning across groups and item indicators may be functioning differentially across groups. Some researchers have posited that group comparisons of observed composite means are more appropriate and defensible when only the items demonstrating metric and scalar invariance are included in composites for which mean differences across groups are tested (Byrne, Shavelson, & Muthen, 1989; Gregorich, 2006; Steenkamp & Baumgartner, 1998). To address this issue, I conducted post hoc analyses in which I created paternal involvement composites that included only factorially non-invariant item indicators and compared mean differences of the revised composites across Black and White fathers.

As shown in Table 8, the revised composite measures of caregiving and affective engagement indicated statistically significant differences across racial groups as did the original composites. Also consistent with the original composite measures, the revised physical interaction/play and language/literacy composite means were not significantly different across the two groups. Unlike

its original composite measure, the revised composite of paternal responsibility, which included only two items (get up with ill child at night and soothe child when upset) did not indicate statistically significant mean differences between African American and European American fathers. The latent factor Child Care was found to have non-invariant factor loadings, intercepts, and thresholds for all item indicators which indicated that the latent factor and manifest variables may have had substantively different meanings across Black and White fathers. As such, comparison of group means was not appropriate for this latent factor. In summary, the results of measurement invariance testing in combination with the post hoc analyses indicated statistically significant mean differences in two, rather than four, domains of paternal involvement – co-resident Black fathers reported being involved in caregiving activities (e.g., changing diapers) and affective engagement (e.g., thinking about the child often) more frequently than co-resident White fathers.



## **CHAPTER V**

### **Discussion**

In the current research study I addressed two interrelated, but separate substantive themes. First, I explored a multi-dimensional model of paternal involvement across co-resident African American and European American fathers. Second, I examined the *effect* of co-resident African American and European American fathers' involvement on their toddlers' cognitive and socio-emotional development. The major findings from each substantive theme are discussed in turn.

#### **Multi-Dimensional Model of Paternal Involvement**

A significant finding of the current study is the evidence of partial measurement invariance of the hypothesized multi-dimensional model of early paternal involvement across co-resident African American and European American fathers. Horn and McArdle (1992) defined measurement invariance as "whether or not, under different conditions of observing and studying phenomena, measurement operations yield measures of the same attribute" (p. 117). Thus, evidence of measurement invariance implies that a given instrument (e.g., survey, psychological test, etc.) measures the same construct across sub-groups to whom the instrument is administered. Conversely, without evidence of measurement invariance of an assessment tool across sub-groups, inferences about the meaning or effect of cross-group differences in assessment scores are

ambiguous (Gregorich, 2006; Millsap & Kwok, 2004; Steenkamp & Baumgartner, 1998; Wu, Li, & Zumbo, 2007). While measurement quality traditionally has been defined and evaluated in terms of reliability and validity of an instrument, as noted by Vandenberg and Lance (2000), lack of evidence of measurement equivalence is as much a threat to interpretations of substantive hypotheses as poor reliability or validity of a measure. Fundamentally, then, the goal of measurement invariance testing is to validate that any group differences in observed measures reflect *real* and substantive differences across the groups in the phenomena being studied and, in turn, to make creditable assessments about the effect of observed group differences on other phenomena of interest.

There are several nested levels or forms of measurement invariance (e.g., configural, metric, scalar, and strong factorial invariance) that can be examined for a given instrument using a Confirmatory Factor Analysis framework (Gregorich, 2006; Meredith & Teresi, 2006). Moreover, evidence of particular forms of factorial invariance can substantiate or validate various types of cross-group comparisons. Thus, in the current study, I examined metric (factor loading) and scalar (intercept and threshold) invariance. Metric invariance suggests that latent factors have the same meaning across groups (i.e., the factor reflects the same underlying construct) and scalar invariance implies that observed composite means are unbiased estimates of latent factor means. Therefore, evidence of metric invariance validates cross-group comparisons of latent factor variances and covariances while evidence of scalar invariance supports cross-group comparisons of observed composite means (Gregorich, 2006). By evaluating metric and scalar invariance in the current study, the

underlying question assessed by invariance testing concerned the extent to which observed group differences in paternal involvement dimensions reflected *true* differences in paternal involvement across co-resident African American and European American fathers and further to determine the appropriateness of comparing structural/predictive relationships between paternal involvement and child outcomes for these fathers and their children.

Results of metric and scalar invariance testing in the current study showed partial measurement invariance which indicates that for several of the measures of paternal involvement, the co-resident fathers in this study did not perceive or interpret the items or measures in the same manner. In particular, African American and European American fathers differed in their conceptualization of the caregiving activity of preparing food, taking responsibility for staying home with the infant when ill and taking the child to the doctor, language and literacy activities including reading stories and singing songs, physically interacting with the child by tickling and holding, and taking care of the child when the mother was busy or not present.

I am not aware of any research that might guide substantive interpretations of these findings. That is, while there are a few studies in which African American and European American fathers have been compared in the frequency of these kinds of paternal involvement activities, these and other studies have not explored why and in what way Black and White fathers might differ in their understanding or conceptualization of various paternal involvement behaviors. Some of the items in which the fathers in this study differed lend themselves more easily to substantive (and speculative) explanation while

reasons for non-equivalence of other items are more ambiguous. For example, African American and European American fathers interpreted differently items that measured language and literacy activities such as reading stories and singing songs. White fathers might be more likely to interpret questions about reading stories and singing songs with the child to mean reading bedtime stories and singing nursery rhymes with the child because a bedtime routine of story time and nursery rhymes is, to a degree, an iconic phenomenon in middle-class families. On the other hand, African American fathers may perceive questions about reading and singing songs more broadly to include reading and singing in various settings and throughout the day (e.g. reading or telling bible stories, singing contemporary music in the car, or singing together at church). On the other hand, it is less clear how co-resident African American and European American fathers might interpret questions about taking responsibility for taking the child to the doctor or staying home when the child is ill.

Overall, interpreting differences in fathers' conceptualization of the items that were found to be non-invariant is entirely speculative. Research in which fathers themselves (particularly co-resident African American fathers) construct the meaning and enactment of fatherhood is sorely needed. Interviews, observations, and focus groups to explore how fathers think about what they do as fathers and what fathers deem to be important aspects of fathering would be extremely valuable as researchers seek to expand our knowledge of what fathers from diverse backgrounds do and how they impact their children's development.

**Partial measurement invariance and cross-group comparisons.** The finding of partial measurement invariance in the current study is significant because it highlighted areas in which co-resident African American and European American fathers diverge in their thinking about paternal involvement activities. In addition, the finding of partial measurement invariance has important implications for cross-group comparisons of paternal involvement behaviors. As noted previously, when measures or items are found to be partially invariant, many researchers assert that cross-group comparisons of composites in which only invariant items are included in the composite score are valid. I revised the original paternal involvement composites to include only invariant items. Cross-group mean comparisons of the revised paternal involvement composites revealed statistically significant mean differences in two domains of paternal involvement. Co-resident Black fathers reported being involved in caregiving activities (e.g., changing diapers) and affective engagement (e.g., thinking about the child often) more frequently than co-resident White fathers. The post hoc findings of cross-ethnic similarities and differences in paternal involvement are discussed in relation to extant research.

There have been only a few studies which have included co-resident African American fathers of infants and toddlers on which to draw comparisons to findings from the current study. Hofferth (2003) examined paternal engagement, an overarching construct that encompasses the paternal involvement domains of caregiving, play/physical interaction, and language/literacy activities assessed in the current study. Hofferth (2003) found no statistically significant differences between Black and White fathers in

number of hours engaged, time eating meals, and time reading to children after controlling for child and family characteristics. However, Hofferth's (2003) study included children ranging in age from 0 to 12 years and whether similar or divergent results would be found with the sub-sample of children aged 0 to 3 years is unknown.

Findings from the current study contrasted findings from Yeung et al's (2001) study in which White fathers engaged in more personal care, play and companionship, and achievement activities on the weekends compared to Black fathers. In the current project, I examined similar constructs (caregiving, play/physical interaction, and language/literacy activities), however, I found no significant differences in play/ physical interaction and language/literacy activities between the two groups and found the opposite effect in caregiving (Black fathers reported higher involvement in caregiving than White fathers). There were at least two important differences between the current study and Yeung's study which may have contributed to divergent findings – different range of children's age (0-2 versus 0-12) and different methodology (self-report survey versus mother-report time diary).

Shears (2007) found that Black fathers of children enrolled in Early Head Start reported engaging in more caregiving activities than White fathers which is consistent with results for this project. An important caveat to Shears' finding, however, is the strong possibility of self-selection bias in the study sample given a response rate of 16% for African American fathers and 42% for European American fathers.

In summary, measurement invariance testing pointed to the need to revise the observed composite measures of paternal involvement domains to achieve construct validity across ethnic groups. Analyses with the revised paternal involvement composite measures showed that co-resident African American fathers reported more frequent caregiving and higher affective engagement than European American fathers. Conversely, I found no significant differences in play/physical interaction, language/literacy activities, and responsibility for the child. These findings stand in contrast to some previous studies in which similar paternal involvement constructs have been studied, and as such, represents new information for father involvement research. However, given that the current study is one of a small set of recent studies in which paternal involvement among co-resident African American and European American fathers of very young children has been compared, future studies will be needed to substantiate the findings.

**Statistical significance versus practical significance.** Several statistically significant differences were found between African American and European American fathers in demographic characteristics, child and mother characteristics, as well as some differences in measures of paternal involvement (as discussed above). Statistically significant results are often found in studies with large samples as in the current study, however, as many researchers have noted, one's real interest lies in the practical significance of quantitative cross-group differences.

One way to examine practical versus statistical significance is to calculate effect sizes. However, calculating effect sizes with data collected in a complex

survey design potentially can be problematic because there is some debate about the appropriate sampling stage (e.g., population, strata, or cluster) in which to calculate effect sizes (C. Weisen, personal communication, April 28, 2010). Given the potential disadvantage of calculating effect sizes per se, next I talk about practical significance in terms of absolute differences between African American and European American fathers in the metric of a particular measure.

Although several statistically significant mean and proportional differences were found in the current study, many differences were quite small in absolute terms. For example, mean comparisons of Black and White fathers showed a statistically significant difference in fathers' affective engagement (e.g., frequency father thinks or talks about the child; see Table 8). However, both groups were near the top of the scale and were less than half a point different from each other (range 1 to 12; African American,  $M = 11.21$ ; European American  $M = 10.80$ ). Fathers were also found to differ significantly in caregiving behaviors. Again fathers of both groups reported high involvement overall and scores were not very different in absolute terms (mean difference of 1.54; see Table 8). In practical terms, this might amount to Black fathers changing one to two more diapers a day than White fathers.

Mean comparisons of fathers' demographic characteristics (i.e., educational attainment, employment status, occupational prestige, and annual gross income) showed statistically significant differences between co-resident Black and White fathers (see Table 2). These differences were likely smaller than differences among the larger population of Black and White men overall, but the differences found in the current study have some practical significance. For



example, African American and European American fathers were roughly 3 points apart in occupational prestige scores which reflects that Black fathers' occupations were concentrated in installation, maintenance and repair; transportation and moving services; and office and administrative support. White fathers' occupations were more likely to be business and financial operations or management positions relative to co-resident Black fathers. European American fathers had more years of schooling than African American fathers, but this was a small difference in that both groups on average attended at least some post-secondary educational or vocational training institutions. Also, both groups were likely to work full-time or nearly full-time although there was a statistically significant difference in employment status. Finally, as in the general population, co-resident European American fathers had statistically significant higher earnings than co-resident African American fathers (43k versus 33k), a difference that has practical significance in terms of buying power.

Some statistically significant differences were found in fathers' beliefs and attitudes, which I believe reflect important substantive and practical significance. Nearly  $\frac{3}{4}$  of African American fathers strongly endorsed that fathers should be as involved in caring for the child as the mother compared to less than  $\frac{1}{2}$  of European American fathers. Similarly, a statistically significant difference was found in the proportion of African American fathers who strongly agreed that encouragement and emotional support of the mother is very important compared to European American fathers (62% and 44%, respectively). These differences are sizable in absolute terms and likely reflect

substantive differences in cultural beliefs and values. Statistically significant differences in other beliefs were smaller and probably have little practical meaning. For example, African American fathers were more likely than European American fathers to strongly agree that it is difficult for men to express affection to babies and that providing is more important than activities with a child, however so few fathers in either group strongly endorsed either statement (6% and 9% of Black fathers; 3% and 2% of White fathers) that this finding provides little substantive information about diverse beliefs and attitudes.

In summary, the overall pattern of statistically significant differences between co-resident African American and European American fathers suggest that there are few meaningful or practical differences in paternal involvement activities of the two groups. Comparisons of the two groups in their beliefs and attitudes about fathers and fathering point to both statistical and substantive differences across co-resident Black and White fathers. The pattern of differences in demographic characteristics is consistent with population trends; that is, Black men on average tend to have less schooling, are more likely to be employed in service and manufacturing jobs, work less, and have lower incomes than White men.

### **Early Paternal Involvement and Toddlers' Cognitive and Socio-Emotional Development**

The final two research questions of the current study concerned predictive relationships between paternal involvement during infancy and toddlers' development within racial/ethnic groups as well as structural invariance of predictive relationships across racial/ethnic groups. As with the cross-ethnic

mean comparisons of paternal involvement composite measures, results of the measurement invariance testing called into question whether testing cross-group structural invariance would be meaningful or interpretable given evidence of non-equivalence of paternal involvement latent factors across groups. More specifically, measurement invariance testing suggested that the latent factors Caregiving, Language and Literacy Activities, Physical Play and Interaction, Responsibility, and Child Care may have assessed different underlying constructs across groups. Comparing structural associations between these paternal involvement factors and child outcomes would be akin to comparing apples and oranges. For example, comparing the effect of paternal involvement in child care on toddlers' cognitive development across Black and White fathers would not be readily interpretable because the latent factor Child Care seemed to be different constructs within the respective ethnic groups. As such, Child Care could predict toddler development within both ethnic groups, but that finding is not really informative if Child Care represents different constructs in each group. Thus, given the results of measurement invariance testing, I examined structural associations between paternal involvement and toddler development within groups, but not across groups.

In contrast to some previous research, I did not find any statistically significant associations between any of the dimensions of paternal involvement assessed during infancy and toddlers' cognitive development for children of co-resident African American fathers. For children of co-resident European American fathers, only paternal capital significantly predicted toddlers' cognitive development. Many of the previous studies in which early paternal involvement

and paternal capital were found to be associated with young children's cognitive development differed in important ways from the current study, which may partially explain contrasting findings. For example, some previous studies used a cross-sectional design in which statistically significant associations are more likely (e.g., Black, et al., 1999; Bronte-Tinkew, Carrano, Horowitz, & Kinukawa, 2008b). Some longitudinal studies assessed paternal involvement at 2 or 3 years of age and child outcomes at 2, 3, or 4 years (e.g., N. J. Cabrera, et al., 2007; Duursma, et al., 2008) unlike the present study in which paternal involvement and capital were assessed during infancy and child outcomes at 24 months. Finally, in some studies quality of paternal involvement and engagement was assessed through observation (e.g., Martin, et al., 2007; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004), whereas in the current study, quantity of paternal involvement was assessed through survey methodology, which is less likely to capture predictive relationships.

Overall, toddler cognitive development of children of co-resident African American fathers was not well-explained by either paternal or maternal factors in the model. In fact, only child characteristics (assessment age and baseline BSF-R Mental Scale Score) significantly predicted toddler cognitive development. Among children of co-resident European American fathers, toddler cognitive development also was not well-explained by paternal factors (only paternal capital was significantly related).

Examining paternal factors that predicted toddlers' socio-emotional development among children of co-resident African American fathers, I found that paternal involvement in child care was positively associated with toddlers'

socio-emotional functioning (as measured by engagement and attention during an interaction with the mother) and temperament. Paternal involvement in caregiving was significantly inversely related to toddlers' self-regulation. This finding was unexpected but may reflect that children with less-developed self-regulatory skills and more difficult temperament often require more frequent, hands-on caregiving than children who are more self-regulated. Paternal responsibility taking (e.g., staying home with the child when ill) was positively related to socio-emotional functioning. Such responsibility taking would likely mean one-on-one time between fathers and infants, which may facilitate young children's social interaction abilities such as engaging and attending to the mother during interactions.

Among children of co-resident European American fathers, paternal involvement in child care was positively associated with toddlers' temperament. Paternal capital and language and literacy activities were positively associated with socio-emotional functioning. Paternal play and physical interaction was inversely related to socio-emotional functioning. The latter finding was also unexpected. It is possible that the direction of the predictive relationship between paternal play and socio-emotional functioning depends on qualitative aspects of paternal play. For example, if the father's play and physical interaction with the child is intrusive or overbearing rather than responsive and sensitive, it may predict lower socio-emotional functioning.

In summary, taking a big picture view of the study findings, the paternal involvement activities and behaviors assessed in the current study did not explain much, if any, of the variation in toddlers' cognitive and socio-emotional

development. This was true for both African American and European American fathers, although there were even fewer significant relationships between toddler development and paternal involvement for Black fathers. These findings could be interpreted to indicate that co-resident African American and European American paternal involvement does not contribute to toddlers' cognitive development, however, such a view is quite inconsistent with extant theoretical perspectives of child development (e.g., ecological or family systems theories). This begs the question, then, what are other possible explanations of the lack of significant relationships found in the current study? One possibility is that the paternal involvement constructs measured are actually important paternal factors in young children's development, but were not examined with the depth and specificity needed to reveal statistically significant predictive relationships. Previous research in which scholars have analyzed paternal behaviors through observational methods have shown some relationships between paternal involvement and early child development (e.g., Martin, et al., 2007).

Another possible explanation for the lack of significant relationships between paternal involvement and toddler development is that the 'right' constructs were not examined. There is little research scholarship on co-resident African American fathers, per se, from which to make informed hypotheses about what would be more appropriate to explore in efforts to understand co-resident Black fathers' influences on their very young children. However, other research avenues such as studies with non-resident African American fathers may provide a starting point for generating hypotheses about paternal factors among co-resident African American fathers that are related to young children's

development. Several researchers have noted the role of extended family and para-kin networks in many African American families. Drawing on extended family relations in shared caregiving of rearing children may be an avenue through which fathers indirectly contribute to young children's development. Fathers' connection to extended family and maintenance of extended family relationships may ensure that children's needs are met and additional opportunities and experiences are provided to the child beyond what is afforded the child in the nuclear family unit. In my own personal experience, I was given numerous opportunities by members of my extended family; relationships that were facilitated, supported, and encouraged by my parents. Research with teen fathers provides some evidence of this process. Research has suggested that teen fathers sometimes encourage and endorse relationships between the teen fathers' mother and the mother of his child by soliciting his mothers' advice and seeking her support in child care (Sullivan, 1993). Although the father may be less involved in direct caregiving and child care, or even if the father is somewhat directly involved, paternal influences may play out in the fathers' efforts to engage members of his extended family in the care of his child. Interview and survey questions that probe the nature and extent of fathers' relationships in extended family and para-kin networks as well as fathers' beliefs about these relationships might inform researchers how extended family processes relate to paternal behaviors in many African American families.

Another avenue of research that may be informative is highlighted by the finding in the current study that shared caregiving, emotional support, and encouragement of the child's mother had a high valence for many co-resident

African American fathers. As discussed previously, a large majority of co-resident Black fathers strongly endorsed the importance of equitable and shared giving between mothers and fathers. Similarly over half of Black fathers strongly endorsed emotional support and encouragement of the mother as one of the most important things a father can do for his child. The salience of these beliefs and attitudes of Black fathers suggests that fathers' relationships with his spouse/partner, mothers' perceptions of paternal support, and even possibly mothers' well-being, parenting quality, and parental self-efficacy as potential pathways through which fathers might indirectly impact their children's development. For example, research with African American mothers has documented a link between maternal mental health and well-being and parenting quality, which is related to child development (McLoyd, 1990). Research on marital quality, marital relationships, and co-parenting has shown complex interrelationships between marital/partner relationships, parenting quality, and child development (Gottman, 1998). Considering these diverse lines of inquiry, one might hypothesize a series of complex mediated relationships between fathers' beliefs about shared caregiving, emotional support, and encouragement and marital quality, maternal parenting, and/or maternal parenting efficacy and child development. If fathers actually engage in shared giving and encouraging behaviors (believing something is important and actually carrying it out are not the same), these may be important factors in the well-being and parenting of mothers of young infants and/or first time mothers.

The current study probed fathers' beliefs about co-parenting and emotional support, which is a good start given that these were the only areas in



which substantive differences were found between co-resident African American and European American fathers. Future research might assess fathers' actual behaviors through interviews and/or observations of both parents to determine to what extent and how these beliefs might be carried out in relationships and influence young children's development.

## **Limitations**

An important limitation of the current study was the use of a self-report questionnaire to assess early paternal involvement. Unlike observational studies, the survey format did not allow examination of the quality of paternal involvement. Further, there was little overlap in the measures of paternal and maternal parenting and, as such, it was not possible to make direct comparisons or to evaluate the effects of paternal involvement beyond the effects of comparable dimensions of maternal parenting.

Findings from the current study should be interpreted in light of the response rates of co-resident African American and European American fathers. Although analyses comparing African American fathers who completed the resident father questionnaire (RFQ) to eligible fathers who did not complete the RFQ showed few differences in demographic characteristics, the fact remains that approximately 37% of eligible co-resident African American fathers did not complete the RFQ. African American fathers who completed the RFQ may not have differed demographically from African American RFQ non-respondents, however, completing the questionnaire may itself be indicative of differences in paternal involvement. Comparisons of co-resident European American RFQ respondents and non-respondents showed several statistically significant

differences of demographic characteristics, suggesting the possibility of self-selection bias for co-resident European American fathers as well.

Finally, overall the ECLS-B was not well-designed for some of the research questions posed in the current study. The ECLS-B provides an expansive view of factors that might relate to young children's development, but by the very nature of its extensive breadth, many areas cannot be explored with great depth. I believe there is much valuable information to be gained from the data available in the ECLS-B. All studies are limited in some manner and the ECLS-B is no exception, but it provides an extremely detailed portrait of the lives of nationally representative sample of very young children in the United States which can contribute to our knowledge of early factors in children's developmental trajectories.

## **Future Directions**

Findings of the current study underscore the importance of evaluating the validity of measures of paternal involvement across ethnic groups. This is vital when comparing groups on mean differences in paternal involvement, particularly if findings will be used to inform policy and program development. Results of the present study also showed that the measures of paternal involvement used in the ECLS-B were not explanatory predictors of cognitive development of 2-year old for either African American or European American co-resident fathers and only a few of the paternal involvement measures explained variation in 2-year olds' socio-emotional development. Future studies with data from the ECLS-B will be needed to examine whether early paternal involvement predicts child outcomes in later years (e.g., preschool or kindergarten). There is

more information about fathers' background characteristics and family-of-origin experiences that can be explored to enhance our understanding of fathers as well as potential relations to child outcomes. Finally, study findings suggest the need for qualitative research to explore cross-ethnic and cross-cultural differences in the meaning and construction of fathering across diverse groups as well as the dimensions of fathering that are salient in children's development across groups.

Table 1

*Socio-demographic Characteristics of Eligible Fathers who Completed and Did Not Complete the Residential Father Questionnaire (RFQ) Within Ethnic/Racial Group*

Variable	<u>African American Fathers</u>				<u>European American Fathers</u>			
	Completed RFQ (n = 464) <sup>a</sup>		Did not complete RFQ (n = 300) <sup>a</sup>		Completed RFQ (n = 3306) <sup>b</sup>		Did not complete RFQ (n = 796) <sup>b</sup>	
	M	SD	M	SD	M	SD	M	SD
Age (years)	31.83	7.04	31.54	7.51	32.39	6.21	32.14	6.78
Education	4.29***	1.77	3.77	1.61	5.04***	1.89	4.19	2.02
Employment	2.54	0.95	2.61	0.89	2.83**	0.59	2.71	0.81
Occupational prestige	41.46	9.76	40.46	9.50	44.81***	10.39	42.14	9.63
Household income	7.16	3.14	7.25	3.02	9.01***	2.73	8.09	3.13
Below poverty (%)	20.1		19.7		7.2***		13.5	
Married (%)	70.9		62.8		91.5***		82.3	

*Note.* Estimates weighted by W1R0 (W1 RESP-PANEL WEIGHT FULL SAMPLE). Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Longitudinal 9-Month-Two-Year Restricted-Use Data File

<sup>a</sup> African American with RFQ: weighted n=150,023; without RFQ: weighted n=99,199. <sup>b</sup> European American with RFQ: weighted n=1,530,257; without RFQ: weighted n=362,253.

\*p < .05; \*\*p < .01; \*\*\*p < .001

Table 2

*Summary Statistics of Paternal Capital and Involvement*

		African American (n = 464) <sup>a</sup>		European American (n = 3306) <sup>b</sup>		
Variable	Range	M	SD	M	SD	F-test
Paternal capital						
Educational attainment	1.00-9.00	4.11	1.79	4.85	1.93	40.060***
Employment status	1.00-4.00	3.49	0.98	3.83	0.59	21.657***
Occupational prestige	27.10-64.20	41.36	9.72	44.26	10.27	17.157***
Annual salary (Log10)	-1.05-3.64	1.52	0.29	1.64	0.31	27.929***
Paternal Involvement						
Caregiving activities	0.00-30.00	23.55	5.54	21.14	5.86	37.860***
Language and literacy activities	0.00-9.00	4.04	2.19	3.96	2.16	0.273
Physical play and interaction	0.00-23.00	18.10	3.27	17.87	2.69	1.320
Physical play and interaction (standardized)	-31.00-5.00	0.15	3.69	-0.01	3.13	0.585
Child care	1.00-162.00	20.47	16.10	13.64	12.48	35.769***
Responsibility	0.00-20.00	10.46	4.11	9.48	3.89	14.231***
Affective engagement	1.00-15.00	13.61	1.67	13.20	1.83	10.711**

Note. Estimates weighted by W2C1F0. Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Longitudinal 9-Month-Two-Year Restricted-Use Data File

<sup>a</sup> African American weighted n=247,170. <sup>b</sup> European American weighted n=1,952,637.

\*p < .05; \*\*p < .01; \*\*\*p < .001

Table 3

*Father's Beliefs and Attitudes about Fathering by Father's Race*

Variable	African American fathers (n = 464) <sup>a</sup> %	European American fathers (n= 3306) <sup>b</sup> %	Adjusted Residual
Fathers' roles and effects on his children (% strongly agreed with each statement)			
Father-child play is essential for child well-being	87	89	0.818
Fathers should be as heavily involved as mothers in the care of the child	73	45	9.308***
The way a father treats his baby has long-term effects	82	71	1.610
Encouragement and emotional support for the child's mother is one of the most important things a father can do for his children	62	44	5.096***
It is difficult for men to express affectionate feelings toward babies	6	3	2.437*
Providing for children is more important than the activities a father does with them.	9	2	2.961**
All things considered fatherhood is a highly rewarding experience	84	87	1.102
Most important thing you do for your child (% ranked highest)			
Showing child love and affection	60	64	1.216
Taking time to play with child	0.5	2	2.617**
Taking care of child financially	11	6	2.043*
Giving child moral and ethical guidance	8	3	2.467*
Making sure child is safe and protected	21	24	1.235
Teaching child and encouraging his or her curiosity	0.2	1	4.866***
How dad feels about self as a father (%)			
Not very good at or has trouble being a father	3	3	0.094
Average or better than average	35	51	4.632***
A very good father	62	46	4.317***

Note. The absolute value of adjusted residuals is reported. Estimates weighted by W2C1F0. Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Longitudinal 9-Month-Two-Year Restricted-Use Data File

<sup>a</sup> African American weighted n=247,170. <sup>b</sup> European American weighted n=1,952,637.

\*p < .05; \*\*p < .01; \*\*\*p < .001

Table 4

*Descriptive Statistics of Maternal Variables and Covariates by Fathers' Race*

		African American (n = 464) <sup>a</sup>		European American (n = 3306) <sup>b</sup>		
Variable	Range	M	SD	M	SD	F-test
Maternal parenting						
Language and literacy activities	0.00-9.00	5.68	2.15	6.23	2.10	12.777**
Physical play and interaction	4.00-18.00	13.93	2.79	14.66	2.19	11.475**
Sensitivity and responsiveness	15.00-49.00	34.59	4.31	35.45	4.41	7.827**
Covariates						
Maternal education at baseline	1.00-9.00	4.15	1.81	4.83	1.86	27.946***
Child assessment age at wave 2	20.10-38.20	24.31	1.24	24.31	1.03	0.011
BSF-R Mental Scale Score at baseline	37.41-116.50	75.39	9.83	76.53	9.33	2.209
Self-regulation and temperament at baseline	0.00-24.00	9.25	4.33	8.80	4.29	2.214
Parental marital status (% married) at baseline	0.00-1.00	70.9		90.1		65.507***

Table 5

*Descriptive Statistics of Child Outcomes at 24-Months by Fathers' Race*

Variable	Range	African American (n = 464) <sup>a</sup>		European American (n = 3306) <sup>b</sup>		F-test
		M	SD	M	SD	
Child cognitive development						
BSF-R Mental Scale Score	92.61-173.29	124.54	11.08	129.72	10.27	49.778***
Vocabulary	0.00-50.00	28.27	11.08	29.77	11.89	3.717
Language skills	0.00-14.00	7.92	4.04	8.74	3.81	11.632**
Child socio-emotional development						
Engagement in interaction	1.00-7.00	4.37	1.15	4.81	1.08	22.657***
Attention in interaction	1.00-7.00	4.37	1.13	4.68	1.13	10.290**
Self-regulation and temperament	1.00-27.00	16.43	5.13	17.25	4.85	5.848*

*Note.* Estimates weighted by W2C1F0. Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Longitudinal 9-Month-Two-Year Restricted-Use Data File

<sup>a</sup> African American weighted n=247,170. <sup>b</sup> European American weighted n=1,952,637.

\*p < .05; \*\*p < .01; \*\*\*p < .001



Table 6

*Paternal Involvement Latent Constructs and Manifest Indicators in SEM Analyses*

Caregiving	Language and Literacy Activities	Physical Play and Interaction
Change diaper	Tell stories to child	Tickles child
Prepare food	Read stories to child	Plays peek-a-boo with child
Feed bottle	Sing songs with child	Takes child outside to play or walk
Bathe child		Holds child <sup>a</sup>
Dress child		Takes child on errands <sup>a</sup>
Put child to sleep <sup>a</sup>		
Child Care	Responsibility	Affective Engagement
Frequency father babysits	Stay home with ill child	Thinks about the child
Number or hours father babysits	Get up when child wakes at night	Talks about the child
Father regularly babysits <sup>a</sup>	Soothe child when upset	Enjoys holding child
Involvement in child care decision <sup>a</sup>	Take child to the doctor	Prefer to get gifts for child rather than self
	Take child to and from sitter <sup>a</sup>	Carry pictures of child <sup>a</sup>

*Note.* Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Longitudinal 9-Month-Two-Year Restricted-Use Data File.

<sup>a</sup> Manifest indicators that were not included in final measurement and structural models.

Table 7

*Fit Indices for Paternal Involvement Measurement Model Invariance Testing*

Latent Factor	Model									$\chi^2_{DIFF}$
	Full Sample			Measurement Non-Invariance			Measurement Invariance			
	$\chi^2$	CFI	RMSEA	$\chi^2$	CFI	RMSEA	$\chi^2$	CFI	RMSEA	
Caregiving	12.17**	.99	.03	13.31*	.99	.03	24.63*	.99	.03	19.71*
Responsibility	0.13	1.00	.00	1.97	1.00	.00	24.22**	.99	.03	23.11**
Affective Engagement	33.90***	.98	.07	31.36***	.98	.06	23.73***	.98	.05	0.11
Language and Literacy Activities <sup>a</sup>										
Physical Play and Interaction <sup>a</sup>	77.87***	.97	.04	87.89***	.97	.04	110.89***	.96	.04	40.71***
Child Care <sup>a</sup>										

Note. Measurement invariance models were nested in measurement non-invariance models for chi-square difference testing.

<sup>a</sup> Language and Literacy Activities, Physical Interaction and Play, and Child Care measurement models were conducted simultaneously to generate model fit indices.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 8

*Racial/Ethnic Comparisons of Involvement with Revised Paternal Involvement Composites*

Variable	Range	African American (n = 464) <sup>a</sup>		European American (n = 3306) <sup>b</sup>		F-test
		M	SD	M	SD	
Paternal Involvement						
Caregiving activities (4 items)	0.00-20.00	15.27	3.79	13.73	3.93	31.84***
Language and literacy activities (1 item)	0.00-3.00	1.13	0.97	1.09	0.94	0.48
Physical play and interaction (2 items)	0.00-10.00	6.70	2.40	6.51	1.85	2.04
Child care <sup>c</sup>						
Responsibility	0.00-8.00	4.94	1.66	4.82	1.54	1.14
Affective engagement	1.00-12.00	11.21	1.12	10.80	1.30	24.76***

Note. Estimates weighted by W2C1F0. Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Longitudinal 9-Month-Two-Year Restricted-Use Data File

<sup>a</sup> African American weighted n=247,170. <sup>b</sup> European American weighted n=1,952,637. <sup>c</sup> The original composite was not revised because measurement invariance testing indicated metric and scalar non-invariance for both item indicators of the latent factor child care.

\*p < .05; \*\*p < .01; \*\*\*p < .001

Table 9

*Intercorrelations of Latent Factors for African American Fathers*

Latent Factor	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Caregiving													
2. Responsibility	.27***												
3. Paternal Language & Literacy	.38***	.09											
4. Paternal Play & Interaction	.68***	.20*	.62***										
5. Child Care	.59***	.10	.21*	.43***									
6. Affective Engagement	.27**	.10	.47***	.52***	.22*								
7. Paternal Capital	-.18**	-.03	-.14	-.41***	-.23*	-.23*							
8. Maternal Language & Literacy	-.13	.05	.23**	-.07	-.11	-.03	.09						
9. Maternal Play & Interaction	-.09	-.05	.12	.21*	.09	.26*	.14	.47***					
10. Cognitive Development	-.04	.08	.02	-.03	-.03	-.03	.29**	.18*	.10				
11. Socio-emotional Functioning	-.01	.09	-.14	-.05	.13	-.05	.26**	-.04	.18	.60***			
12. Temperament	-.10	-.05	.04	-.10	.03	-.01	.35***	.22**	.20*	.36***	.28***		
13. Self-Regulation	-.08	-.003	.11	.12	-.09	.12	.11	.13	.17	.43***	.34***	.66***	

*Note.* Estimates weighted by W2C1F0. Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Longitudinal 9-Month-Two-Year Restricted-Use Data File

<sup>a</sup> African American weighted n=247,170. <sup>b</sup> European American weighted n=1,952,637. <sup>c</sup> The original composite was not revised because measurement invariance testing indicated metric and scalar non-invariance for both item indicators of the latent factor child care.

\*p < .05; \*\*p < .01; \*\*\*p < .001

Table 10

*Intercorrelations of Latent Factors for European American Fathers*

Latent Factor	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Caregiving													
2. Responsibility	.30***												
3. Paternal Language & Literacy	.39***	.18***											
4. Paternal Play & Interaction	.72***	.28***	.58***										
5. Child Care	.59***	.22***	.28***	.40***									
6. Affective Engagement	.21***	.17***	.28***	.43***	.10**								
7. Paternal Capital	-.12***	-.10**	.15***	-.09	-.18***	-.26***							
8. Maternal Language & Literacy	-.04	-.06*	.47***	.08*	-.04	.05	.25***						
9. Maternal Play & Interaction	.01	-.04	.15***	.30***	-.01	-.12*	.08	.49***					
10. Cognitive Development	-.02	-.03	.15***	.07*	-.06*	.00	.22***	.25***	.14**				
11. Socio-emotional Functioning	-.03	-.06	.12***	-.03	-.05	-.04	.21***	.19***	.10*	.55***			
12. Temperament	-.07**	.03	.10**	-.03	-.01	.04	.13***	.20***	.11*	.23***	.16***		
13. Self-Regulation	-.07*	-.07*	-.01	-.06	-.04	-.08*	.17***	.17***	.15**	.30***	.21***	.61***	

*Note.* Estimates weighted by W2C1F0. Source: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Longitudinal 9-Month-Two-Year Restricted-Use Data File

<sup>a</sup> African American weighted n=247,170. <sup>b</sup> European American weighted n=1,952,637. <sup>c</sup> The original composite was not revised because measurement invariance testing indicated metric and scalar non-invariance for both item indicators of the latent factor child care.

\*p < .05; \*\*p < .01; \*\*\*p < .001

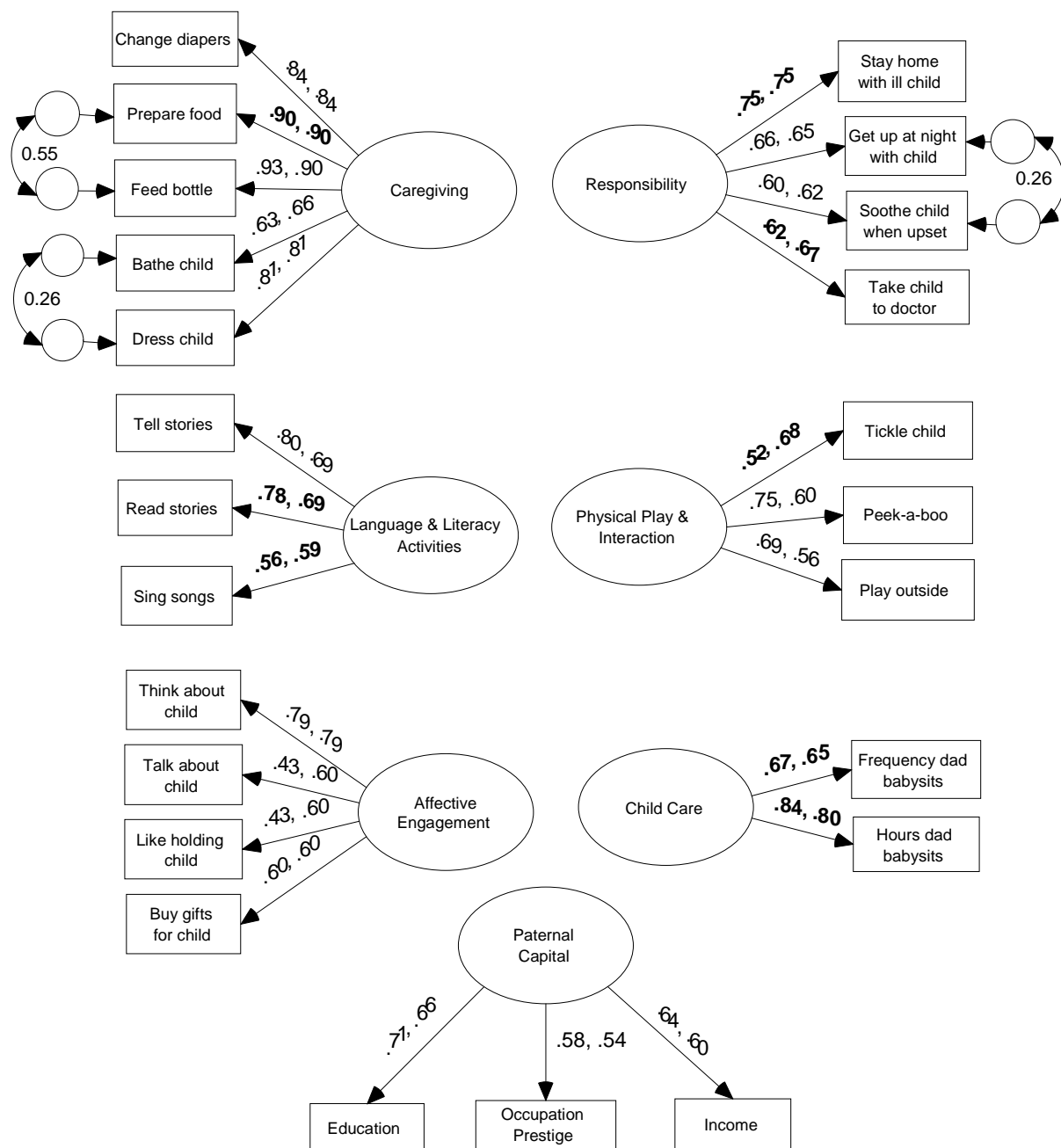
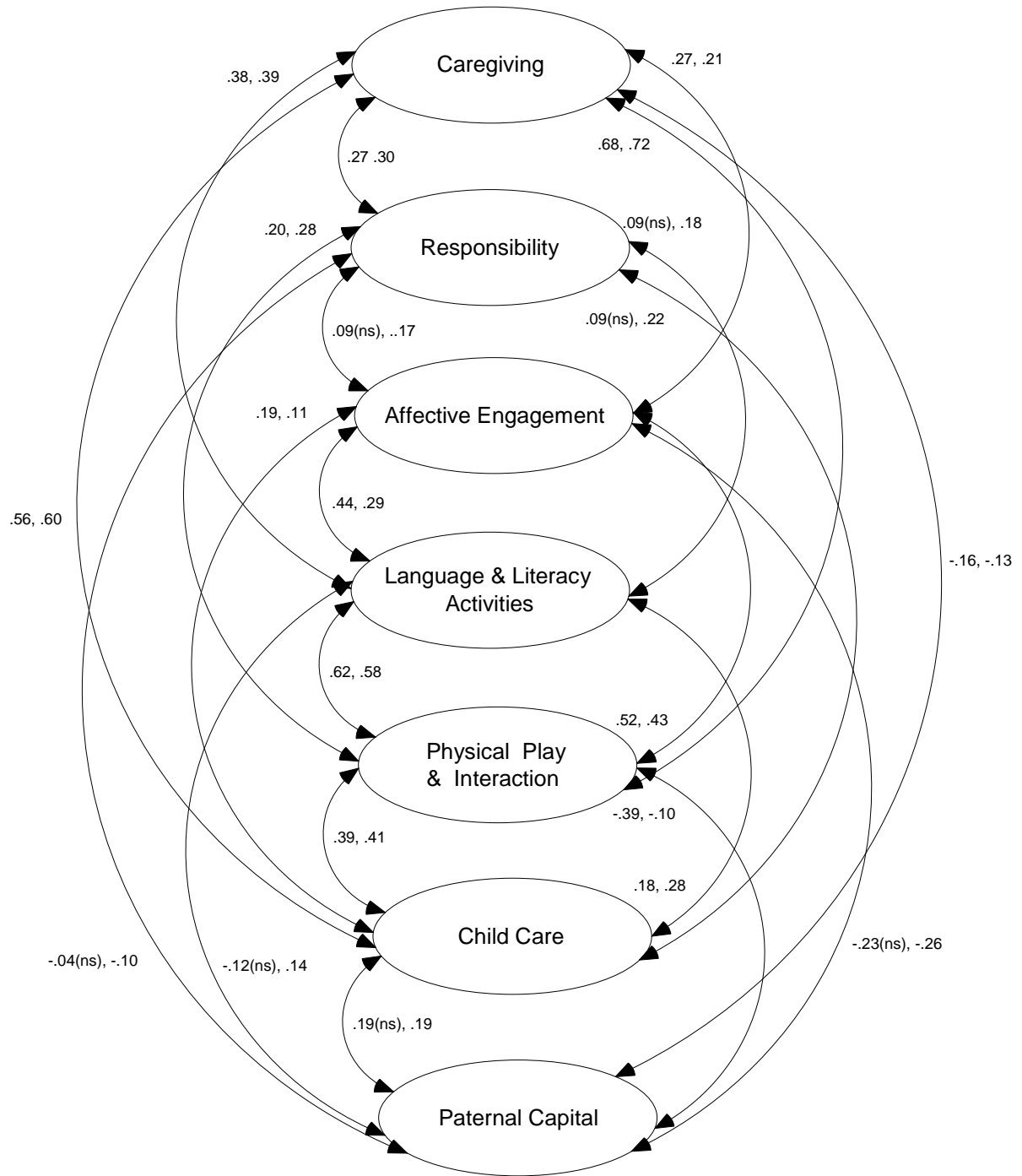


Figure 1. Individual paternal involvement measurement models. Standardized factor loading estimates are shown. Unconstrained factor loadings are in bold. Ordering of coefficients is African American first, then European Americans. Double-headed arrows indicate correlated error terms (the correlated error terms were not included in the final multi-dimensional model of paternal involvement). For ease of presentation, standardized covariances among the latent variables are shown in Figure 2.



*Figure 2.* Simultaneous group analysis of paternal involvement and paternal capital latent factors covariances. Ordering of coefficients is African American first, then European Americans. Covariances are significant unless denoted by (ns).

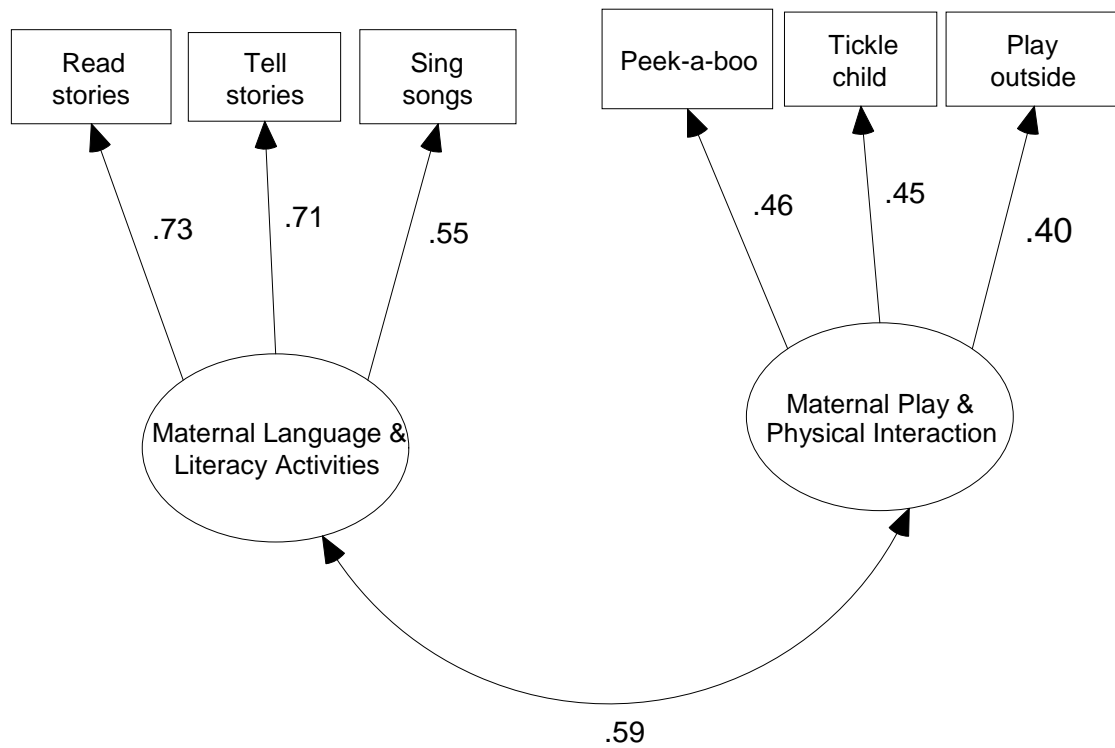


Figure 3. Maternal parenting measurement model. Parameter estimates were calculated with the whole sample, not grouped by race. Standardized estimates are shown.



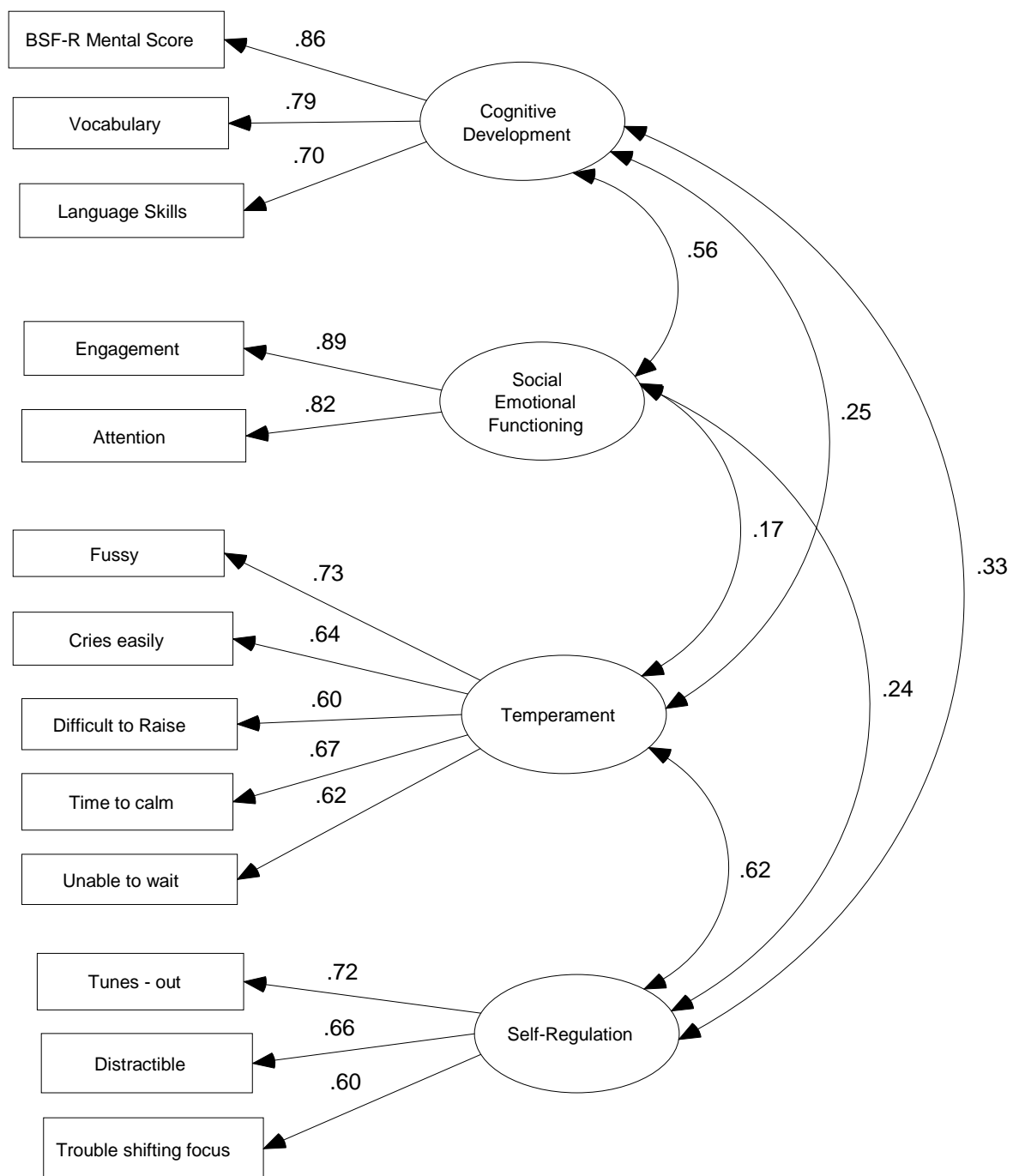


Figure 4. Child developmental outcomes measurement model. Parameter estimates were calculated with the whole sample, not grouped by race. Standardized estimates are shown.

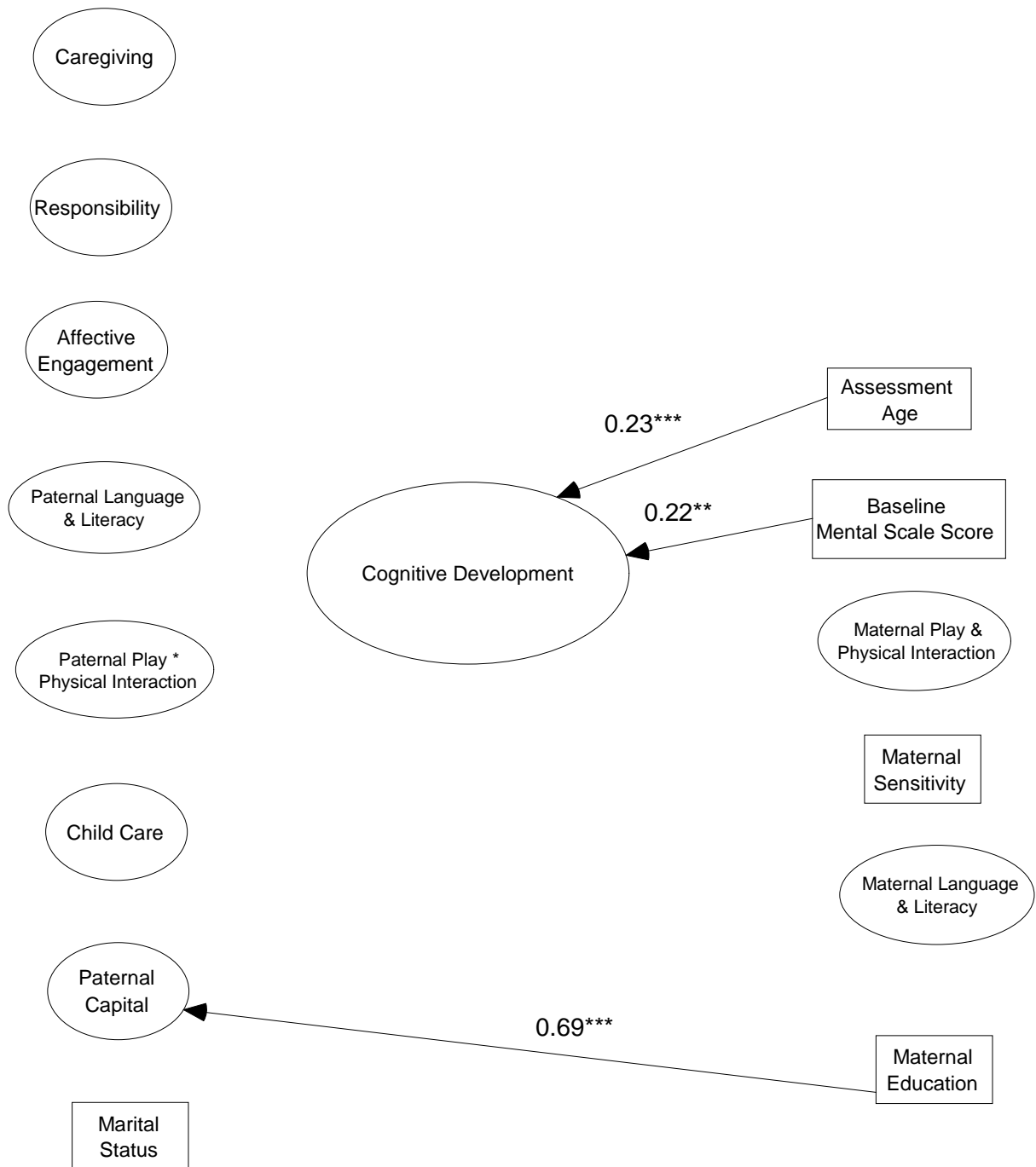


Figure 5. Cognitive development SEM for the African American sub-sample. Only statistically significant structural paths are shown. Parameter estimates are standardized.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

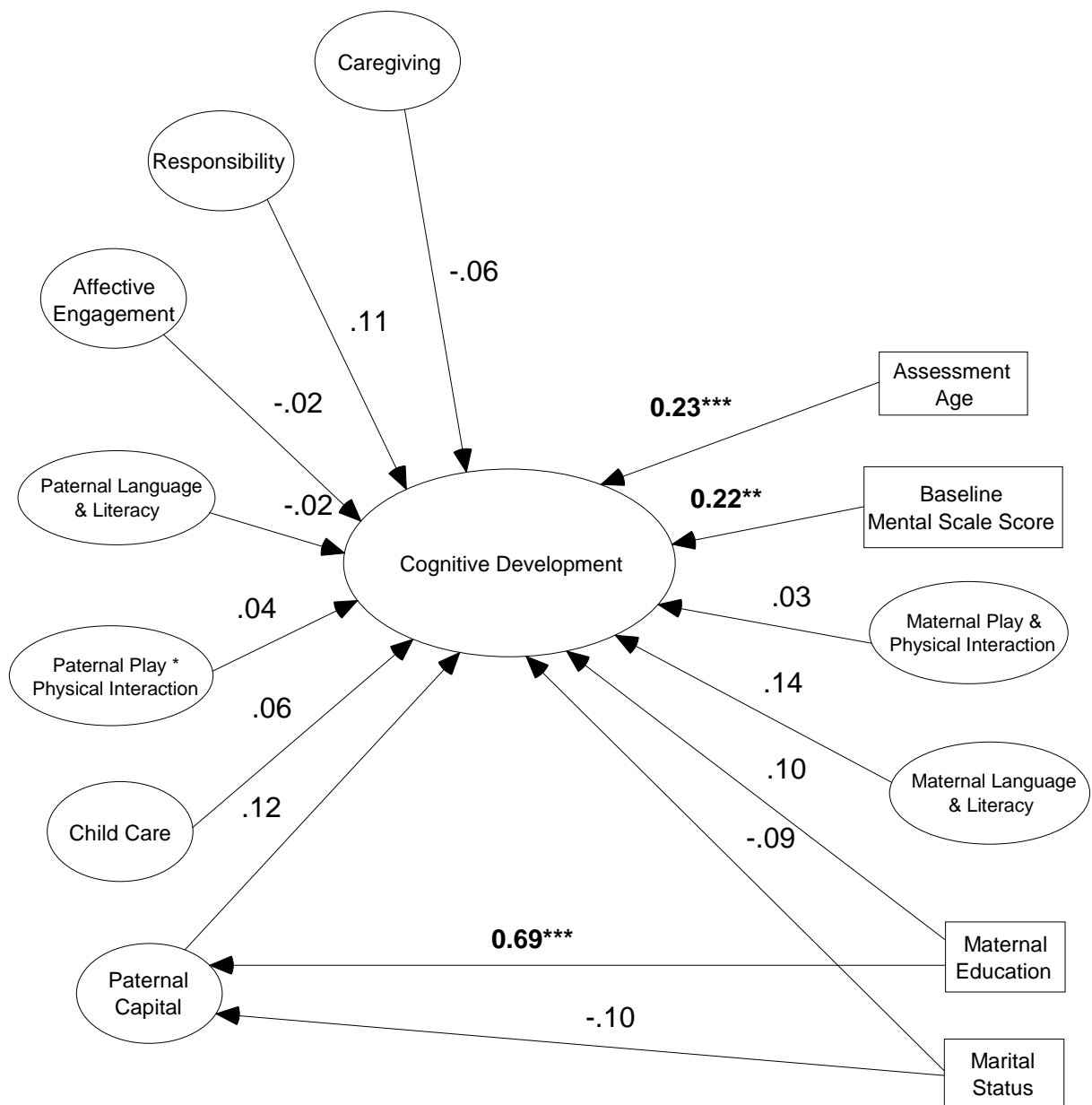


Figure 6. Cognitive development SEM for the African American sub-sample. All tested paths are shown. Standardized parameter estimates are shown and statistically significant parameters are in boldface.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

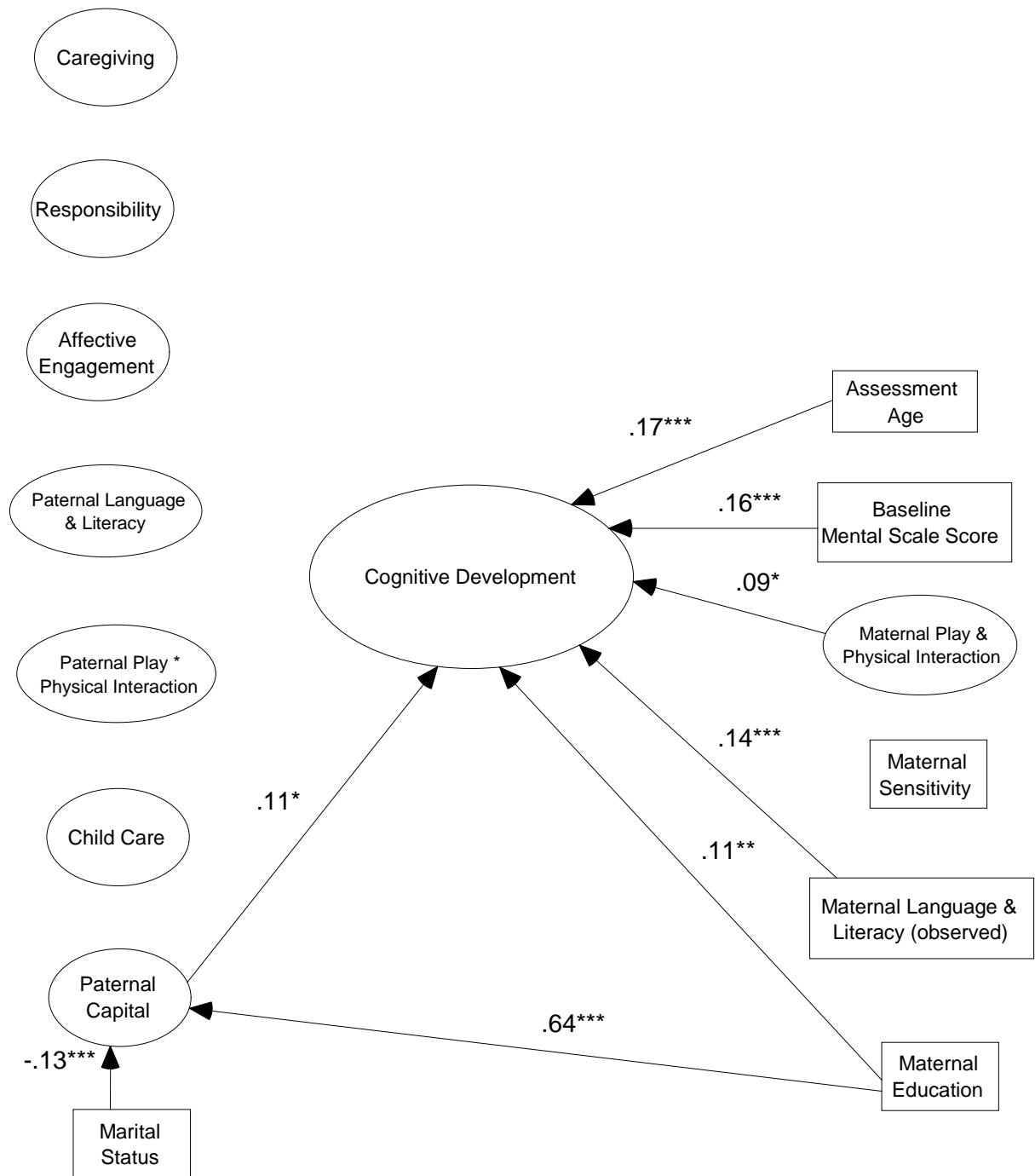


Figure 7. Cognitive development SEM for the European American sub-sample. Only statistically significant structural paths are shown. Parameter estimates are standardized.  
 $^*p < .05$ ;  $^{**}p < .01$ ;  $^{***}p < .001$ .

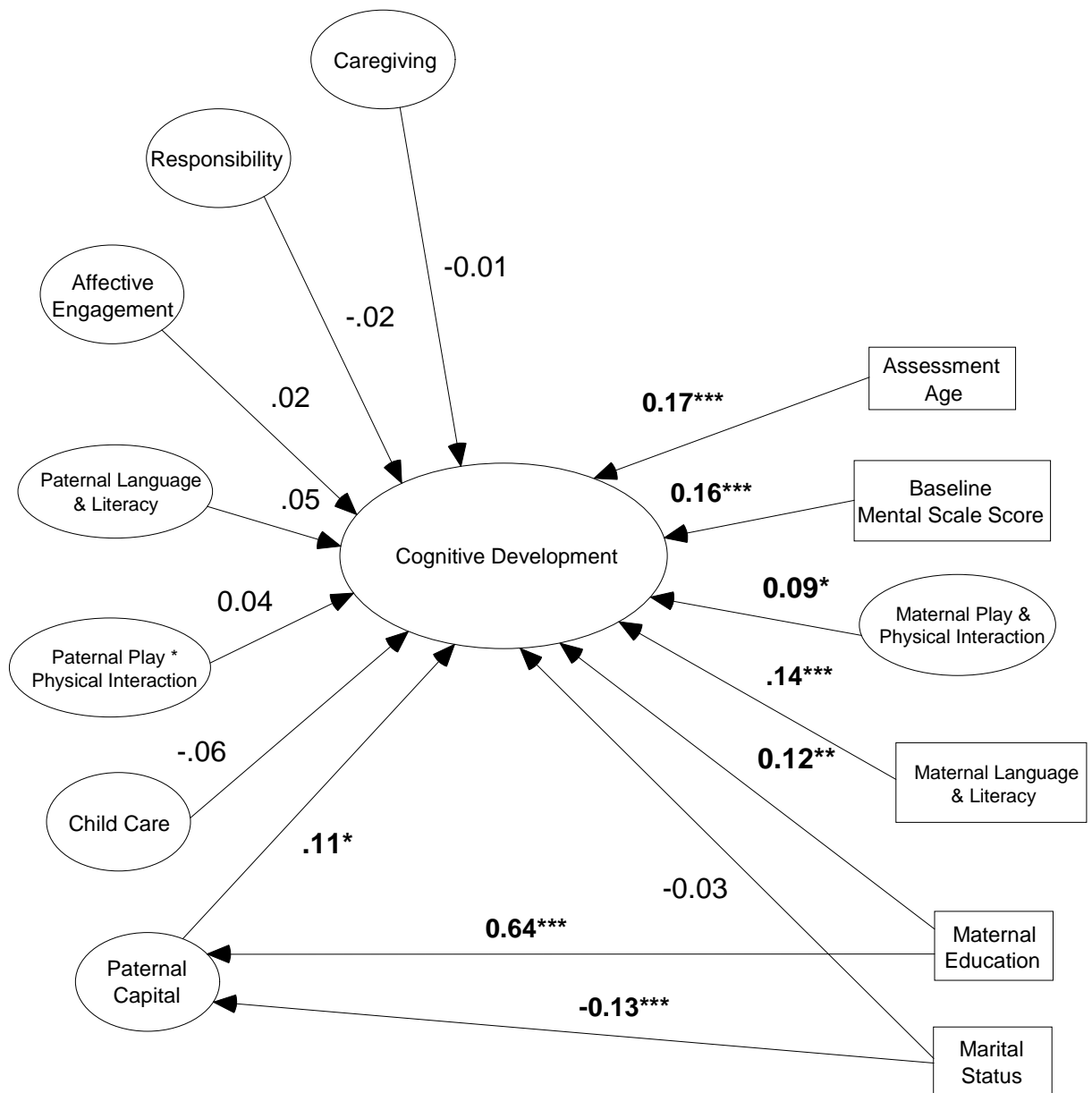


Figure 8. Cognitive development SEM for the European American sub-sample. All tested paths are shown. Standardized parameter estimates are shown and statistically significant parameters are in boldface.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

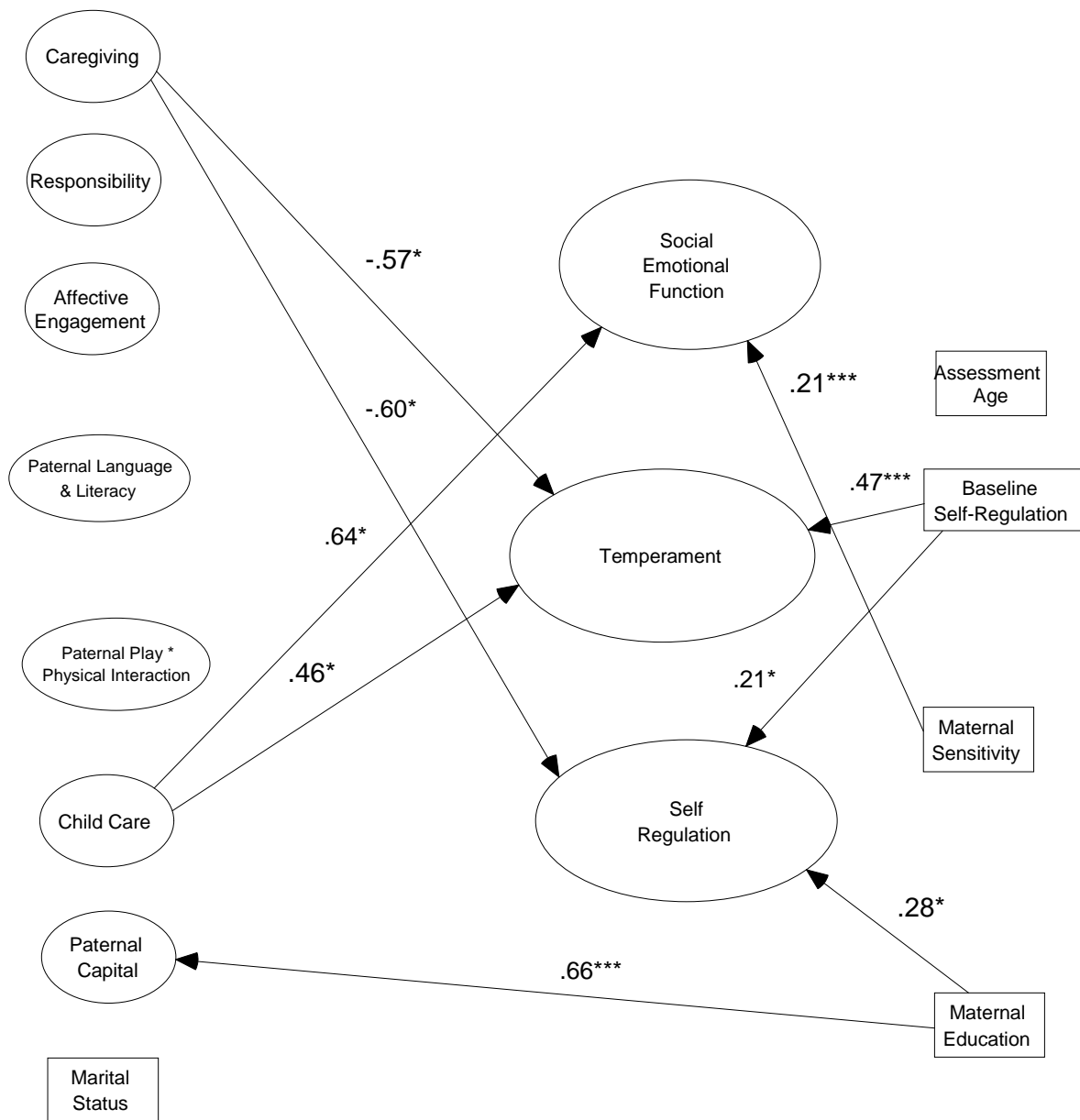
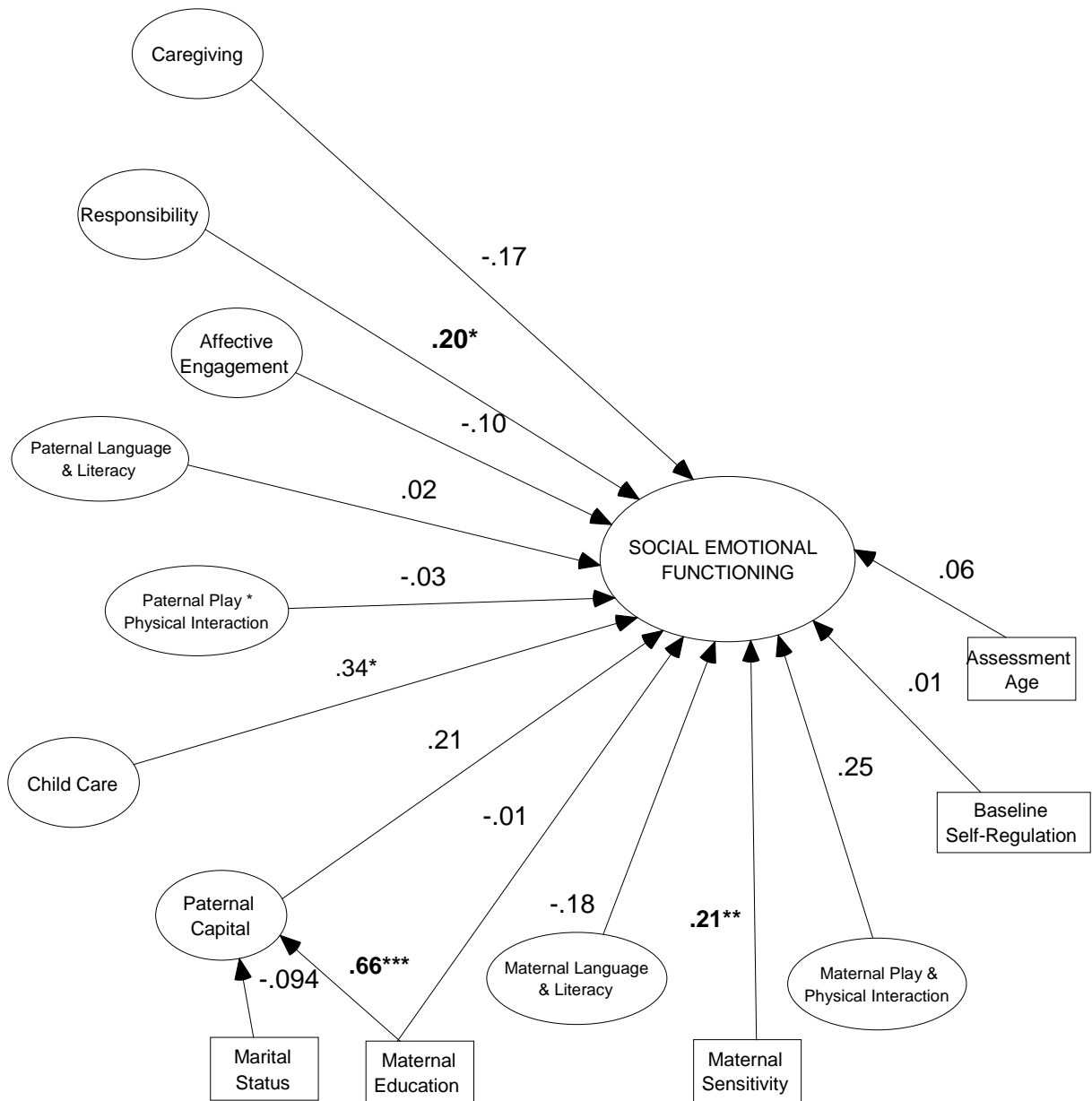
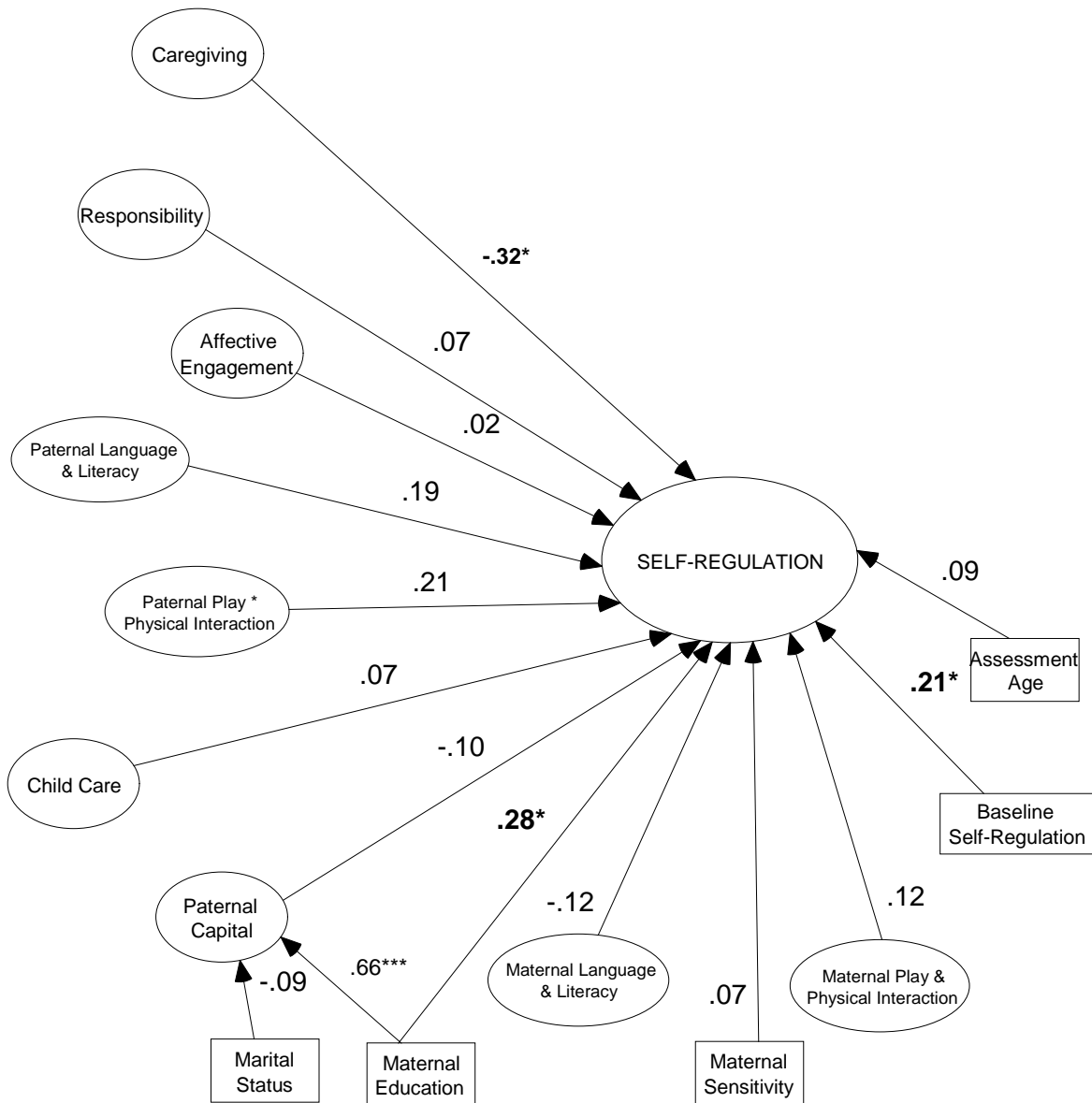


Figure 9 . Socio-emotional development SEM for the African American sub-sample. Only statistically significant structural paths are shown. Parameter estimates are standardized.  
 \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .



*Figure 10.* Socio-emotional Functioning SEM for the African American sub-sample. Standardized parameter estimates are shown. Socio-emotional functioning, temperament, and self-regulation child outcomes were analyzed simultaneously. Each socio-emotional development outcome is displayed separately for ease of presentation.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .



*Figure 11.* Self-Regulation SEM for the African American sub-sample. Standardized parameter estimates are shown. Socio-emotional functioning, temperament, and self-regulation child outcomes were analyzed simultaneously. Each socio-emotional development outcome is displayed separately for ease of presentation.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .



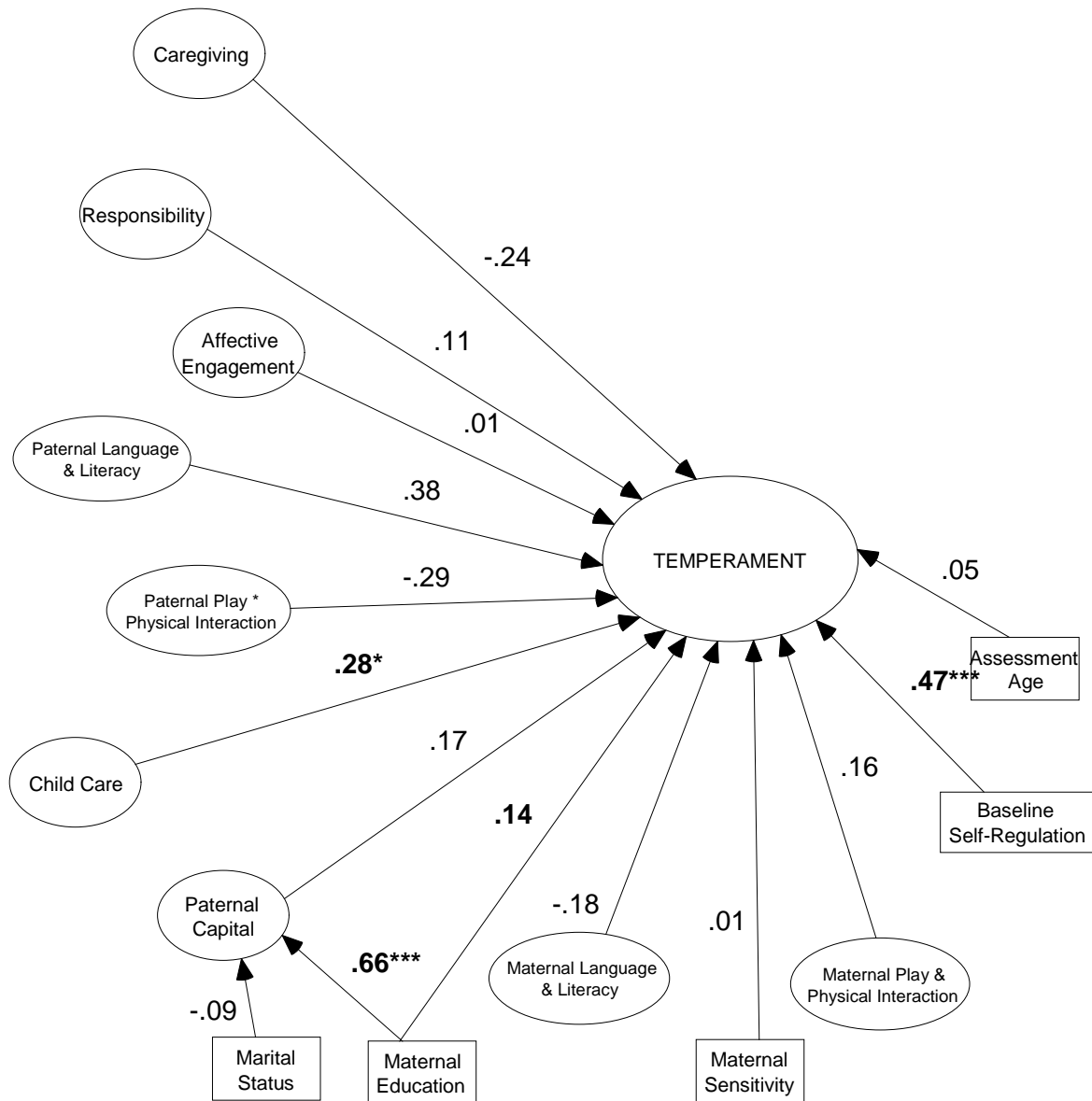


Figure 12. Temperament SEM for the African American sub-sample. Standardized parameter estimates are shown. Socio-emotional functioning, temperament, and self-regulation child outcomes were analyzed simultaneously. Each socio-emotional development outcome is displayed separately for ease of presentation.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

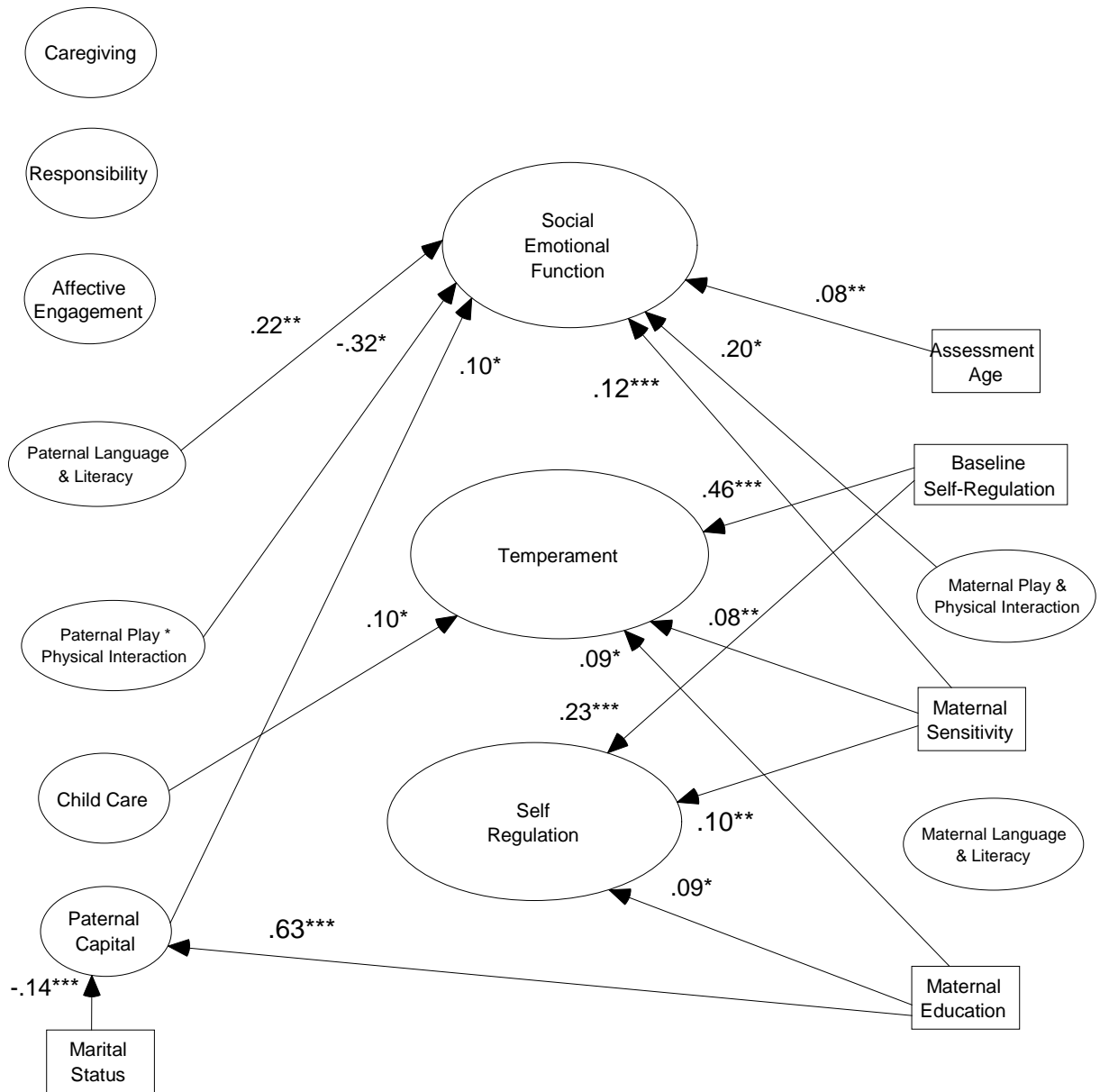
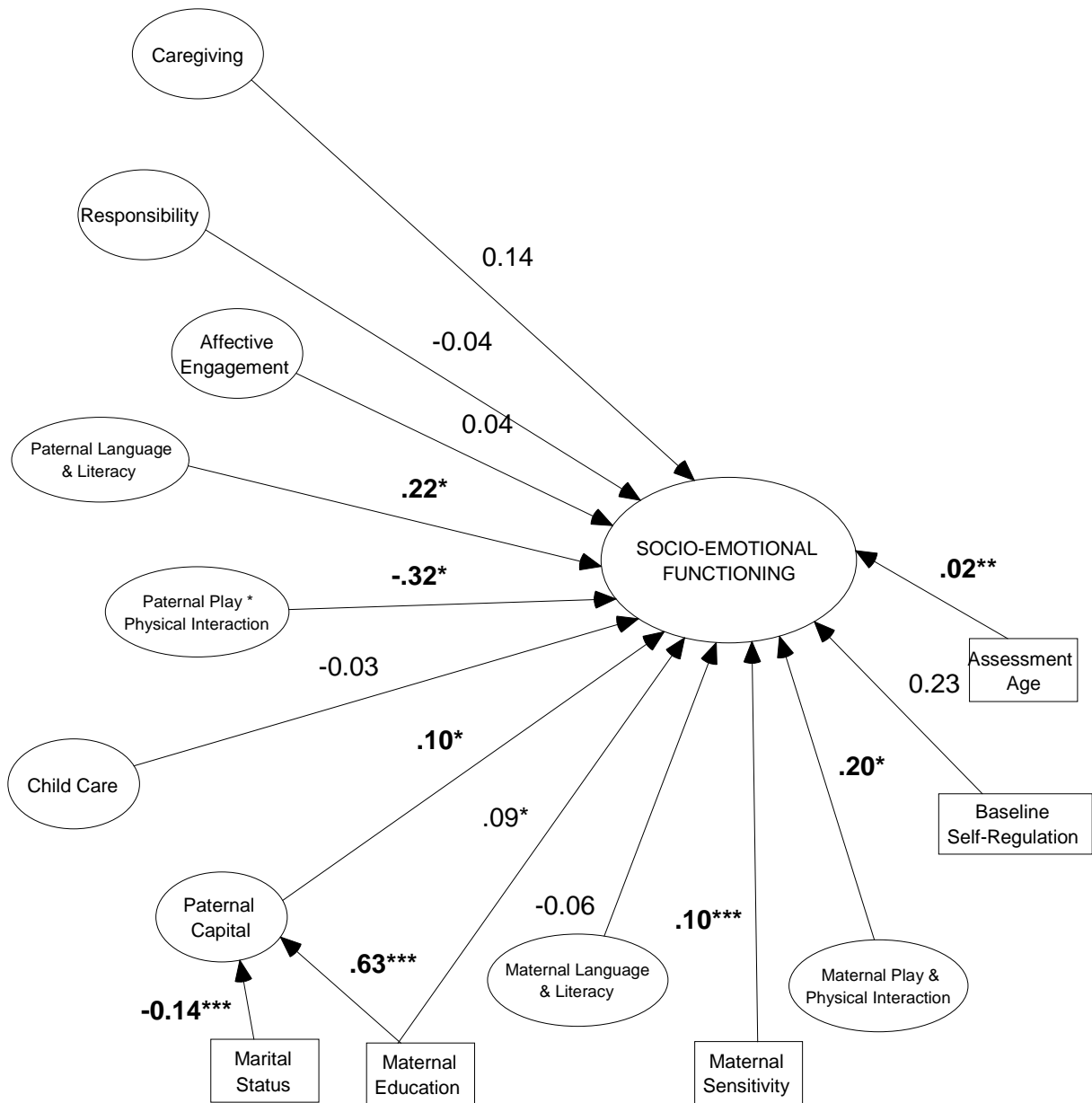
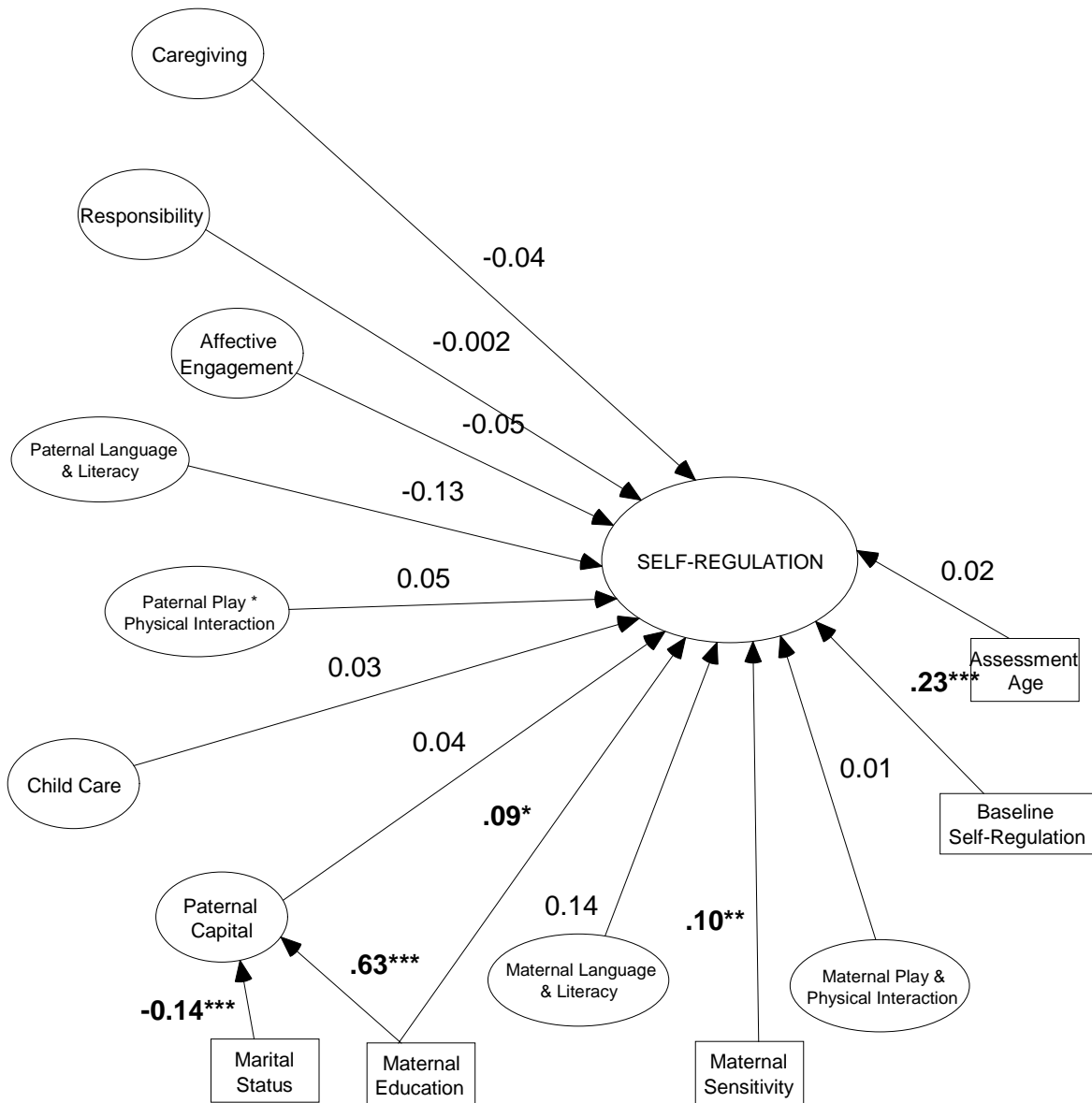


Figure 13. Socio-emotional development SEM for the European American sub-sample. Only statistically significant structural paths are shown. Parameter estimates are standardized.  $*p < .05$ ;  $**p < .01$ ;  $***p < .001$ .



*Figure 14.* Socio-emotional Functioning SEM for the European American sub-sample. Standardized parameter estimates are shown. Socio-emotional functioning, temperament, and self-regulation child outcomes were analyzed simultaneously. Each socio-emotional development outcome is displayed separately for ease of presentation.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .



*Figure 15.* Self-Regulation SEM for the European American sub-sample. Standardized parameter estimates are shown. Socio-emotional functioning, temperament, and self-regulation child outcomes were analyzed simultaneously. Each socio-emotional development outcome is displayed separately for ease of presentation.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

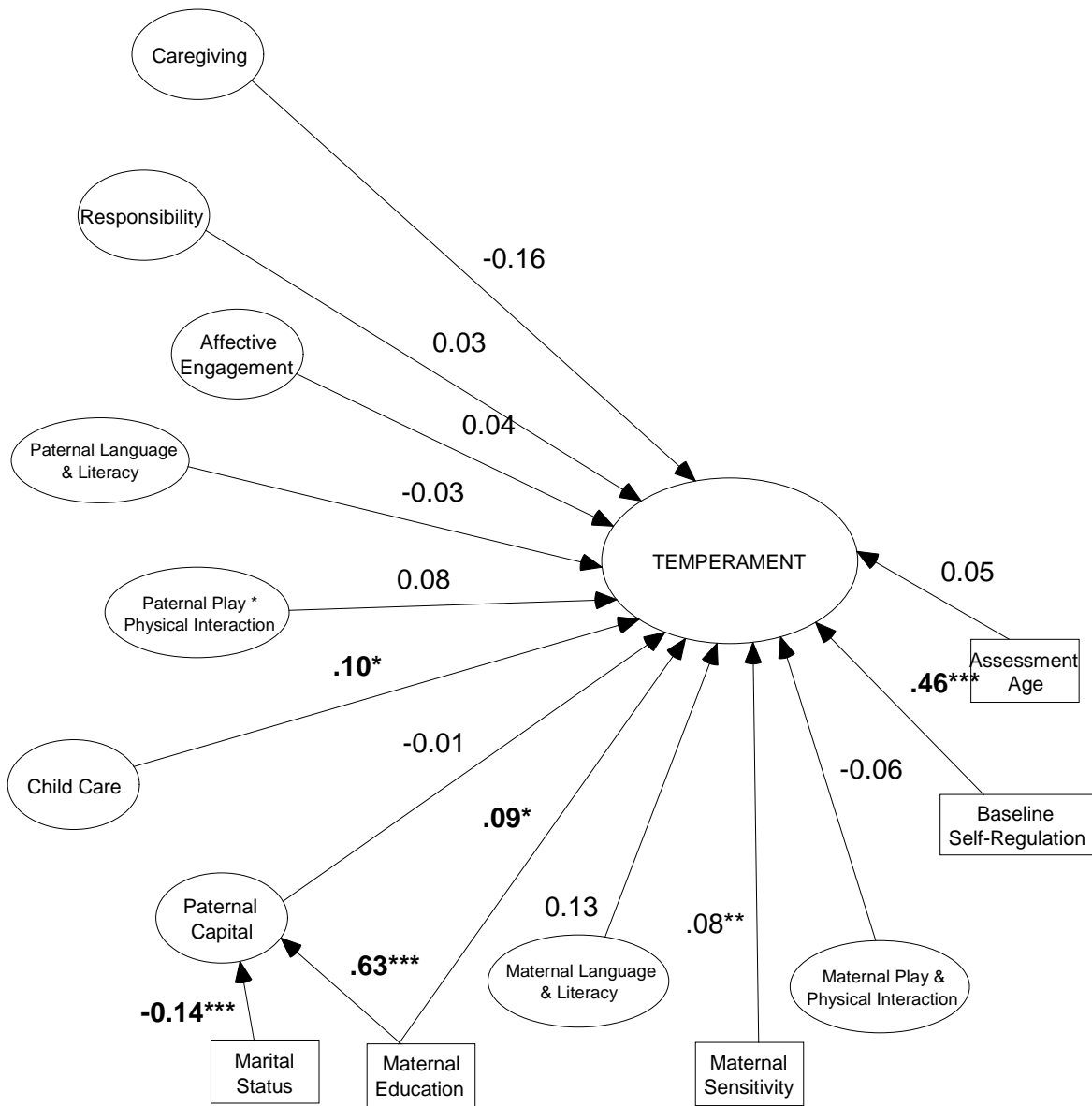


Figure 16. Temperament SEM for the European American sub-sample. Standardized parameter estimates are shown. Socio-emotional functioning, temperament, and self-regulation child outcomes were analyzed simultaneously. Each socio-emotional development outcome is displayed separately for ease of presentation.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$



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