Father Involvement in Context: The Effects of Fathers'
Intergenerational, Psychological, and Relational Functioning on Children's Development

by

Cassandra Latrice Kirkland

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Approved by

Margaret Keiley, Chair, Professor of Human Development and Family Studies
Francesca Adler-Baeder, Professor of Human Development and Family Studies
Amy Rauer, Assistant Professor of Human Development and Family Studies
Ivan Watts, Associate Professor of Educational Foundations Leadership and Technology

Abstract

Moving toward a process model for understanding the antecedents to father involvement and the effects of father involvement on child development is important for gaining insight on the mechanisms by which father involvement influences children's development. The current dissertation investigated possible process models for father involvement that incorporated important contextual factors that have salient influence on paternal engagement (e.g. family of origin experiences with biological father, psychological distress, and intimate relationship quality). Furthermore, the proposed process models also incorporated developmental outcomes for children and utilized longitudinal data from the *Fragile Families and Child Wellbeing Study*.

Study one tested an adapted version of Belsky's (1984) process model for the determinants of parenting. Fathers' past experiences with their own biological fathers (e.g. living with their biological fathers during childhood, knowing their biological fathers during childhood, and having involved biological fathers during childhood) were negatively related fathers' depression when their children are born. Furthermore, when children are newborns, paternal depression was negatively related to fathers' intimate relationship quality with birth mothers. The most robust relationships were the following: a positive relationship between fathers' intimate relationship quality when their children are born and later father involvement when their children are 3 years old; and a positive relationship between fathers' intimate relationship quality when their children are newborns and later intimate relationship quality when children are 3 years old. Lastly, father involvement, intimate relationship quality, and the

interaction between father involvement and intimate relationship quality when children are 3 years old significantly predicted child outcomes (pro-social, internalizing, and externalizing behaviors) when children are 5 years old. Fathers' ethnic background and the sex of the focal child were significant moderators for the hypothesized model.

Study two was an effort to determine if paternal postpartum depression indirectly affects children's internalizing and externalizing behaviors at age 3 and over time until age 9 via the intervening roles of father involvement and intimate relationship quality when children are 3 years old. An intervening role for father involvement and intimate relationship quality when children are 3 years old was not observed. However, paternal postpartum depression was negatively related to fathers' intimate relationship quality when their children are 3 years old. Furthermore, paternal involvement and intimate relationship quality when children are 3 years old were significantly related to children's internalizing and externalizing behaviors, but this was true only for girls. Fathers' ethnic background also served as a significant moderator for the proposed model.

Overall, the current dissertation provides poignant evidence for the cascade effects of fathers' developmental experiences on their individual functioning, intimate relationships, father-child relationships, and children's development.

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General Introduction

List of Abbreviations

FIML   Full information maximum likelihood

RMSEA   Root mean square error of approximation

SRMR   Standardized root mean square residual

I.   General Introduction

On average, no other familial system has more direct influence on children's development and well-being than the parental system. Furthermore, when considering the influence of parents on child development, mothering has received preeminent attention; however, the contribution of fathers in the lives of their children has received less empirical inquiry. A more balanced approach – which gives adequate attention to both maternal and paternal contributions to children's adjustment – is needed to gain a holistic understanding of parental influences on child development. In order to achieve this goal, more research attention should be directed toward fathering. This concerted attention is well warranted, for it appears that paternal contributions to child development are qualitatively different from maternal contributions (Goeke-Morey & Cummings, 2007) - thereby implicating differential child outcomes. Furthermore, the fatherhood literature has acknowledged that paternal roles are more highly negotiated than maternal roles; with negotiation occurring between the fathers themselves, their partners, and the ever changing social prescriptions for fatherhood (Marsiglio, Amato, Day, & Lamb, 2000). This understanding has led to the generation of the *Fathering Vulnerability Hypothesis* (Goeke-Morey & Cummings, 2007), which posits that fathering is more susceptible to being influenced by the functioning of intimate relationships than mothering. Therefore, given the rather robust influence of contextual factors on fathering, the current two studies investigate how the context of fathering may indeed not only have implications for father involvement, but may also indirectly affect children's adjustment and development over time.

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Father Involvement in Context

Lamb, Pleck, Charnov, and Levine (1987) set forth a staple conceptualization for father involvement, which includes three components: paternal engagement (direct interaction with the child), accessibility, and responsibility (ensuring that the child's needs are met by providing the needed resources). For the purposes of the current two studies, paternal engagement, which will be referred to as father involvement, will be the component of fathering examined.

A multitude of theoretical support provides justification for examining father involvement in context. Ecological theory (Brofenbrenner, 1979), the *Fathering Vulnerability Hypothesis* (Goeke-Morey & Cummings, 2007), and Belsky's (1984) process model for the determinants of parenting collectively serve as the theoretical framework for the current two studies. In reference to ecological theory (Brofenbrenner, 1979), contextual factors influence the beliefs and behaviors of individuals on various levels—direct interactions in the microsystem (family members, family norms, friends), and indirect interactions in the mesosystem (relations between microsystems), exosystem (social context), macrosytem (cultural context), and chronosystem (changes in contextual systems over time). Furthermore, individual characteristics (e.g. personality, temperament) determine the degree of influence of varying contextual/environmental factors. With regard to important contextual factors that influence father involvement (Belsky, 1984, Goeke-Morey & Cummings, 2007), the current two studies focus primarily on individual functioning (paternal depressive symptomatology), the microsystem (intimate relationship quality), and the chronosystem (intergenerational transmission and influence of fathering practices). Overall, ecological theory serves as the overarching rationale for the inclusion of contextual factors in the current research design; and,
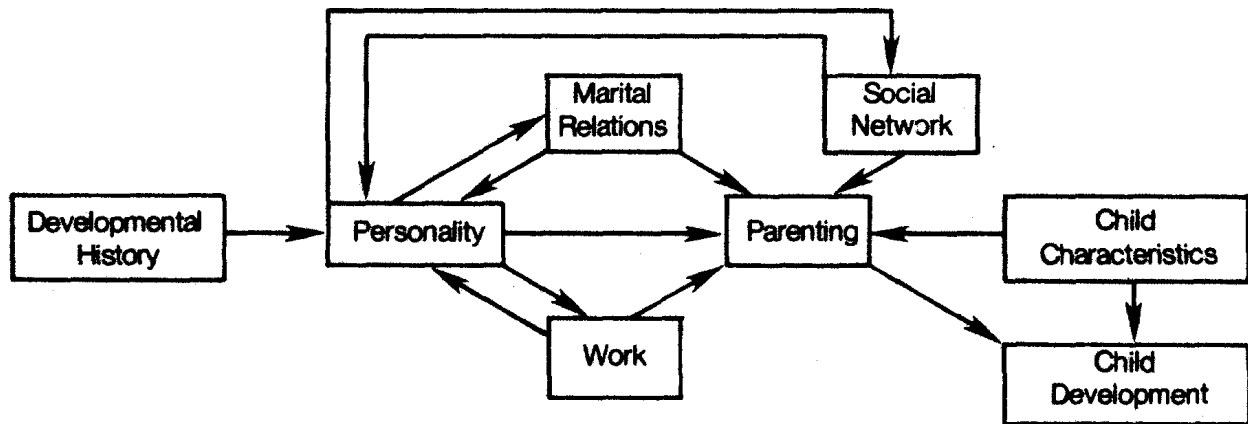
the *Fathering Vulnerability Hypothesis* (Goeke-Morey & Cummings, 2007) and Belsky's (1984)

parenting process model provide specific guidance for our hypothesized models.

Goeke-Morey and Cummings (2007) proposed a noteworthy framework for providing

clarity on the indirect effects of fathering on child development in the context of intimate

relationships/marriage in their theoretical article examining the impact of father involvement on

child development. A series of empirically supported hypotheses were posited – three of which

hold important implications for the current two studies: the *Fathering Vulnerability Hypothesis*,

the *Paternal Mental Health Hypothesis*, and the *Differential Reactivity Hypothesis*. The

Fathering Vulnerability Hypothesis posits that marital/intimate relationship conflict may more

negatively affect paternal involvement in comparison to maternal involvement. Furthermore, the

Paternal Mental Health Hypothesis indicates that, similar to mothers, paternal psychological

functioning is associated with marital/intimate relationship conflict and has important

implications for child outcomes. Lastly, the *Differential Reactivity Hypothesis* proposes that

paternal expression of discord during marital/intimate relationship conflict may cause more

distress and negative reactivity in children in comparison to maternal expression of discord.

Based on the possible notion that fathers are more vulnerable to intimate relationship conflict and

the imbued psychological distress that may result from this heightened vulnerability, paternal

depression and intimate relationship quality are two central predictors for father involvement in

the following two studies. Furthermore, based on possible differential child reactions to paternal

distress in comparison to maternal distress in the context of intimate relationship functioning, the

indirect effect of paternal depression on child outcomes is also examined in the following two

studies. Overall, the *Fathering Vulnerability Hypothesis* is the most salient justification

proposed by Goeke-Morey and Cummings (2007) for the purposes of the current two studies, for

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it appears that paternal vulnerability to the climate of the intimate relationship has direct consequences for paternal psychological functioning (*Paternal Mental Health Hypothesis*) and child outcomes (*Differential Reactivity Hypothesis*).

In the construction of the hypothesized model for study one, Belsky's (1984) process model for parenting served as a method for synthesizing research implications from ecological theory and the *Fathering Vulnerability Hypothesis* into an empirical research model (see Figure 1). According to Belsky's (1984) process model, contextual factors have important implications for father involvement, and the most notable influences are: personality/psychological well-being of parents, developmental history of parents (e.g. childhood experiences with parents), individual characteristics of children, and the broader societal milieu (e.g. marital relationship, support networks, and work experiences). Overall, Belsky's (1984) parenting process model provides direction for the proposed relationships between the constructs that ecological theory and the *Fathering Vulnerability Hypothesis* implicated as having considerable influence on father involvement (i.e. intimate relationship quality, paternal mental health, and developmental history).

Figure 1. Belsky's (1984) process model of the determinants of parenting (p, 84).

Current Research Studies

Study one serves as an overarching examination of important contextual factors that have been shown to directly influence father involvement, namely fathers' developmental history with their own fathers (Capaldi, Pears, Patterson, & Owen, 2003; Cowan et al., 1996; Furstenberg & Weiss, 2000) and intimate relationship quality (Cummings, Goeke-Morey, & Raymond, 2004; Feldman, Nash, & Aschenbrenner, 1983; Volling & Belsky, 1991). Furthermore, we examine the indirect effect of these contextual factors on children's language skills, pro-social, internalizing, and externalizing behaviors. We utilize Belsky's (1984) process model for the determinants of parenting as a theoretical and methodological guide for the construction of our hypothesized model. This study is one of the first studies to empirically test the parenting process model proposed by Belsky (1984). The model for study one deviates from Belsky's (1984) process model, in that, we are examining the cascade effects of fathers' developmental history on father involvement via paternal depression and intimate relationship quality. This cascade design was utilized based on current research demonstrating a direct effect of psychological functioning on intimate relationship quality (Ramchandani et al., 2011) and a

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direct relationship between intimate relationship quality and father involvement (Cummings et al., 2004; Feldman et al., 1983; Volling & Belsky, 1991). Study two focuses more on how psychological distress, namely paternal postpartum depression, may have long-term effects on father involvement and intimate relationship quality when children are 3 years old, and the intervening role of father involvement and intimate relationship quality when children are 3 years old on the relationship between paternal postpartum depression and children's internalizing and externalizing behaviors at age 3 and over time until age 9.

II.   Study 1 – Fatherhood in Context: Intergenerational, Psychological, and Relational

Influences

Empirical evidence has unequivocally confirmed that fathers play an integral role in

promoting the optimal development (e.g. social, emotional, and academic) of their children

(Amato & Rivera, 1999; Marsiglio et al., 2000; Pfiffner, McBurnett, & Rathouz, 2001; Toldson,

2008). Fatherhood scholars are not only invested in understanding the child-related implications

of various fathering practices, but investigators are acutely focused on understanding the

determinants and antecedents of father involvement (Belsky, 1984; Cowan et al.,1996;

Furstenberg & Weiss, 2000; Shannon, Tamis-LeMonda, & Margolin, 2005). A natural outcome

of this line of inquiry has been examining the effects of childrearing experiences on the

individual functioning of fathers and their ability to be involved with their children. Initially, the

research examining the intergenerational transmission of parenting practices (i.e. father

involvement) was primarily focused on understanding how harsh/abusive fathering practices are

transferred from one generation to the next, which was a direct byproduct of this work being

grounded in the etiology of child abuse (Belsky, 1984). However, current research is expanding

its scope to cover the intergenerational transmission of the practice of fathers being involved

with their children in ways that positively support child development (e.g. Belsky, Sligo, Jaffee,

Woodward, & Silva, 2005; Chen & Kaplan, 2001). Overall, the rationale for examining

childrearing experiences of contemporary fathers is to determine mechanisms of

intergenerational transmission, historical factors that may promote healthy father-child
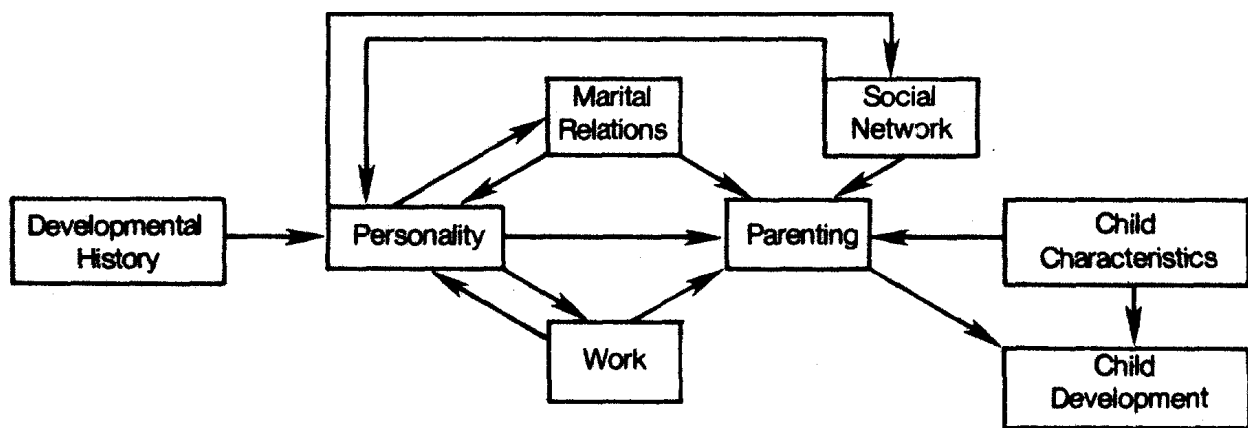
relationships, and effective interventions for fathers with problematic developmental histories, which may help to prevent cycles of abuse. It is assumed that achieving these research goals may assist in promoting positive father-child interactions and optimal socio-emotional development of children (Chen & Kaplan, 2001).

Understanding family of origin characteristics is instrumental for gaining comprehensive insight on salient contextual factors that may influence father involvement. Like any other phenomenon in family studies, context has strong implications for potential outcomes. However, it appears that fatherhood may be more strongly influenced by context than motherhood due to its undefined role prescriptions (Doherty, Kouneski, & Erickson, 1998; Goeke-Morey & Cummings, 2007). For example, the *Fathering Vulnerability Hypothesis* posits that fathers are more vulnerable to intimate relationship difficulties than mothers, and this difference may prove to have more adverse effects on child outcomes (Goeke-Morey & Cummings, 2007). Therefore, understanding the context of fathering is as equally important as understanding the individual characteristics of fathers (Levy-Shiff & Israelashvili, 1988). The current study incorporates the developmental history of fathers (e.g. their experiences with their own fathers) into a larger/comprehensive framework of the various factors that affect father involvement. This framework stems from Belsky's (1984) process model for the determinants of parenting, which lays a solid foundation for understanding the complexity and multidimensional nature of factors that influence parenting. According to Belsky's (1984) process model (see Figure 1), father involvement is multiply influenced by the following domains: personality/psychological well-being of the parent, developmental history of the parent (e.g. childhood experiences with parents), individual characteristics of the children, and the broader social context (e.g. marital relationship, support networks, and work experiences). The current study will focus on the

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following aspects of Belsky's (1984) model: fathers' developmental histories (experiences with their own fathers), psychological well-being (depressive symptomatology), and intimate/marital relationship quality. Data from the Fragile Families and Child Wellbeing study will be utilized for analyses, and one of the notable strengths of utilizing this data is its longitudinal design, which enables the examination of potential causal mechanisms.

Figure 1. Belsky's (1984) process model of the determinants of parenting (p, 84).

Intergenerational transmission of fathering practices

Developmental psychology has paid close attention to the possibility that fathering practices may be transmitted from one generation to the next; however, a consensus has not been reached in determining the extent of intergenerational parental influences (Capaldi et al., 2003; Patterson, 1998). Initially, researchers were interested in examining the transference of hostile/problematic fathering practices (e.g. abuse, punitive parenting) from one generation to the next (Belsky, 1984; Capaldi et al., 2003; Cowan et al., 1996; Furstenberg & Weiss, 2000). In the midst of this problem-focused approach, resiliency also warranted substantial attention. For example, researchers have consistently found that high quality intimate relationships of fathers with their partners experienced during adulthood may protect against the continuity of negative

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fathering practices from one generation to the next (Belsky, 1980; Kaufman & Zigler, 1989). Furthermore, early indications from previous research purport that the protective effects of high quality/supportive romantic relationships may only be apparent in cases with exceptionally adverse childrearing histories (Belsky et al., 2005). Given the slightly more vulnerable nature of a considerable number of the participants in the Fragile Families study, we hypothesize that the buffering effect of supportive intimate relationships may prove to be significant for fathers in our sample.

The specific father-related factors that garner substantial attention from researchers examining fathers' developmental history are the effects of living with one's father during childhood and the quality of the father-son relationship (Forste & Jarvis, 2007; Furstenberg & Weiss, 2000; Shannon et al., 2005). These two foci have been examined to determine their association with father involvement for the second generation of fathers and have remained salient in research studies due to their ease of recall for retrospective designs. For example, Forste and Jarvis (2007) examined the relationship between paternal residency and early paternity (fathering a child between ages 15 – 27 based on this study), and found that adolescents were less likely to enter early paternity when they resided with their biological or adoptive fathers at age 14. This study highlights the positive relationship between paternal age and fathering; therefore, paternal age will serve as a control variable in the current study. In addition, Cooksey and Fondell (1996) found that fathers who resided with a father figure during childhood were more likely to spend more time with their children in comparison to their counterparts who were raised without a father figure in the home. Overall, it appears that when males reside with their fathers or father figures during childhood, this structural dynamic may prove to be beneficial for later parenting/father involvement.

Interestingly, racial differences for residing with one's father during childhood are prominent in American society. For example, the US Census Bureau (2008) estimates that 50% of African American children experience father absence during childhood in comparison to 26% of Hispanic children and 18% of European American children. Critical race theory (CRT) provides insight for racial differences for various phenomena by positing that unique cultural norms are underlying factors that may explain differential outcomes based on race (Collins, 2000; Dill & Zambrana, 2009). Furthermore, in consideration of how the current study is giving particular focus to the intergenerational transmission of fathering practices, the unique historical experiences of African American men (i.e. high father absence and discrimination) may create an environmental context/ecocultural niche for African American fathers that is qualitatively different based on these unique, shared experiences (Phenice, Griffore, Hakoyama, & Silvey, 2009). In consideration of the previous findings and theoretical explanations for racial differences in fathering practices, the current study will include race as a moderator for the proposed hypothesized model.

Most studies that examine the effects of intergenerational fathering tend to primarily investigate outcomes for only two generations. Of the few that are able to examine three generations, most examine child outcomes for infants and toddlers in the third generation (Belsky et al., 2005; Capaldi et al., 2003; Shannon et al., 2005). The current study addresses this shortcoming by examining internalizing and externalizing behaviors in children in the third generation at age five. Furthermore, retrospective assessment of past experiences with one's father is another salient limitation in the research design of studies examining intergenerational fathering. The strong reliance on retrospective designs is due primarily to the inherent difficulty of tracking families long enough to examine intergenerational outcomes. However,

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contemporary studies are beginning to examine the intergenerational transmission of fathering

practices, prospectively. In these studies, researchers are able to tap into the more nuanced

dynamics of father-child relationships and how they affect child outcomes across multiple

generations. For example, a prospective study by Capaldi and colleagues (2003) examined the

effects of fathers' parental monitoring, harsh/lax discipline, and parent-child relationships on

adolescents' antisocial behavior. They found that fathers' poor parenting was associated with

higher levels of antisocial behavior in their sons during adolescence, which in turn, was

predictive of temperamental risk for the grandchildren (toddlers) of these fathers.

In reference to the quality of father-child relationships, it appears that attachment

histories of fathers also explain possible outcomes for children. For example, Cowan and

colleagues (1996) found that fathers' attachment histories explained more variance in teachers'

report of children's externalizing behaviors in comparison to mothers' attachment histories. Due

to the importance of examining the quality of prior father-son relationships in predicting

intergenerational transference of fathering practices, and the importance of gaining a prospective

account of this occurrence, the current study will utilize both current and retrospective accounts

of fathers' assessments of their relationship quality with their own fathers.

Paternal Depression

Current research reveals that psychological distress, more specifically depression, is an

important intervening variable that helps to explain the mechanism by which fathering received

during childhood affects future father involvement (Belsky, 1984; Chen & Kaplan, 2001; Wilson

& Durbin, 2010). Maternal depression has been extensively examined by researchers, who have

found that maternal depression affects child outcomes via impaired parenting – i.e. harsh

parenting strategies, decreased interactions with the child, and less displays of positive affect (Jacob & Johnson, 1997; Landman-Peeters, Ormel, Sonderen, Boer, Minderaa, & Hartman, 2008). The less developed literature on paternal depression has also found preliminary evidence for this spillover effect from paternal individual functioning (i.e., depression) to child outcomes via impaired parenting (Davis, Davis, Freed, & Clark, 2011; Jacob & Johnson, 1997; Wilson & Durbin, 2010). Furthermore, considering how men may be more inclined to display hostility and irritability as their symptoms of depression (Madsen & Juhl, 2007; Winkler, Pjrek, & Heiden, 2004); it could be assumed that paternal depression may manifest differently from maternal depression. Given the qualitatively different depressive symptomatology in men, there also may be the potential for differential outcomes for paternal depression on child outcomes in comparison to maternal depression. Lastly, when considering depression in context, certain environmental stressors tend to co-occur with depressive symptomatology. Previous research has firmly corroborated a strong association between economic hardship/lower levels of socioeconomic status and the presentation of depression (Butterworth, Rogers, & Windsor, 2009). Therefore, the current study will control for indices related to socioeconomic status, namely education and household income.

Examining the role of depression in predicting parenting behaviors of fathers with young children is especially important due to the possible elevated risk posed for these fathers. It appears that about 6-12% of fathers with young children experience significant depressive symptoms (Paulson, Dauber, and Leiferman, 2006; Perren, S., von Wyl, Burgin, Simoni, & von Klitzing, 2006) in comparison to 2-3% of males experiencing depression in the general population (American Psychiatric Association, 2005). Currently, preliminary evidence demonstrates that paternal depression is associated with internalizing behaviors in children

(Weinfield, Ingerski, Moreau, 2009); however, disparate findings exist on the effects of paternal depression on externalizing behaviors in children. Interestingly, Marchand and Hock (2010) found that paternal depression did not significantly predict children's externalizing behaviors in their sample, while other research findings purport that paternal depression is significantly related to both externalizing and internalizing behaviors in children (Gross, Shaw, Moilanen, Dishion, & Wilson, 2008; Kane & Garber, 2009). A meta-analysis conducted by Connell and Goodman (2002) helps to shed light on the conflicting findings, for they found that paternal psychopathology in general had more of an effect on internalizing behaviors in children than externalizing behaviors. It could be possible that paternal depression would have more of an effect on internalizing behaviors in children due to depression being a typical internalizing problem rather than an externalizing one. To address the disparate findings on the effects of paternal depression on internalizing and externalizing behaviors, both child indices will be included in the current study to examine possible differences for the effect of paternal depression on children's internalizing and externalizing behaviors.

In consideration of the ecological implications of paternal depression on children, potential negative effects can be far reaching into the societal milieu in which children are embedded. Difficulties in peer relations and academic/cognitive impairments may be potential consequences of paternal depression. For example, Dave, Sherr, Senior, and Nazareth (2008) found that fathers who experienced major depression had children (ages 4-6 years-old) who were 8 to 36 times more likely to display social ineptness and experience difficulties with their peers, respectively. And with regard to cognitive development, it appears that language development may be indirectly affected by paternal depression. For example, Paulson, Keefe, and Leiferman (2009) found that only paternal depression, and not maternal depression, indirectly affected

expressive vocabulary development in children via decreased incidence of fathers reading to

their child. These findings highlight the myriad of potential direct and indirect effects paternal

depression may have on parenting and children's well-being.

Researchers are especially invested in determining the mechanisms by which paternal

depression affects children, and impaired parenting has been given much attention as a possible

pathway. As mentioned above, fathers may have an increased likelihood of displaying hostility

and irritability when experiencing depression (Madsen & Juhl, 2007; Winkler et al., 2004), and it

appears that the involvement of depressed fathers with their children is more inclined to be

devoid of warmth and positive parent-child interactions (Cummings, Keller, & Davies, 2005;

Paulson et al., 2009). However, a more exhaustive review of the literature indicates that

impaired father involvement only partially explains the deleterious effects of parental depression

on child outcomes. Genetic and contextual factors in the family and surrounding environment

may further illuminate the mechanisms by which parental depression affects children (Wilson &

Durbin, 2010). Furthermore, in consideration of family systems theory and ecological theory,

depressive symptomatology of one parent will affect the functioning of the entire family. For

example, Jacob and Johnson (1997) found that the presence of a depressed parent in a family was

related to lower levels of emotional expression in all family members. In addition, paternal

depression appears to negatively affect intimate relationship quality – with empirical findings

demonstrating an increased risk for disharmony in partner relationships (Ramchandani et al.,

2011). Overall, there is distressing evidence for the cascade of negative effects originating from

parental depression and indirectly affecting children via compromised intimate relationship

functioning (Cummings & Davies, 1994; Cummings et al., 2005). Therefore, when

psychological functioning is included in models predicting father involvement, it is imperative to

also include relationship quality due to the high likelihood of psychological functioning directly affecting relationship quality, which in turn, has been proven to have a significant influence on paternal involvement (Carlson, Pilkaukas, McLanahan, & Brooks-Gunn, 2011; Fagan & Palkovitz, 2011; Volling & Belsky, 1991).

Father Involvement/Intimate Relationship Quality

Due to the vast conceptual area of father involvement and the many methods used for operationalization, a concrete definition of father involvement has not been established in the literature (Coley & Hernandez, 2006). However, a few general domains are recurrent, and Lamb, Pleck, Charnov, and Levine (1985, 1987; Pleck, Lamb, & Levine, 1985 as cited in Pleck & Masciadrelli, 2004) suggest that father involvement consists of the following three components: "(a) paternal engagement (direct interaction with the child, in the form of caretaking or play or leisure), (b) accessibility (availability) to the child, and (c) responsibility, making sure that the child is taken care of and arranging resources for the child (p. 222)." For the purposes of the current study, paternal engagement as thus defined will be our focal point.

Overall, paternal involvement has many benefits for child outcomes. Current research has found that the involvement of fathers within the family may contribute to positive developmental outcomes for children (e.g. fostering pro-social relationships with peers, a decreased incidence of internalizing and externalizing behaviors, positive academic functioning, lower engagement in risk-taking behaviors during adolescence, and the development of healthy intimate relationships during adulthood) (Amato & Rivera, 1999; Marsiglio et al., 2000; Pfiffner et al., & Rathouz, 2001; Toldson, 2008). Interestingly, there appears to be gender differences for father involvement, such that fathers may differentially engage with their sons in comparison to

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their daughters. For example, Leavell, Tamis-LeMonda, Ruble, Zosuls, and Cabrera (2012) found that fathers are more likely to engage in physical play with their sons and literacy activities with their girls. Given this finding, the current study endeavors to explore if gender differences also exist for levels of father involvement and their effects on child outcomes; thus, sex will be included as a moderator of the paths in the hypothesized model.

When considering father involvement in context, marital/intimate relationship quality is a salient factor that has considerable influence on paternal involvement. Numerous studies have accounted for the rather robust effects of marital/relationship quality on paternal involvement, with evidence demonstrating that high quality intimate relationships have a positive effect on paternal involvement (Carlson et al., 2011; Cummings et al., 2004; Feldman et al., 1983; Volling & Belsky, 1991). Furthermore, relationship status with the birth mother has been predictive of differential effects on paternal involvement, with fathers who are romantically involved demonstrating higher levels of involvement with their children than their romantically uninvolved counterparts (Coiro & Emery, 1998; Lewin, Mitchell, Burrell, Beers, & Duggan, 2011). This may be a natural consequence of how intimate relationship status is also related to residential status, which is associated with higher levels of paternal accessibility and engagement (Castillo, Welch, & Sarver, 2011; Cooksey & Fondell, 1996; Coiro & Emery, 1998). Furthermore, it appears that high levels of relationship quality with the birth mother protects against paternal disengagement post separation or divorce (Laughlin, Farrie, Fagin, 2009). And lastly, as noted above, positive intimate relationship quality may buffer the negative effects of a father's negative developmental history on the quality of his own involvement with his children (Belsky, 1980; Kaufman & Zigler, 1989).
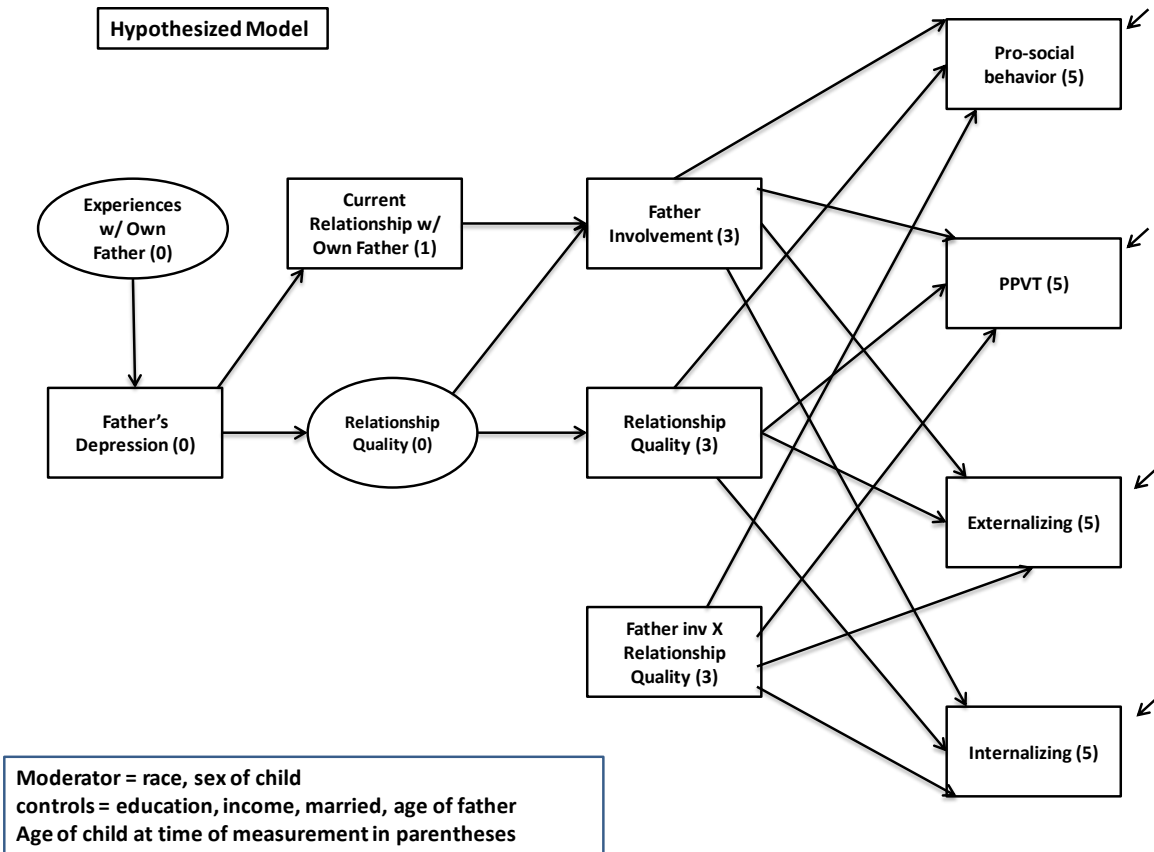
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Conversely, poor relationship quality has deleterious effects on paternal involvement with a higher incidence of inhibitory maternal gate-keeping, punitive fathering/parenting, and low paternal involvement in this context (Allen & Hawkins, 1998; Coiro & Emery, 1998). Overall, it appears that paternal involvement may be highly malleable to varying relationship climates. Therefore, the inclusion of relationship quality in frameworks examining paternal involvement is imperative for gaining a comprehensive understanding of important contextual factors that may have a particularly strong influence on fathering.

Current Study

The hypothesized model for the current study (Figure 2) is an adapted version of Belsky's (1984) process model for parenting, in which we examined how fathers' developmental history with their own biological fathers (level of paternal involvement during childhood), current father-son relationship quality, psychological well-being (depression), and intimate relationship quality affect father involvement and intimate relationship quality. In turn, we examined the indirect effects of these relationships on child outcomes (language skills, pro-social, internalizing, and externalizing behaviors) via father involvement. Due to the differential influences of sex and ethnicity on father involvement that have been found in the literature (Coley & Chase-Lansdale, 1999; Coley & Hernandez, 2006; Cooksey & Fondell, 1996; Leavell et al., 2012), sex and race served as separate moderators. Data from the Fragile Families and Child Wellbeing study was utilized to examine the long-term effects important contextual factors – relationship quality and paternal depression – experienced postpartum (when fathers' children were born) on father involvement at age three and children's language skills (PPVT scores), pro-social, internalizing, and externalizing behavior at age five. Furthermore, intergenerational

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fathering was examined in this framework to provide a possible historical explanation for contemporary fathering practices.

Figure 2.

Hypothesized Model

Experiences w/ Own Father (0)

Current Relationship w/ Own Father (1)

Father Involvement (3)

Father's Depression (0)

Relationship Quality (0)

Relationship Quality (3)

Father inv X Relationship Quality (3)

Pro-social behavior (5)

PPVT (5)

Externalizing (5)

Internalizing (5)

Moderator = race, sex of child
controls = education, income, married, age of father
Age of child at time of measurement in parentheses

The current study expands the literature on intergenerational fathering in the following key ways: 1) both retrospective and current accounts of participants' experiences/relationship quality with their father were included; 2) a strengths-based approach was utilized, in that, the focus is not on poor parenting but general paternal involvement, and positive child outcomes were included; 3) child outcomes for children in the third generation are examined well beyond infancy (5 years-old); and 4) it provides a more comprehensive framework for a longitudinal

examination of intergenerational fathering on child outcomes by investigating this occurrence in the context of paternal psychological well-being (depression) and intimate relationship quality.

Method

Data and Sample

Data were gathered from the Fragile Families and Child Wellbeing Study (FFCWS), an ongoing, nationally representative, longitudinal study of a birth cohort of 4,898 families that began in 1998. At the time of birth of the focal child, families were recruited from 75 hospitals in 20 cities throughout the United States with a population of at least 200,000 persons (see Reichman, Teitler, Garfinkel, & McLanahan, 2001, for an in depth review of the research design). FFCWS is particularly focused on understanding the capabilities of unmarried fathers, relationship dynamics of unmarried parents, child outcomes in fragile families, and the influence of public policy and environmental structures on familial and child outcomes. Due to the aforementioned focus of FFCWS, these data prove to provide an optimal sample for the current investigation.

The inclusion criterion for the current analytic sample was ethnic background, and only African American or European American fathers were included to more readily facilitate ethnic comparisons. Due to the high degree of cultural diversity in individuals of Latin American descent, these individuals were excluded from ethnic comparisons made in the current study to prevent over-generalization. The analytic sample ($N = 3,301$) consists of 2,407 African American fathers (73%) and 894 European American fathers (27%).

Measures

Predictor Variables

Childhood Experiences with Biological Father was a latent variable composed of three items. No question directly asking if the respondent lived with his biological father during childhood exists in the data; therefore, the following question will be used as the proxy: "Were you living with both of your biological parents at age 15?" Secondly, the level of paternal involvement received during childhood was assessed at baseline (child's age 0) by the following question: "How involved in raising you was your biological father?" This item was on a 4-point Likert scale, with 1 indicating very involved and 4 indicating no involvement. Scores were reverse coded so that 4 indicated being very involved and 1 indicated no involvement. Thirdly, when the focal child was 12 months old, fathers were asked whether or not he knew his father during childhood. No measures examining retrospective accounts of father-child relationship quality were available in the data set.

Current Relationship Quality with Biological Father was an observed variable assessed when the child was 12 months old, which asked the following question: "How well do you get along with your father now?" This item was on a 3-point Likert scale with 1 indicating very well and 3 indicating not very well. Scores were reversed coded in order for higher scores to reflect higher levels of relationship quality.

Paternal Depression was assessed at baseline when the focal child was a newborn by a shortened version of Center for Epidemiological Studies' Depression Scale (CES-D) (Ross & Mirowsky, 1984), which included 12 items examining paternal depressive symptoms. Fathers were asked the frequency at which they experienced depressive symptoms within the week prior

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to the interview. Sample items were the following: "In the past week, how often did you feel depressed? In the past week, how often did you feel everything was an effort? In the past week, how often did you sleep restlessly?" Responses ranged from 0 to 7, with 0 indicating 0 times per week and 7 indicating experiencing the depressive symptom 7 days during the past week.   The average scale score was utilized. Furthermore, the Cronbach's alpha for all of the items was .85.

Intervening Variables

Father Involvement was assessed when the focal child was 3 years old by a composite variable composed of 13 items. Fathers reported the amount of days per week that they participated in the following with the focal child: sings songs or nursery rhymes; hugs or shows physical affection; tells child that he loves him/her; lets child help with simple chores; plays imaginary games; reads stories; tells stories; plays inside with toys; tells child he appreciates something he/she did; takes child to visit relatives; takes child to a restaurant; assists child with eating; and puts child to bed. Possible responses ranged from 0 to 7 days per week. Principal components factor analysis revealed that all items could be represented by one factor, and the Cronbach's alpha ($\alpha = .75$) demonstrated an acceptable reliability. Higher scores reflected higher levels of paternal involvement, and lower scores reflect lower levels of father involvement.

Intimate Relationship Quality was assessed at baseline when the child was a newborn by a latent variable composed of five items. Furthermore, intimate relationship quality was also assessed when the child was three years old by a composited variable containing 5 items similar to the items used to assess intimate relationship quality when the child was a newborn. For both the latent variable and composited variable, fathers reported the frequency by which the birth mother was a) "fair and willing to compromise when you have a disagreement;" b) "hits or slaps

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you when she is angry" (reverse coded); c) "expresses affection or love for you;" d) "insults or criticizes you or your ideas" (reverse coded); and e) "encourages or helps you to do things that are important to you." All items were on a 3-point Likert scale, and possible responses were 1 (never), 2 (sometimes), and 3 (often). The Cronbach's alpha ($\alpha = .62$) for the composite variable for intimate relationship quality (when the child was three years old) was less than ideal. Higher scores reflected a higher level of intimate relationship quality, and lower scores demonstrated lower levels of intimate relationship quality.

Outcome Variables

Pro-social behaviors when the focal child was age 5 were assessed by items from the Adaptive Social Behavior Inventory (ASBI) (Hogan, Scott, & Bauer, 1992) and the Social Skills Rating Scale (SSRS) (Gresham & Elliot, 2007). Primary caregivers, typically mothers, were asked whether or not the focal child displayed particular pro-social behaviors. Sample items were: "is sympathetic toward other children's distress, tries to comfort others when they are upset; will join group of children playing; and understands others' feelings, like when they are happy/sad/mad." Possible responses were 0 (not true), 1 (somewhat or sometimes true), and 2 (very true or often true). An average score was created for all 12 items measuring pro-social behaviors, and the Cronbach's alpha ($\alpha = .78$) was acceptable. Higher scores indicated a higher level of pro-social behaviors and lower scores reflected lower levels of pro-social behaviors.

Vocabulary Skills were assessed at child age 5 by the Peabody Picture Vocabulary Test (PPVT) Revised (Dunn & Dunn, 1997). The focal child completed this test during a home visit in which they were administered the PPVT. This procedure involved a research assistant presenting a series of pictures to the child, and there were four pictures on a page in which each picture was numbered (Bendheim-Thoman Center for Research on Child Wellbeing, 2011). The

research assistant stated a word that described one of the pictures, and the child would then point to the picture that the word described (Bendheim-Thoman Center for Research on Child Wellbeing, 2011). Scores were determined by obtaining a basal set of items (the lowest set of 12 items in which the child had fewer than two mistakes); and obtaining a ceiling set (the first difficult set of 12 items in which the child had 8 or more mistakes, consecutively) (Traxel & Bo, 2008). The total raw score was calculated by taking the item number for the last item in the difficult set and subtracting it from the total number of mistakes in all of the sets (Traxel & Bo, 2008). We utilized these raw scores, and higher values reflected higher levels of vocabulary proficiency.

Internalizing behaviors – at child age 5, mothers' report of children's internalizing behaviors was assessed by the Child Behavior Checklist (CBCL) (Achenbach, 1992). Primary caregivers were asked whether or not the focal child displayed certain internalizing behaviors. Sample items are the following: worries, cries a lot, complains of loneliness, feels too guilty, and refuses to talk. Possible responses were 0 (not true), 1 (somewhat or sometimes true), and 2 (very true or often true). An average score was created for all 17 items measuring internalizing behaviors, and Cronbach's alpha ($\alpha = .71$) was acceptable. Higher scores indicated a higher level of internalizing behaviors and lower scores reflected lower levels of internalizing behaviors.

Externalizing behaviors were also assessed at child age 5 by mothers' report of children's externalizing behaviors, and the CBCL (Achenbach, 1992) was utilized. Primary caregivers were asked whether or not it was true that the focal child displayed certain externalizing behaviors. Sample items include the following: argues a lot, gets in many fights, has temper tantrums or hot temper, screams a lot, and teases a lot. Possible responses were 0 (not true), 1

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(somewhat or sometimes true), and 2 (very true or often true). An average score was created for all of the 24 items measuring externalizing behaviors. Cronbach's alpha ($\alpha = .79$) was acceptable. Higher scores indicated a higher level of externalizing behaviors and lower scores reflected lower levels of externalizing behaviors.

Moderating and Control Variables

Race was assessed by one dummy variable – one indicating being African American and zero indicating being European American. *Child Sex* was dummy-coded with 1 indicating a male focal child and 0 indicating a female focal child. Furthermore, *Marital Status* was also a dummy variable (1=married; 0=not married). *Paternal Age* was a continuous variable reflecting fathers' age in years. *Paternal Education* was assessed by a 9-point Likert scale indicating the highest grade completed, and possible responses were 1 (no formal education), 2 (less than 8th grade), 3 (some high school), 4 (high school diploma), 5 (GED), 6 (some college), 8 (bachelor's degree), and 9 (graduate degree). *Household income* was assessed by a 9-point Likert scale indicating the total household income reported by the father. Possible responses were 1 (<$5,000), 2 ($5K – $9,999), 3 ($10K – $14,999), 4 ($15K – $19,999), 5 ($20K – $24,999), 6 ($25K - $34,999), 7 ($35K - $49,999), 8 ($50K – $74,999), and 9 (>$75K).

Analytic Strategy

The first step of analysis included examining the univariate and bivariate statistics for the variables of interest. Secondly structural equation modeling was be used to test the hypothesized model in Figure 1. Additionally, two multiple group analyses were conducted; the first multiple group analysis compared the hypothesized model across African American and European American fathers, and the second multiple group analysis compared the same model across sex of the focal child. These analyses were conducted with Mplus (Version 6; Muthen & Muthen,

1998-2010). Lastly, missing data were not imputed; rather, available data from all 843 families were used in analyses by using full information maximum likelihood (FIML) estimation with robust standard errors. FIML estimation is one of the best methods for dealing with missing data (Acock, 2005). Model fit was assessed by a χ^2 statistic/degrees of freedom ratio less than 5 and a RMSEA less than .10 (Wheaton, Muthen, Alwin, & Summers, 1977).

Results

Descriptive Statistics

Univariate statistics for each variable in the current study are presented in Table 1a. The distributional qualities of all study variables were examined; and the log transformation for paternal depression (child age 0), internalizing (child age 5), and externalizing (child age 5) behaviors was used in order for these variables to meet the assumptions for their use in linear models. No other variables needed transformation. Furthermore, t-tests were conducted to determine if the means for the variables were significantly different for European American in comparison to African American fathers; and for fathers with a male focal child in comparison to fathers with a female focal child. For racial differences, African American fathers reported lower mean averages for all of the retrospective accounts of fathering – having an involved biological father (M=2.87, t =10.28, p<.001for AAs; M=3.28 for EAs), knowing one's biological father during childhood (M=0.83, t =4.56, p<.001for AAs; M=0.89 for EAs), and living with one's biological father during childhood (M=0.31, t =15.87, p<.001for AAs; M=0.64 for EAs). Furthermore, African American fathers reported lower levels of intimate relationship quality on three of the intimate relationship items in comparison to European American fathers. In addition, African American fathers reported higher levels of depression in comparison to

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European American fathers (M=0.65, t =-4.42, p<.001for AAs; M=0.56 for EAs). Lastly,

African American fathers demonstrated lower averages on all of the control variables in

comparison to European Americans – age (M=27.48, t =8.66, p<.001for AAs; M=30.19 for EAs),

income (M=5.12, t =18.48, p<.001for AAs; M=7.06 for EAs), education (M=4.47, t =20.31,

p<.001for AAs; M=5.95 for EAs), and marriage (M=0.16, t =24.19, p<.001for AAs; M=0.58 for

EAs).

Few sex differences in the univariate statistics were demonstrated. Only paternal age

(M=28.68, t =2.53, p<.05 for girls; M=27.94 for boys) was found to be statistically and

significantly different between fathers with a female focal child in comparison to fathers with a

male focal child, and an intimate relationship item at child age 0 (M=2.43, t =-2.07, p<.05for

girls; M=2.49 for boys) was approaching significance.

Table 1a. Study variables means, standard deviations in the whole sample (*N* = 3,301) and in the sub-samples of African American (*n* = 2,407) and European American fathers (*n* = 894).

	Range		Overall Sample (*n* = 3,301)		African American (*n* = 2,407)		European American (*n* = 894)	
	Min	Max	*M*	*SD*	*M*	*SD*	*M*	*SD*
Retrospective Accounts of Fathering								
Bio dad inv. (0)	1	4	2.99	0.96	2.87***	0.97	3.28***	0.88
Knew bio dad (1)	0	1	0.85	0.36	0.83***	0.38	0.89***	0.30
Lived w bio dad(0)	0	1	0.41	0.49	0.31***	0.46	0.64***	0.48
Contextual Predictors								
Cur. relationship qual. w/ bio dad(1)	1	3	2.43	0.70	2.38***	0.72	2.52***	0.65
Relation qual. a (0)	1	3	2.48	0.61	2.47~	0.61	2.54~	0.58
Relation qual. b (0)	1	3	2.82	0.45	2.81*	0.46	2.87*	0.37
Relation qual. c (0)	1	3	2.81	0.41	2.80***	0.43	2.89***	0.32
Relation qual. d (0)	1	3	2.58	0.59	2.57	0.59	2.62	0.56
Relation qual. e (0)	1	3	2.74	0.49	2.74	0.49	2.74	0.46
Relation quality (3)	1	3	2.64	0.33	2.62**	0.34	2.67**	0.30
Father inv. (3)	0	7	4.54	1.07	4.55	1.10	4.53	1.02
Depression (0)	0	2.08	0.63	0.50	0.65***	0.63	0.56***	0.53
Outcome Variables								
Pro-social beh. (5)	0	2	1.56	0.28	1.56	0.28	1.57	0.27
Vocab test (5)	0	119	61.45	19.36	61.22	19.48	62.04	19.03
Externalizing (5)	0	0.88	0.26	0.16	0.26	0.25	0.26	0.25
Internalizing (5)	0	0.83	0.22	0.16	0.22	0.16	0.22	0.16
Control Variables								
Age (0)	15	53	28.29	7.42	27.48***	7.47	30.19***	6.93
Income (0)	1	9	5.82	2.43	5.12***	2.39	7.06***	1.96
Education (0)	1	9	4.91	1.84	4.47***	1.49	5.95***	2.11
Married (0)	0	1	0.28	0.45	0.16***	0.36	0.58***	0.49

[a] Results from t-tests; age of child in parentheses; ***$p<.001$, ** $p<.01$, ~$p<.10$

Table 1b. Study variables means, standard deviations in the whole sample (*N*=3,301) and in the sub-samples of fathers with a female focal child (*n*=1,560) and fathers with a male focal child (*n*=1,740).

	Range		Overall Sample (*n* = 3,301)		Female Focal Child (*n* = 1,560)		Male Focal Child (*n* = 1,740)	
	Min	Max	*M*	*SD*	*M*	*SD*	*M*	*SD*
Retrospective Accounts of Fathering								
Bio dad inv. (0)	1	4	2.99	0.96	2.98	0.95	3.00	0.96
Knew bio dad (1)	0	1	0.85	0.36	0.85	0.36	0.85	0.36
Lived w bio dad(0)	0	1	0.41	0.49	0.41	0.49	0.42	0.49
Contextual Predictors								
Cur. relationship qual. w/ bio dad(1)	1	3	2.43	0.70	2.43	0.68	2.42	0.71
Relation qual. a (0)	1	3	2.48	0.61	2.49	0.60	2.48	0.61
Relation qual. b (0)	1	3	2.82	0.45	2.80~	0.48	2.84~	0.41
Relation qual. c (0)	1	3	2.81	0.41	2.81	0.41	2.82	0.42
Relation qual. d (0)	1	3	2.58	0.59	2.58	0.59	2.58	0.58
Relation qual. e (0)	1	3	2.74	0.49	2.75	0.46	2.74	0.51
Int. rel. quality (3)	1	3	2.64	0.33	2.65	0.33	2.63	0.33
Father inv. (3)	0	7	4.54	1.07	4.53	1.09	4.56	1.04
Depression (0)	0	2.08	0.63	0.50	0.62	0.49	0.63	0.50
Outcome Variables								
Pro-social beh. (5)	0	2	1.56	0.28	1.55	0.28	1.57	0.28
Vocab test (5)	0	119	61.45	19.36	60.79	19.73	62.01	19.03
Externalizing (5)	0	0.88	0.26	0.16	0.26	0.17	0.26	0.16
Internalizing (5)	0	0.83	0.22	0.16	0.22	0.16	0.23	0.15
Control Variables								
Age (0)	15	53	28.29	7.42	28.68*	7.57	27.94*	7.27
Income (0)	1	9	5.82	2.43	5.82	2.41	5.82	2.45
Education (0)	1	9	4.91	1.84	4.95	1.82	4.88	1.85
Married (0)	0	1	0.28	0.45	0.30	0.46	0.27	0.45

[a] Results from t-tests; age of child in parentheses; * $p<.05$, ~ $p<.10$

Table 2a. Pearson correlation coefficients for study variables (N=3301)

	1	2	3	4	5	6	7	8	9	10
1 bio_inv (0)	--									
2 knw_bio (1)	.52***	--								
3 liv_bio (0)	.56***	.31***	--							
4 cur_dad (1)	.43***	Miss[a]	.29***	--						
5 Rel.quala (0)	.04~	-.01	.04~	.01	--					
6 Rel.qualb(0)	.08**	.04	.04	.01	.14***	--				
7 Rel.qualc(0)	.09***	.05~	.05*	.03	.23***	.11***	--			
8 Rel.quald(0)	.05~	-.01	.07**	.05	.21***	.18***	.21***	--		
9 Rel.quale(0)	.02	-.01	.04	.02	.27***	.11***	.35***	.24***	--	
10 Rel.qual(3)	.12***	.08**	.06*	.06~	.25***	.11***	.15***	.27***	.16***	--
11 dad_inv (3)	.04	0.01	-.04	.08*	.06	.03	.10**	.05	.10**	.14***
12 depress (0)	-.14***	-.09***	-.14***	-.09***	-.10***	-.12***	-.09***	-.12***	-.08***	-.12***
13 pro_soc (5)	.03	-.00	.03	.03	-.03	.02	-.00	-.01	-.01	.01
14 ppvt (5)	.01	-.03	.00	-.03	-.01	-.06*	-.02	-.00	.03	.03
15 ext (5)	-.02	-.02	-.03	-.01	.02	-.01	.04	.02	-.01	.02
16 int (5)	-.04~	-.01	-.02	-.00	-.04	-.02	.02	-.04~	-.00	-.02

$\sim p < .10$ $*p < .05.$ $**p < .01.$ $***p < .001;$ [a] Correlation could not be computed due to the distribution of knw_bio

Table 2b. Pearson correlation coefficients for study variables (N=3301) (continued)

	11	12	13	14	15	16
11 dad_inv (3)	--					
12 depress (0)	.04~	--				
13 pro_soc (5)	-.04	.01	--			
14 ppvt (5)	-.02	.03	.23***	--		
15 ext (5)	-.03	-.00	.05**	-.12***	--	
16 int (5)	.02	-.01	-.17***	-.13***	.42***	--

Bivariate Analyses

Tables 2a and 2b present the Pearson correlations for the variables in the current study. All of the variables capturing childhood experiences with one's father – knowing one's biological father during childhood, the level of involvement of one's biological father during childhood, and living with one's biological father during childhood – were significantly related to each another in a positive direction. These relationships were moderate to strong with correlations ranging from $r = .31$, $p < .001$ to $r = .56$, $p < .001$. Furthermore, all of the relationship quality items were associated with each other in the expected positive direction. Interestingly, a majority of the relationship quality items were positively related with childhood experiences with one's father, which indicates that having positive past experiences with one's father was related to higher levels of intimate relationship quality during adulthood, and vice versa. Paternal depression was negatively related to both retrospective and current accounts (current relationship quality with biological father) of fathering and all of the intimate relationship quality items. This indicates that when fathers were more depressed, they were more likely to report not living with or knowing their biological father during childhood, having an uninvolved father during childhood, and lower levels of intimate relationship quality when their child was firstborn and at age 1, and vice versa. Lastly, all of the child outcome variables were associated with each other, and the strongest relationships existed between internalizing and externalizing behaviors and pro-social behaviors and PPVT scores. For example, internalizing and externalizing behaviors were positively correlated ($r = .42$, $p < .001$), which indicates that higher levels of internalizing behaviors were related to higher levels of externalizing behaviors, and vice versa. Furthermore, pro-social behaviors and PPVT scores

were positively correlated ($r =.23$, $p < .001$), which indicates that higher levels of pro-social behaviors were related to higher PPVT scores, and vice versa.
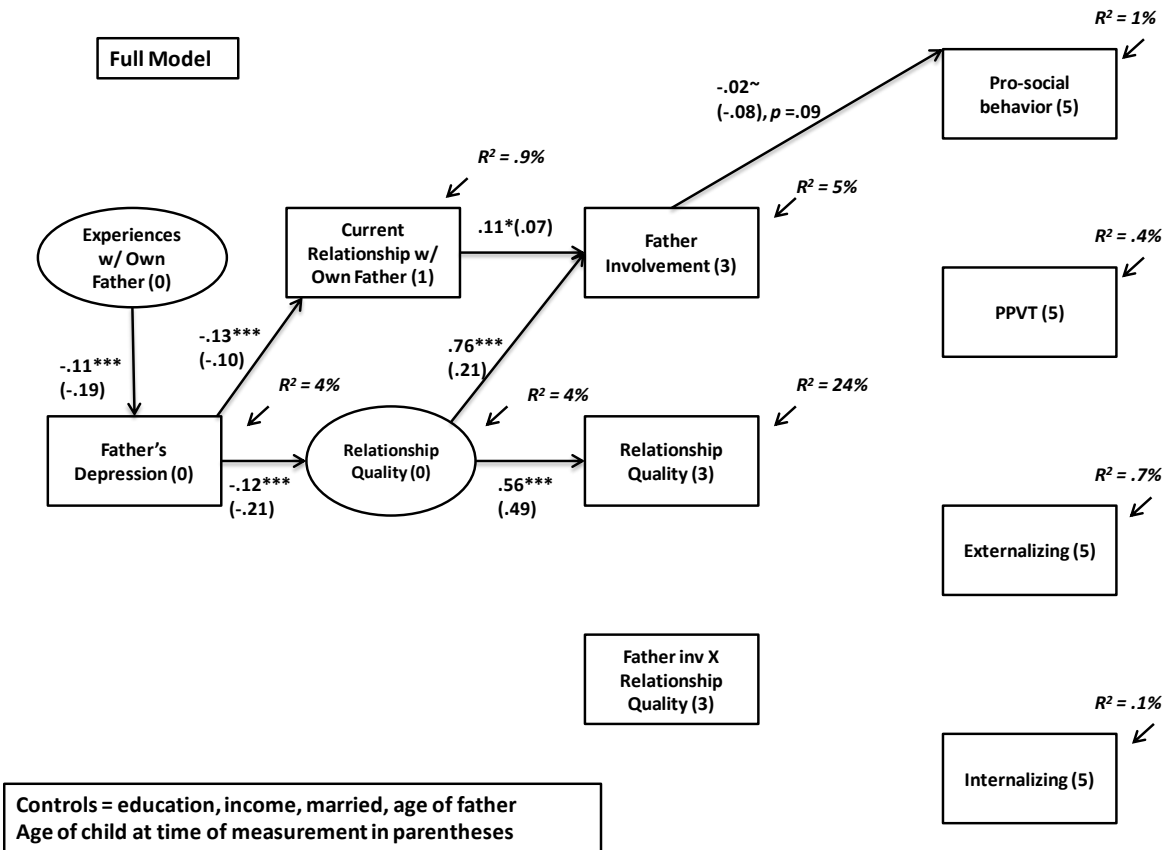
Multivariate Analyses

Full Sample

Figure 3 presents the results for the structural equation model that was fit to address the hypothesized model for the entire analytic sample. The model fit statistics indicate that the fit was not ideal (χ^2/df $=7079.17/164$; $RMSEA =.11$, $p = .00$; $SRMR =.09$); therefore, the following results should be interpreted with caution. Furthermore, the model fit indices were close to an acceptable range ($RMSEA <.10$; $SRMR <.10$), but they were above the standard conventional cutoffs (χ^2/df $=5$; $RMSEA <.05$; $SRMR <.05$) (Kline, 2011). In an examination of the cascade effects, when their children are born, if fathers had poor childhood experiences with their own fathers, they experience depression ($\beta=-.11$, $p <.001$); but, on average, when fathers had more positive experiences with their own biological fathers during their childhood (i.e. living with and knowing their biological father), they experience less depression when their children are born. Furthermore, when their children are born, fathers who are depressed have lower intimate relationship quality with their partners ($\beta=-.12$, $p <.001$). And, when their children are 1, they have lower relationship quality with their own biological fathers ($\beta=-.13$, $p <.001$). Therefore, on average, high levels of paternal depression when their children are born are related to lower levels of relationship quality with respondents' own fathers (when their children are 1 year old) and intimate partner (when their child is born).

If fathers' relationship quality with their partners when their children are born is high then their intimate relationship quality with their partners when their children are 3 is also high,

and vice versa (β=.56, $p <.001$). In addition, these fathers have high involvement with their children when they are age 3 (β=.76, $p <.001$). Therefore, on average, higher levels of intimate relationship quality when children are born are related to higher levels of father involvement and intimate relationship quality when their children are 3, and vice versa. Lastly, only father involvement when children were 3 years old has an effect on child outcomes when children were 5. Namely, high father involvement when children are 3 predicts lower pro-social behavior for their children at age 5 (β=-.02, $p =.09$), and vice versa. However, this finding should be considered in light of this relationship being fairly minimal and only approaching significance. Overall, all of the predictors in the model, taken together, minimally predicts the variance in children's PPVT scores ($R^2 = 0.4\%$) pro-social ($R^2 =1\%$), internalizing ($R^2 =0.1\%$), and externalizing ($R^2 = 0.7\%$) behaviors.   However, considerably more variance was explained in relationship quality at child age 3 ($R^2 =24\%$) by experiences with their own fathers, paternal depression, and intimate relationship quality when their children are born. Five percent of the variation of father involvement at children's age 3 was predicted by those same variables plus fathers' current status with their own fathers.

Figure 3. Structural equation model of the relations among constructs for childhood experiences with biological father (child age 0), paternal depression (child age 0), current relationship quality with biological father (child age 1), intimate relationship quality (child age 0), intimate relationship quality (child age 3), father involvement (child age 3), pro-social behaviors (child age 5), PPVT (child age 5), internalizing behaviors (child age 5), externalizing behaviors (child age 5), and their related observed variables—full sample (standardized estimated correlations in parentheses) (*N*=3301). Only significant relationships are shown.

Multiple-group Analysis for Race

To determine if race had a moderating effect on the hypothesized model, a multiple group analysis was conducted, which included two groups: 1) African American fathers and 2) European American fathers (see Figures 4 and 5). Model fit statistics indicate that the fit was not ideal (χ^2/df =7921.06/353; *RMSEA* =.11, *p* = .00; *SRMR* = .12). Yet again, these indices were close to an acceptable range (*RMSEA* <.10; *SRMR* <.10), but they were above the standard

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conventional cutoffs (χ^2/df =5; *RMSEA* <.05; *SRMR* <.05) (Kline, 2011). In examining

differences based on race, if African American fathers experience depression when their children

are born, they also experience lower levels of relationship quality with their own fathers when

their children are 1 year old (β=-.17, *p* <.001), and vice versa. However, this finding was not

significant for European American fathers. Furthermore, if African American fathers experience

higher levels of relationship quality with their own fathers when their children are 1 year old,

they also experience higher levels of father involvement with their own children when they are 3

years old (β=.13, *p* <.05), and vice versa. This relationship was only approaching significance

for European Americans fathers (β=.09, *p* =.06).

In reference to racial differences for the predictors of child outcomes, if European

American fathers experience higher levels of intimate relationship quality when their children are

3 years old, their children display lower levels of internalizing behaviors when they are 5 years

old (β=-.03, *p* <.05), and vice versa. This relationship was not significant for African Americans.

Therefore, higher levels of fathers' intimate relationship quality when their children are 3 years

old are related to lower levels of children's internalizing behaviors at age 5 only for European

Americans. Interestingly, an interaction of father involvement and relationship quality when the

child was 3 only exists for European American fathers; when European American fathers display

high levels of father involvement when their children are 3 years old and also experience high

levels of intimate relationship quality when their children are 3 years old, their children also

experience higher levels of internalizing behaviors when they are 5 years old (β=.007, *p* =.09).

Therefore, when high levels of father involvement are coupled with high levels of intimate

relationship quality when children are 3 years old, internalizing behaviors in children at age 5 are

also high, and vice versa. This was only true for European Americans. A prototypical plot

displaying this relationship is presented in Figures 6 and 7. Lastly, when African Americans

fathers experience high levels of intimate relationship quality when their children are 3 years old,

their children are more likely to experience externalizing behaviors when they are 5 years old

(β=.03, p =.10), and this relationship was approaching significance for African Americans but

was not significant for European Americans. Therefore, for African Americans, higher levels of

intimate relationship when their children are 3 years old are related to higher levels of children's

externalizing behaviors when they are 5 years old. Furthermore, more variance was explained in

the child outcomes and predictors for European Americans in comparison to African Americans.

For example, 32% of the variance in intimate relationship quality when children were 3 years old

was explained for European American fathers in comparison to 24% of the variance in intimate

relationship quality for African American fathers when their children were 3 years old. Also, the

variance in children's PPVT scores (R^2 = 4%) pro-social (R^2 =4%), internalizing (R^2 =3%), and

externalizing (R^2 = 3%) behaviors for European Americans was slightly higher than what was

explained for African Americans. Practically no variation was explained in children's PPVT

scores (R^2 = .3%) pro-social (R^2 =.8%), internalizing (R^2 =1%), and externalizing (R^2 = .1%)

behaviors for African Americans.

Figure 4. Structural equation model of the relations among constructs for childhood experiences with biological father (child age 0), paternal depression (child age 0), current relationship quality with biological father (child age 1), intimate relationship quality (child age 0), intimate relationship quality (child age 3), father involvement (child age 3), pro-social behaviors (child age 5), PPVT (child age 5), internalizing behaviors (child age 5), externalizing behaviors (child age 5), and their related observed variables—European American sample (standardized estimated correlations in parentheses) (*N*=894). Only significant relationships are displayed.
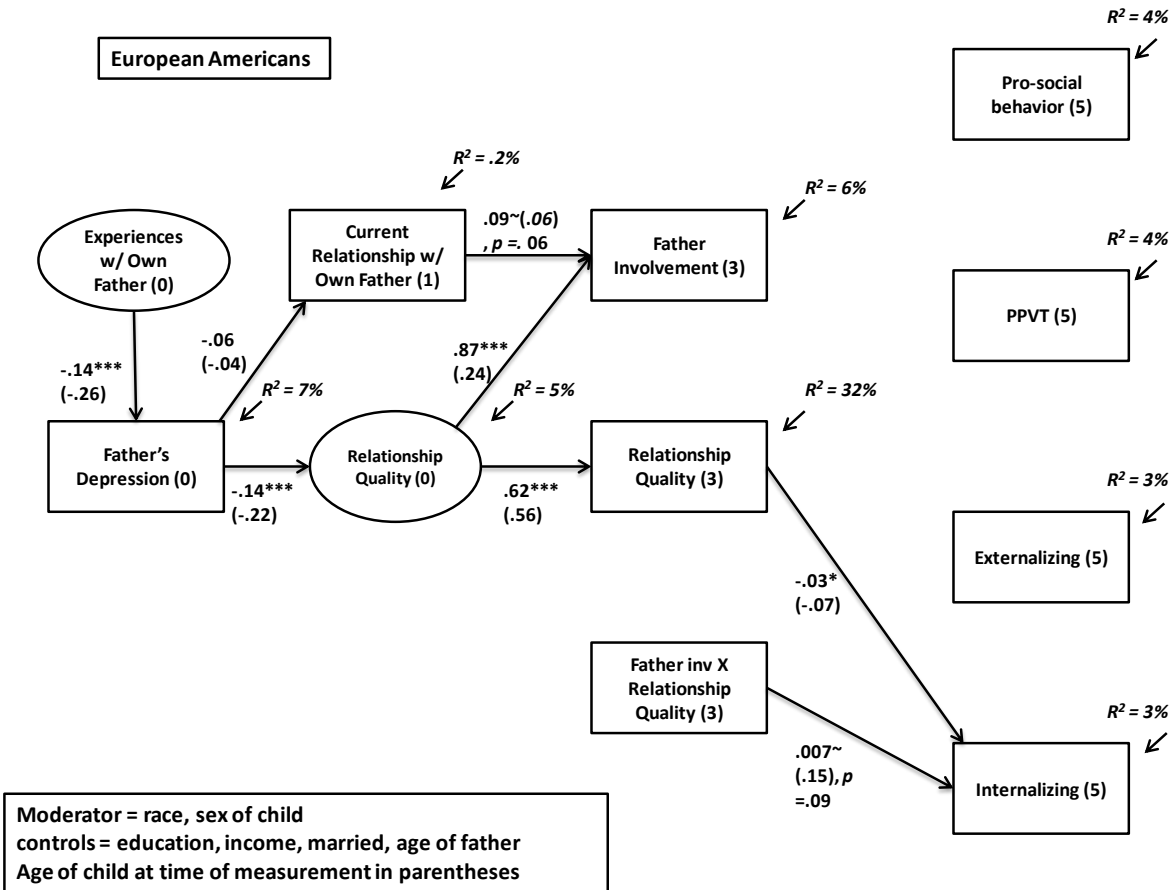
Figure 5. Structural equation model of the relations among constructs for childhood experiences with biological father (child age 0), paternal depression (child age 0), current relationship quality with biological father (child age 1), intimate relationship quality (child age 0), intimate relationship quality (child age 3), father involvement (child age 3), pro-social behaviors (child age 5), PPVT (child age 5), internalizing behaviors (child age 5), externalizing behaviors (child age 5), and their related observed variables—African American sample (standardized estimated correlations in parentheses) (*N*=2,407). Only significant relationships are displayed.
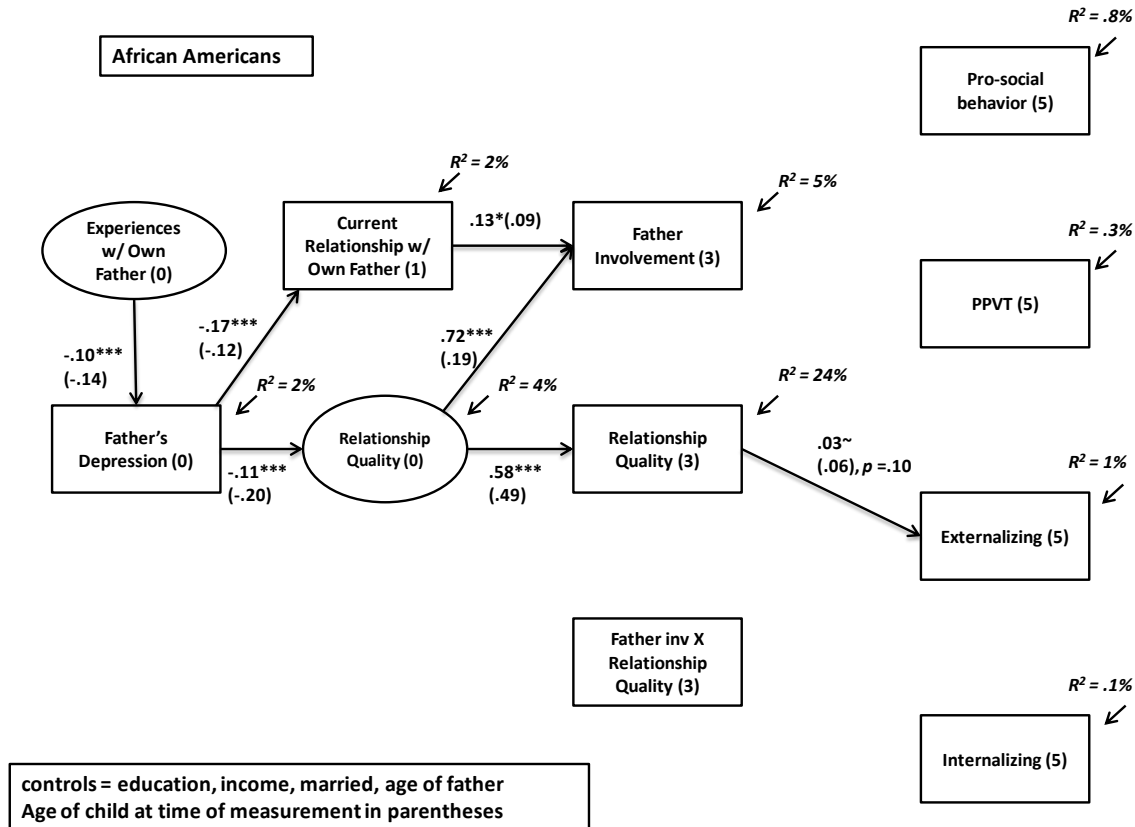
Figure 6. The effect of relationship quality at age 3 on internalizing behaviors at age 5 for EA and AA prototypical children with high father involvement at age 3.
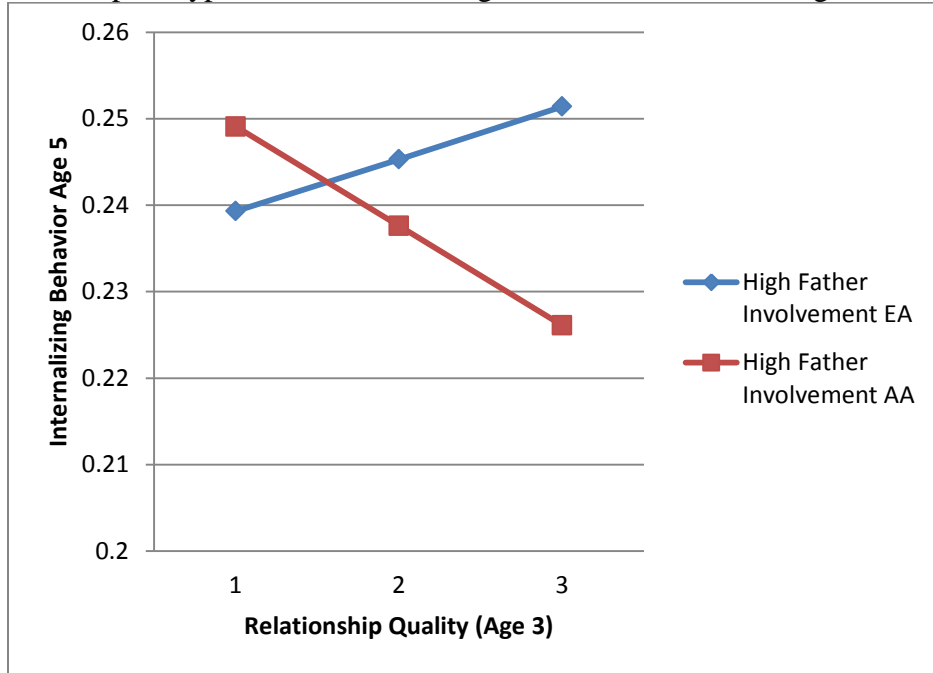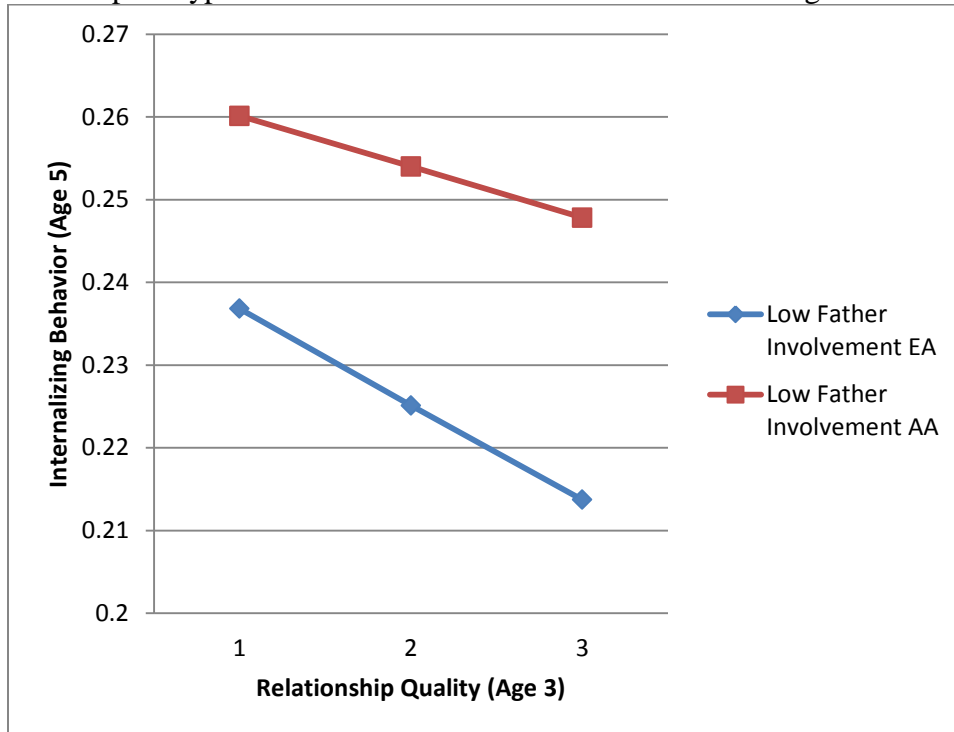

Figure 7. The effect of relationship quality at age 3 on internalizing behaviors at age 5 for EA and AA prototypical children with low father involvement at age 3.

Multiple-group Analysis for Child Sex

To examine the potential moderating effect of child sex on the hypothesized model, a multiple-group analysis composed of boys and girls was conducted. Model fit statistics indicate that the fit was not ideal, but acceptable (χ^2/df =7261.283/353; *RMSEA*=.11; *SRMR* =.09). For example, the model fit indices were close to an acceptable range (*RMSEA* <.10; *SRMR* <.10), but they were above the standard conventional cutoffs (χ^2/df =5; *RMSEA* <.05; *SRMR* <.05) (Kline, 2011). The models for boys and girls were fairly similar to each other with regard to the observed effects for the fathering related and intimate relationship outcomes (see Figures 8 & 9). Differences between boys and girls were observed for the child outcomes. For example, none of the child outcomes were significantly predicted in the fitted model for girls. However, for boys, if father involvement is high when they were 3 years old, they exhibit fewer externalizing behaviors at age 5 (β=-.02, *p* <.05). This relationship is not significant for girls. Therefore, on average, higher levels of father involvement when boys are three years old are related to lower levels of externalizing behavior when they are 5 years old, and vice versa. Furthermore, if fathers exhibit high levels of father involvement and experience high intimate relationship quality when their children are 3 years old, their male children exhibit higher levels of pro-social behavior when they are 5 years old (β=.01, *p* <.05). Therefore, the interaction between father involvement at child age 3 and intimate relationship quality at child age 3 is positively related pro-social behaviors in boys when they are 5 years old. This relationship is not significant for girls. Figures 10 and 11 illustrates this relationship, which shows how girls' pro-social behaviors at age 5 are relatively unaffected by high levels of father involvement at child age 3 combined with high levels of intimate relationship quality at child age 3; however, when both father involvement (child age 3) and relationship quality (child age 3) are high, boys display higher

levels of pro-social behavior at age 5 in comparison to girls. Furthermore, at high levels of father involvement at child age 3 and low levels of relationship quality at child age 3, boys display levels of pro-social behaviors that are similar to girls, on average.

Interestingly, for boys, high levels of father involvement when children are 3 years old is related to lower levels of children's pro-social behavior at age 5 (β=-.03, p =.06). However, this relationship is only approaching significance and indicates that higher levels of father involvement when boys are 3 years old are related to lower levels of pro-social behavior when boys are 5 years old, and vice versa. This relationship is not significant for girls. Furthermore, for boys, the interaction between father involvement at child age 3 and intimate relationship quality at child age 3 is positively related to externalizing behaviors when boys are 5 years old (β=.007, p =.11). However, this relationship is only approaching significance and indicates that higher levels of both father involvement and intimate relationship quality when children are 3 years old are also related to higher levels of externalizing behaviors in boys at age 5.

Overall, minimal variance is explained for the child outcomes for both boys and girls. However, slightly more variance is explained for boys' pro-social (R^2 =4%) and externalizing (R^2 =4%) behaviors in comparison to what is explained for girls' pro-social (R^2 =.6%) and externalizing (R^2 =.2%) behaviors, which is practically no variance observed for girls. Furthermore, slightly more variance in girls' PPVT scores (R^2 = 2%) is explained in comparison to practically no variance being explained in boys' PPVT scores (R^2 =.3%). Little to no variance is explained for both boys' (R^2 =.1%) and girls' (R^2 =.2%) internalizing behaviors. Lastly, the amount of variance explained for father involvement at child age 3 (girls' R^2 =6% and boys' R^2 =4%) and relationship quality at child age 3 (girls' R^2 =25% and boys' R^2 =23%) is relatively the same for boys and girls.

Figure 8. Structural equation model of the relations among constructs for childhood experiences with biological father (child age 0), paternal depression (child age 0), current relationship quality with biological father (child age 1), intimate relationship quality (child age 0), intimate relationship quality (child age 3), father involvement (child age 3), pro-social behaviors (child age 5), PPVT (child age 5), internalizing behaviors (child age 5), externalizing behaviors (child age 5), and their related observed variables—Boys sample (standardized estimated correlations in parentheses) (*N*=1,740). Only significant relationships are displayed.

Figure 9. Structural equation model of the relations among constructs for childhood experiences with biological father (child age 0), paternal depression (child age 0), current relationship quality with biological father (child age 1), intimate relationship quality (child age 0), intimate relationship quality (child age 3), father involvement (child age 3), pro-social behaviors (child age 5), PPVT (child age 5), internalizing behaviors (child age 5), externalizing behaviors (child age 5), and their related observed variables—Girls sample (standardized estimated correlations in parentheses) (*N*=1,560). Only significant relationships are displayed.
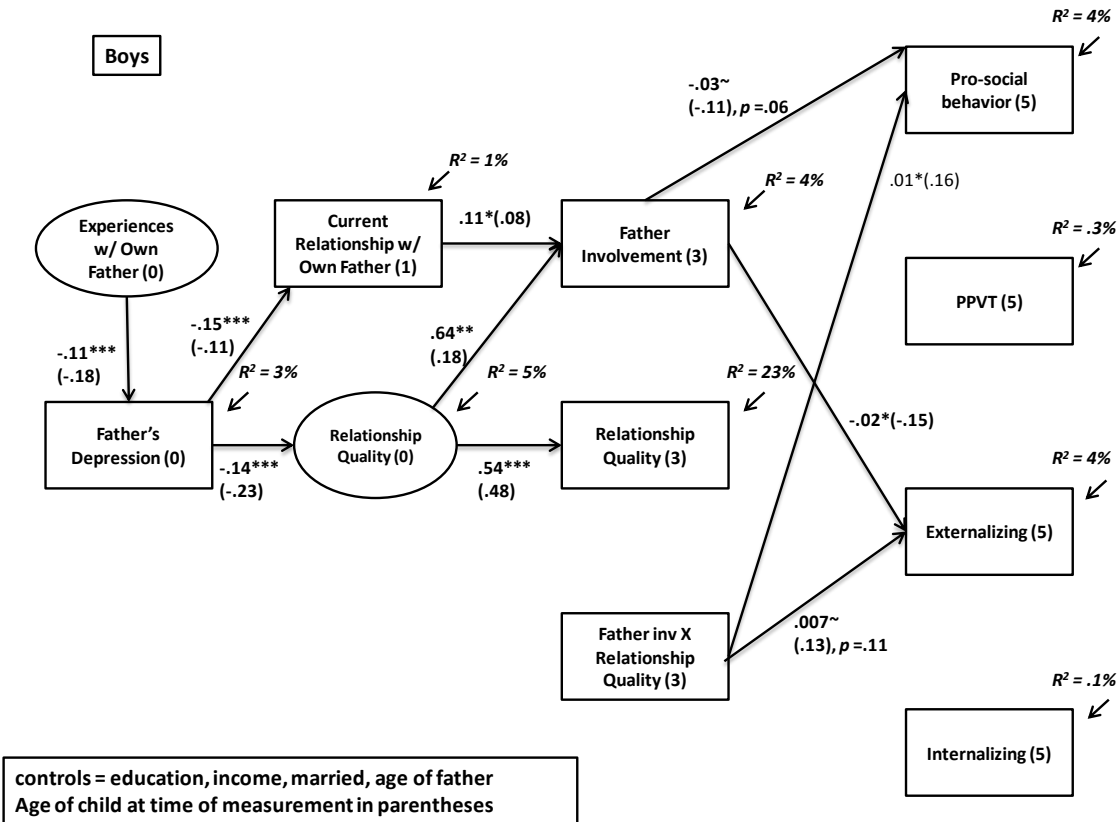
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Figure 10. The effect of relationship quality at age 3 on pro-social behaviors at age 5 for prototypical boys and girls with high father involvement at age 3.
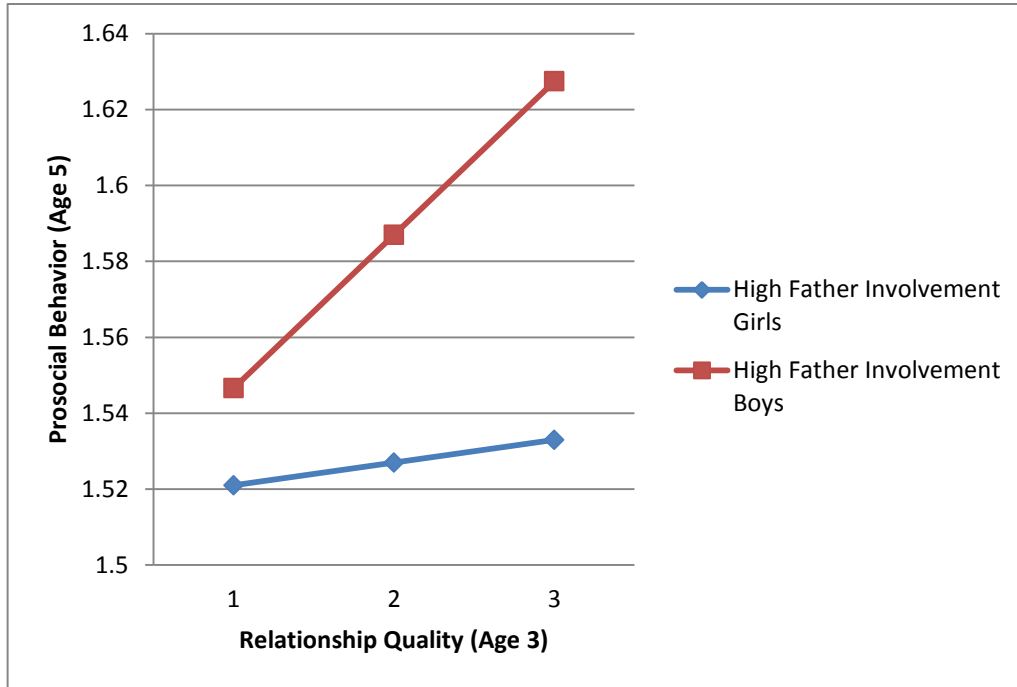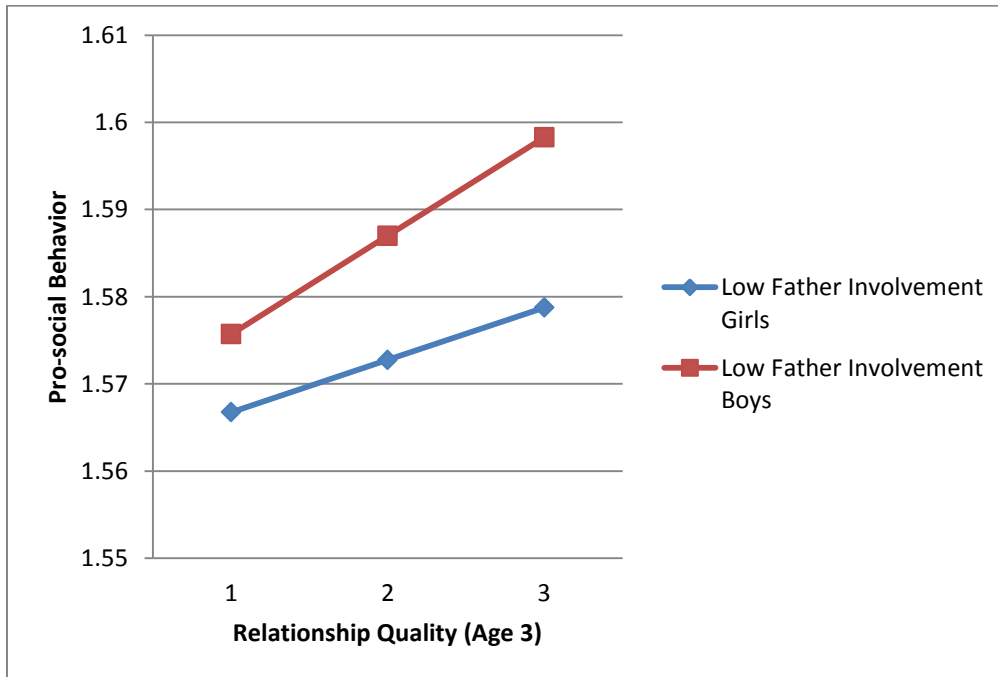

Figure 11. The effect of relationship quality at age 3 on pro-social behaviors at age 5 for prototypical boys and girls with low father involvement at age 3.

Discussion

Empirical support for the vital role of fathers in child development has been unwavering (Marsiglio, Amato, Day, & Lamb, 2000; Parke et al., 2004; Pleck & Masciadrelli, 2004). Furthermore, it has been well established that father involvement is embedded within a larger ecological context that is affected by various subsystems and individual characteristics. Therefore, the primary goal of the current study was to examine the malleability of fathering to varying historical, psychological, and relational contexts – namely childhood and current experiences of fathers with their own biological fathers, paternal depression, and intimate relationship quality. Furthermore, the cascade of these effects – originating from childhood experiences with one's father to the residual effects of these experiences on intimate relationship quality and father involvement – was used to predict child outcomes (pro-social behaviors, PPVT scores, internalizing, and externalizing behaviors). Due to the higher prevalence of father absence generally experienced by African Americans (U.S. Census, 2008), we wanted to determine if the current model was moderated by race. Furthermore, in consideration of sex differences that exist for internalizing and externalizing behaviors in children (Engle & McElwain, 2011; Hammarberg & Hagekull, 2006; Stacks & Goff, 2006), we tested for the moderating effects of sex on the paths in the hypothesized model. An important caveat should be considered for the following discussion: the findings for the current study should be interpreted with caution due to the model fit for all of the models being relatively poor. Furthermore, due to the moderating effect of race and child sex, the findings for the full model are only preliminary.

One of the most important findings of the current study was the significant negative relationship between fathers' past experiences with their own biological fathers on their

depressive symptomatology when their children are born. This finding addresses an important gap in the literature on the intergenerational transmission of fathering practices: for few, if any studies, have examined how fathers' past experiences with their own fathers may have implications for fathers' psychological distress. This relationship was true regardless of fathers' ethnic backgrounds or the sex of focal children. Interestingly, this relationship occurs during the transition into parenthood for fathers and the earliest stage of life for children, infancy. Therefore, fathers' positive experiences with their own biological fathers when they themselves were children may reduce the likelihood of experiencing depression when their children are newborns. Conversely, fathers' negative childhood experiences with their own fathers may have negative implications for their infants via compromised psychological distress, namely a heightened risk for depression. Based in current research indicating the deleterious effects of paternal depression on warm and sensitive caregiving/parenting (Davis et al., 2011; Jacob & Johnson, 1997; Wilson & Durbin, 2010), it appears that fathers' positive past experiences with their own fathers during childhood may foster an emotional climate that is ideal for warm and sensitive parenting when children are newborns – a developmental period for children that needs high quality/warm caregiving. The reverse would also be true, such that fathers' negative childhood experiences with their biological fathers may compromise their mental health when their children are born, which may not serve as a conducive emotional environment for warm and sensitive parenting.

In reference to the moderating effect of race, differences were observed between European and African American fathers, and two of the most notable differences observed for the predictors were for the effects of fathers' depression when their children are newborns and current relationship quality with one's biological father when their children are 1 year old. For

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example, when African American fathers experience higher levels of depression after the birth of their children, they also report lower levels of relationship quality with their biological fathers when their children are 1 year old, and vice versa. However, this relationship was not significant for European Americans. Furthermore, African American fathers' relationship quality with their biological fathers when their children are 1 year old is positively related to their levels of father involvement when their children are 3 years old, such that higher levels of African American fathers' relationship quality with their biological fathers when their children are 1 year old is related to higher levels of father involvement when their children are 3 years old. These findings suggest that African American fathers' relationship with their own fathers when their children are 1 year old may be more heavily influenced by psychological distress experienced when their children are newborns, and this sensitivity doesn't appear to exist for European American fathers. In addition, African Americans' father involvement at child age 3 was positively related to their relationship quality with their own fathers at child age 1, but this relationship was only approaching significance for European Americans.

Extrapolating from these findings, it may be plausible that African American fathers are more vulnerable to the effects of depression on their current relationship quality with their own fathers due to their higher incidence of experiencing depression. Furthermore, due to the higher incidence of father absence in the lives of African Americans (U.S. Census, 2008), it is reasonable to conclude that having a positive relationship with one's biological father would be especially important for African American fathers' involvement with their children. This assumption is supported by findings from the Shannon et al. (2005) study, which utilized a racially diverse sample of inner-city fathers, and 42% were African American. They found that paternal acceptance received during childhood was positively related to responsive-didactic

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interactions with infants, for the fathers in their sample. However, they did not test if race had a moderating effect on their model. Taken together, these findings address an important gap in the literature, for few, if any, studies have examined how race may moderate the effects of paternal depression on fathers' relationships with their own biological fathers, or the moderating effect of race on the relationship between fathers' current relationship with their own biological fathers and how this affects their involvement with their children.

With regard to the moderating effect of race on child outcomes, intimate relationship quality when children are 3 years old is negatively related to internalizing behaviors in children at age 5; however, this relationship was only significant for European Americans. This finding corresponds with previous research that has examined the effects of marital conflict and inter-parental relationship violence on children's internalizing behaviors, which has demonstrated that marital conflict and relationship violence increase the likelihood of internalizing behaviors in children (Camacho, Ehrensaft, & Cohen, 2012; Cummings & Davies, 1994; Emery, 2011). The benefit of the current study was that we were examining the opposite end of the relationship quality continuum by examining intimate relationship quality instead of intimate relationship conflict, which is a construct that has been primarily examined in its relation to children's internalizing behaviors. Interestingly, the effect of intimate relationship quality at child age 3 was positively related to externalizing behaviors in children at age 3 for African Americans (this relationship was approaching significance). This finding in is in stark contrast to previous research that has found that intimate relationship quality is negatively related to externalizing behaviors in children (Ackerman, D'Eramo, Umylny, Schultz, & Izard, 2001). Lastly, the interaction between father involvement at child age 3 and intimate relationship quality at child age 3 is positively related to internalizing behaviors in children when they are 5 years old for

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European Americans (this relationship is approaching significance), and this relationship is not significant for African Americans. Therefore, when intimate relationship quality (at child age 3) is also considered in the context of the father involvement (at child age 3), the combination of their effects is positively related to internalizing behaviors when their children are 5 years old. This finding is rather surprising in light of the current study demonstrating a negative relationship between intimate relationship quality and internalizing behaviors for European Americans. It could be possible that higher levels of father involvement are related to higher levels of internalizing behaviors regardless of experiencing higher levels of intimate relationship quality due to the ways in which men are socialized to avoid the expression of vulnerable feelings (Watts & Borders, 2005). This socialization may increase the likelihood of internalizing behaviors in European American children when their fathers are highly involved in their lives.

In reference to the moderating effect of child sex on the hypothesized model, no sex differences were demonstrated across the predictor variables. Furthermore, fathers reported similar levels of father involvement for both boys and girls in the current sample. This finding differs from previous research indicating that fathers spend more time with their sons in comparison to their daughters (Cooksey & Fondell, 1996; Morgan, Lye, & Condran, 1988). However, we did find that gender moderated the effect of father involvement at child age 3 on children's pro-social and externalizing behaviors when they are 5 years old; and the effect of the interaction between father involvement at child age 3 and intimate relationship quality at child age 3 on children's externalizing and internalizing behaviors when they are 5 years old. These effects are significant only for boys, and none of the child outcomes are significantly predicted for girls. For example, the interaction between father involvement and relationship quality when children are 3 years old is positively related to pro-social behaviors in boys when they are 5

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years old, such that higher levels of father involvement (at child age 3) coupled with higher levels of intimate relationship quality (at child age 3) is related to higher levels of pro-social behaviors when boys are five years old. This relationship is not significant for girls. Based on these findings it could be possible that high levels of father involvement in the context of high quality intimate relationships are related to higher levels of pro-social behaviors in boys due to same-gender role modeling (Helibrun, 1965). In addition, father involvement at child age 3 is negatively related to externalizing behaviors in boys when they are 5 years old, which indicates that higher levels of father involvement are related to lower levels of externalizing behaviors in boys, and vice versa. Taken together, these findings support previous research demonstrating that father involvement may be more salient for positive developmental outcomes for boys in comparison to girls (Harris & Morgan, 1991).

Overall, the current study adds to the literature by demonstrating intergenerational effects of fathering on child outcomes – specifically children's pro-social, internalizing, and externalizing behaviors. It appears that past experiences with one's father may have implications for adult psychological distress, and in this case, paternal depression. Furthermore, paternal depression negatively affects fathers' current relationship quality with their own fathers, but this appears to only be true for African American fathers. In addition, fathers' current relationship quality with their own fathers has positive bearings on their levels of father involvement. The most robust finding was observed for the positive effects of intimate relationship quality when children are newborns on father involvement when children are 3 years old. Therefore, intimate relationship quality experienced after the birth of a child has implications for father involvement during toddlerhood. This finding corroborates a wealth of previous research demonstrating

positive spillover effects for high quality intimate relationship functioning on father involvement (Carlson et al., 2011; Cummings et al., 2004; Feldman et al., 1983; Volling & Belsky, 1991).

In reference to the child outcomes examined in the current study, we did not predict children's PPVT scores in any of the models – indicating that father involvement, intimate relationship quality, and the interaction between father involvement and intimate relationship quality at age 3 are not significantly related to children's vocabulary skills when they are 5 years old. This finding contrasts with previous research findings that have found a positive relationship between father involvement and children's academic/cognitive outcomes (Flouri & Buchanan, 2004; Seokhee & Campbell, 2011). Both race and gender proved to serve as moderators for the current study. Overall, this study provides empirical evidence that supports the process model for parenting proposed by Belsky (1984), and is a promising step toward gaining a more comprehensive understanding of how intergenerational, psychological, and relational contexts influence fathering, and in turn, how the cascade of these effects on fathering has implications for children's pro-social, internalizing, and externalizing behaviors.

Limitations

The assessment of childhood experiences with one's father was less than ideal for various reasons. First, we used living with both biological parents as a proxy for living with one's biological father during childhood; therefore, there may have been fathers who lived with their biological father but did not live with their biological mother and were ultimately coded as not living with their biological father during childhood in this study. Second, we were unable to tease apart the nuanced dynamics of the father-child relationship during childhood due to the limitations inherent in the secondary data set that was utilized for this study. For example, we

were unable to examine retrospective accounts of fathers' relationship quality with their own fathers during childhood due to no measures being available to assess this construct. Third, we were unable to gather prospective accounts of fathering experiences during childhood due to the research design of the current study. And lastly, in reference to the child outcomes, these findings must be considered in light of the little to null amount of variance that was explained for these outcomes.

With regard to looking at racial differences, it would have been more ideal to examine the moderation effects of socioeconomic status (SES) instead of race. There was considerable variability in education and income levels for European and African American fathers, with African American fathers reporting considerably lower levels of education and income. In addition, previous research has demonstrated strong links between economic struggle and depressive symptomatology (Butterworth et al., 2009). And lastly, SES is a malleable construct while race is unchanging; therefore, it may prove to be a more practical focus for interventions.

In reference to other contextual factors that may have a strong bearing on the current findings – transitioning into parenthood and amount of children are particularly salient – it would have been ideal to control for these factors. For example, first-time fathers who are transitioning into parenthood may interact differently with their children in comparison to fathers with previous children. In addition, fathers with more children may have less time to spend with each child in comparison to fathers with fewer children.

Strengths

One of the advantages of the current study was its longitudinal design, which enabled the examination of the long-term effects of this cascade model. Furthermore, the current study is

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one of the first studies to empirically test the process model for parenting set forth by Belsky (1984) with the use of longitudinal data. Furthermore, the focus of the current study was broader than most studies that examine intergenerational effects of fathering practices, for we examined not only problem behaviors in children, but also pro-social and academic/cognitive outcomes.

Future Directions

To gain clearer insight on the impact of past experiences with one's father on current fathering, it would be imperative for researchers to utilize prospective designs. Following adolescents prospectively into their adulthood and childbearing years may prove to be an optimal research design for capturing the intergenerational effects of fathering across two generations. This would enable researchers to assess father-child relationships in vivo and across time, which would provide a more accurate account of these relationships. Furthermore, it would permit the assessment of a broader array of father-child relationships dynamics, instead of relying primarily on examining retrospective accounts of levels of paternal involvement and father absence. Researchers are beginning to utilize this proposed research design (Capaldi et al., 2003); however, assessment of the third generation usually ends at infancy or toddlerhood. More empirical inquiry is needed for understanding the intergenerational influences of fathering on child development beyond the infancy and toddler years, and it would be of great value to understand the implications of intergenerational fathering on adolescence and adult development of the third generation. Understandably, these suggestions are considerably rigorous and labor intensive; however, extended longitudinal follow-up is needed to truly capture the nuanced details of intergenerational fathering.

Additionally, it would be important to address the limitations previously discussed: testing the moderation of SES on the hypothesized model; controlling for first-time fatherhood and number of children; and potentially changing the research model to only observing the father-related variables. Furthermore, it would be interesting to examine paternal anxiety instead of paternal depression, for anxiety may be more socially acceptable for men to display instead of depressive symptoms. Overall, current research strongly demonstrates that fathering is a highly negotiated phenomenon, and the future looks promising for gaining insight on the role of intergenerational, psychological, and relational influences.

III.   Study 2 – Paternal Postpartum Depression and Children's Internalizing and

Externalizing Trajectories: The Intervening Role of Father Involvement and

Relationship Quality

In comparison to maternal postpartum depression, paternal postpartum depression has

received limited empirical inquiry from researchers. However, paternal depressive

symptomatology is currently garnering much needed attention from family scholars. This

interest is well warranted due to the potential negative effects of paternal depression on

children's socioemotional development (Dave et al., 2008; Gross et al., 2008; Weinfield et al.,

2009). Furthermore, there appears to be a heightened risk for paternal depression during the

postpartum period; in that, like mothers, fathers are more likely to experience depressive

symptoms when their children are in early infancy in comparison to other developmental periods

(Ballard, Davies, Cullen, Mohan, & Dean, 1994). Researchers are particularly invested in

understanding causal pathways between paternal depression and child outcomes, and impaired

parenting is a well substantiated mechanism by which paternal depression affects children (Davis

et al., 2011; Jacob & Johnson, 1997; Wilson & Durbin, 2010). However, parenting, father-child

relationships, and child behavior are not the only compromised familial systems due to

depression; intimate relationships are also negatively affected by depressive symptomatology,

with elevated levels of disharmony, marital conflict, and insecure relationship attachment

behavior being typical relational outcomes (Cummings et al., 2005; Ramchandani et al., 2011).

Overall, the detrimental effects of maternal depression on familial and child functioning have

been well substantiated by research (Jacob & Johnson, 1997; Landman-Peeters et al., 2008);

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however, less is understood about the presentation and implications of paternal postpartum depression. Due to the importance of high quality parent-child interactions during the postnatal period and early infancy, paternal postpartum depression may indeed have unique consequences for children's development in comparison to paternal depression experienced at other developmental periods.
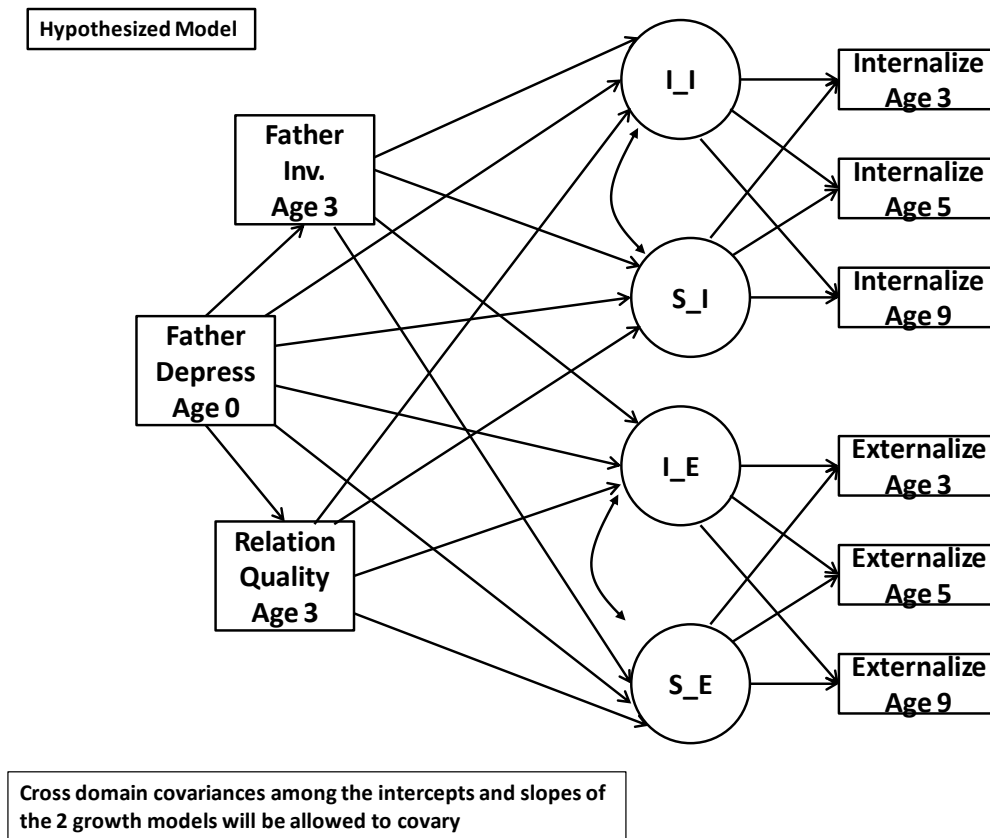
Unfortunately, a pervasive shortcoming in the literature is that most research investigating the effects of paternal depression on family systems primarily utilize cross-sectional data (Cummings et al., 2005; Davis et al., 2011). In addition, few studies have examined the developmental consequences experienced by children whose fathers experienced postpartum depression, but it appears that postpartum depression in men may be problematic due its potential long-term effects on children's development. For example, Paulson et al. (2009) found that depression experienced at 9 months postpartum in fathers, not mothers, predicted lower levels of paternal reading to the children and children's expressive vocabulary at age 2. Therefore, there may be potential long-term effects of paternal postpartum depression on both father involvement and important child outcomes.

Interestingly, it appears that paternal depression doesn't experience significant growth after the very early years of parenthood. For example, Gross et al. (2008) utilized latent growth modeling to examine the effects of maternal and paternal depression on of conduct problems in children and found that paternal depression did not show significant change over the course of two years from child ages 2 to 4. Even though early depression in fathers may not significantly predict elevated levels of paternal depression longitudinally, long-term effects for paternal postpartum depression on the later development of children may exist, much as maternal postpartum depression has been found to be related to negative developmental outcomes for

children (e.g. insecure attachment styles, cognitive difficulties, and internalizing/externalizing behaviors) (Goodman & Gotlib, 1999; Murray & Cooper, 1997).

In an effort to address these gaps in the literature and provide insight on possible longitudinal consequences of paternal postpartum depression, the current study will focus on the cascade effects of paternal postpartum depression on children's trajectories for internalizing and externalizing behaviors from ages 3 to 9 years via fathers' involvement with their children and their relationship quality with their children's mothers (see Figure 1). Therefore, relationship quality and father involvement when children are 3 years old will serve as intervening variables in the process of the effect of paternal depression on the development of children's problem behaviors. Based on current findings demonstrating that paternal depression does not, on average, increase after the postpartum period/early infancy (Gross et al., 2008), we decided to use fathers' depressive symptomatology when children are born. Overall, the current hypothesized model is well supported by previous research which has substantiated the negative effect of paternal depression on father involvement (Davis et al., 2011; Jacob & Johnson, 1997; Paulson et al., 2009) and relationship quality (Cummings et al., 2005); and in turn, both father involvement and relationship quality have important implications for children's internalizing and externalizing behaviors. Essentially, the current model serves as a hypothesized process model that explicates the effects of paternal postpartum depression on later familial and child functioning.

Figure 1.

Hypothesized Model

Cross domain covariances among the intercepts and slopes of the 2 growth models will be allowed to covary

Paternal Depression and Children's Internalizing and Externalizing Behaviors: The Influence of Father Involvement

Associations between paternal depression and children's internalizing and externalizing behaviors have been well substantiated by empirical findings; that is, paternal depression is related to a heightened risk for the manifestation of internalizing and externalizing behavior in children (Gross et al., 2008; Kane & Garber, 2009). The typical presentation of depression, regardless of gender, may consist of the following symptoms: feeling sad/hopeless/discouraged,

diminished interest/pleasure in activities, insomnia or hypersomnia, suicidal ideation, significant weight loss/gain, fatigue, difficulty concentrating, and feelings of worthlessness (American Psychiatric Association, 2005). However, the presentation of depression in men slightly differs from women with higher levels of anger and irritability being typical symptoms of depression in men (Madsen & Juhl, 2007). Given the possibly unique symptomatology of paternal depression, there may be considerable consequences for father-child relationships, which may be particularly detrimental during the postpartum period when children need warm and sensitive caregiving. For the purpose of the current study, we will focus primarily on paternal engagement (directly interacting with the child by caregiving, playing, or participating in leisure activities) due to the ease of quantifying this construct, which is one of the three types of father involvement (engagement, accessibility, and responsibility) proposed by Lamb et al. (1987).

Very little research has examined the effects of paternal depression on father involvement or the intervening role of father involvement on the relationship between paternal depression and children's problem behaviors. However, it appears that paternal involvement may moderate the relationship between maternal depression and children's internalizing behaviors. For example, Mezulis, Hyde, and Clark (2005) found that father involvement that was characterized as warm and controlling (setting rules, protective, and supervisory) moderated the relationship between maternal depression during a child's early infancy and child internalizing problems in kindergarten; such that, low to moderate amounts of high-warmth father involvement and high amounts of medium- to high-control father involvement during a child's infancy were related to lower levels of child internalizing behavior during kindergarten. Based on these findings, we expect similar relationships in the context of paternal postpartum depression. The current study endeavors to examine the intervening role of paternal involvement during toddlerhood (age 3)

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between postpartum paternal depression and children's internalizing and externalizing behaviors at age 3, either as an intervening variable or a moderator of the effects of paternal postpartum depression on children's internalizing trajectories.   We hypothesize that when fathers are highly involved with their children at age 3, it may offset some of the negative consequences of paternal postpartum depression on children's internalizing behaviors at age three and over time until age 9.

With regard to the effect of paternal depression on children's externalizing behaviors, the findings are inconsistent. For example, Marchand and Hock (2010) found that paternal depression did not significantly predict children's externalizing behaviors, while other research findings support that paternal depression does indeed predict externalizing behaviors in children (Gross et al., 2008; Kane & Garber, 2009). Furthermore, in reference to the influence of father involvement on the relationship between paternal depression and children's externalizing behaviors, the limited research in this area has not found an intervening or moderating effect for father involvement (Mezulis et al., 2005). Due to the few empirical investigations in this area, the current study includes father involvement as a potential intervening influence on the relationship between paternal postpartum depression and children's externalizing behaviors at age three and over time to determine if our findings confirm or refute previous null findings. Data from the Fragile Families and Child Wellbeing Study will be utilized for the current study, and the large sample size and available data from fathers may enable detection of an intervening role of father involvement on the relationship between paternal postpartum depression and children's externalizing behaviors at age three and over time.

Paternal Depression and Children's Internalizing and Externalizing Behaviors: The Influence of Relationship Quality

Intimate relationship quality is an important contextual factor to consider when examining the relationship between paternal depression and children's internalizing and externalizing behaviors, for it appears that low quality intimate relationships may exacerbate the negative effects of paternal depression on children's socioemotional well-being. Furthermore, high quality intimate relationships may serve as a buffer against the negative consequences of paternal depression on children's socioemotional well-being. For example, in an effort to determine a process model for the effects of parental depression on familial and child functioning, Cummings et al. (2005) found that marital conflict and secure paternal marital attachment mediated the relationship between paternal depression and children's internalizing behaviors but not externalizing behaviors. These findings highlight the important mediating role of relationship quality, and the current study will examine the intervening role of relationship quality between paternal depression and children's internalizing behaviors and externalizing behaviors.

Overall, the process model for the current study is well supported by research with preliminary evidence demonstrating an intervening role for relationship quality between paternal depression and children's problem behaviors (Cummings et al., 2005; Du Rocher Schudlich & Cummings, 2007). Furthermore, negative associations between parental depression and relationship quality have been well supported empirically (Paulson et al., 2011). And lastly, substantial support indicates a positive link between parental intimate relationship quality and children's adjustment (Franck & Buehler, 2007; Kouros, Merrilees, & Cummings, 2008).

Therefore, the inclusion of relationship quality as an intervening variable in the current hypothesized model is highly validated by contemporary research.

Externalizing Trajectories

In general, externalizing behaviors are fairly normative during the toddler age, with toddlers typically displaying some form of aggression or destructive behaviors; however, these externalizing tendencies diminish over the preschool and middle childhood years (Coie & Dodge, 1998). For example, Keiley, Lofthouse, Bates, Dodge and Pettit (2003) found that mothers' reports of children's externalizing behaviors decreased from kindergarten to 8th grade. Furthermore, it appears that externalizing trajectories may vary due to important contextual factors in children's environment, and parenting has received substantial empirical attention. For example, Luyckx and colleagues (2011) found that various parenting styles differentially predicted children's maladaptive behaviors over a 12 year period of time (grades 1 – 12). More specifically, they found that children of uninvolved and indulgent parents had the most rapid increases in antisocial behavior (Luyckx et al., 2011). As mentioned previously, father involvement has received limited attention as a possible intervening variable between parental depression and children's adjustment; therefore, examining the effects of father involvement on children's internalizing/externalizing behavioral trajectories in the context of paternal depressive symptomatology would prove to be a promising approach that may lead to understanding the developmental implications of paternal depression on children's problem behaviors via the influence of father involvement.

Internalizing Trajectories

Findings from clinical and nonclinical samples suggest that internalizing behaviors of children remain relatively stable during childhood with a slight increase during adolescence (Bongers, Koot, van der Ende, & Verhulst, 2003; Twenge & Nolen-Hoeksema, 2002). Furthermore, gender differences appear to exist with females potentially being more likely to experience an increase in internalizing behaviors over time while internalizing trajectories for boys remain relatively stable (Leve, Kim, & Pears, 2005). For example, Leve et al. (2005) found that from ages 5 to 17, trajectories for internalizing behaviors increased over time only for girls. Furthermore, they found that maternal depression and childhood fear/shyness were significant predictors of internalizing behaviors spanning the 12 year timeframe of the study, and they concluded that early exposure to maternal depression during childhood may increase the likelihood of internalizing behaviors during adolescence.

The current study is an effort to examine if children's early exposure to paternal postpartum depression has an effect on children's internalizing behaviors at age 3 and internalizing trajectories from age 3 to 9 via the intervening role of father involvement and relationship quality. Furthermore, we will examine the moderating effect of child sex on our hypothesized model to determine if differences exist in this proposed model for boys in comparison to girls. Examining the moderating effect of child sex on the paths in the current study is highly warranted due to previous research indicating that fathers may interact differently with their sons in comparison to their daughters (Leavell et al., 2012) and internalizing and externalizing behaviors being influenced by child sex (Engle & McElwain, 2011; Hammarberg & Hagekull, 2006; Stacks & Goff, 2006). In addition, race will also serve as a moderator in the current study based on the assumption stemming from Critical Race Theory (Collins, 2000; Dill

& Zambrana, 2009) that varying cultural norms may result in differential family norms and practices. Research evidence supports this theoretical assumption; for example, Leavell et al. (2012) found that the types of activities fathers participate in with their children vary by race, such that African American fathers reported higher levels of care-giving, playful, and visiting activities with their sons than European American and Latino American fathers. Lastly, in consideration of the focus of the current study being about paternal postpartum depression, and economic hardship being closely related to depression (Butterworth et al., 2009), we will control for demographic variables that are strongly associated with SES – household income, marital status, and education.

Method

Data and Sample

Data from the Fragile Families and Child Wellbeing Study (FFCWS) was utilized for the current study. The FFCWS is an ongoing longitudinal study of a birth cohort of 4,898 families that began in 1998. At the time of birth of the focal child, families were recruited from 75 hospitals in 20 cities throughout the United States with a population of at least 200,000 persons (see Reichman et al., 2001, for an in depth review of the research design).   FFCWS is primarily focused on understanding the capabilities of unmarried fathers, relationship dynamics of unmarried parents, child outcomes in fragile families, and the influence of public policy and environmental structures on familial and child outcomes. Due to the aforementioned focus of FFCWS and its longitudinal research design, these data prove to provide an optimal sample for the current investigation.

The exclusive inclusion criterion for the current analytic sample was ethnic background, and only African American or European American fathers were included to more readily facilitate ethnic comparisons. Due to the high degree of cultural diversity in individuals of Latin American descent, these individuals were excluded from ethnic comparisons made in the current study to prevent over-generalizations. The analytic sample ($N = 3,301$) consists of 2, 407 African American fathers (73%) and 894 European American fathers (27%).

Measures

Predictor Variable

Paternal Depression was assessed at children's birth by a shortened version of Center for Epidemiological Studies' Depression Scale (CES-D) (Ross & Mirowsky, 1984), which included 12 items examining paternal depressive symptoms. Fathers were asked the frequency by which they experienced depressive symptoms within the week prior to the interview. Sample items are the following: "In the past week, how often did you feel depressed? In the past week, how often did you feel everything was an effort? In the past week, how often did you sleep restlessly?" Responses ranged from 0 to 7, with 0 indicating 0 times per week and 7 indicating experiencing the depressive symptom 7 days during the past week. An average scale score based on all 12 items was used. Furthermore, the Cronbach's alpha for all of the items was .85.

Intervening Variables

Father Involvement was assessed when children were 3 years old by a composited variable composed of 13 items. Fathers reported the amount of days per week that they participated in the following with the focal child: sings songs or nursery rhymes; hugs or shows physical affection; tells child that he loves him/her; lets child help with simple chores; plays

imaginary games; reads stories; tells stories; plays inside with toys; tells child he appreciates

something he/she did; takes child to visit relatives; takes child to a restaurant; assists child with

eating; and puts child to bed. Possible responses ranged from 0 to 7 days per week. Principal

components analysis revealed that all items could be represented by one factor, and the

Cronbach's alpha ($\alpha = .75$) demonstrated an acceptable reliability. Higher scores reflect higher

levels of paternal involvement, and lower scores reflect lower levels of father involvement.

Relationship Quality was assessed when children were 3 years old by a composited

variable composed of five items. Fathers reported the frequency by which the birth mother was

a) "fair and willing to compromise when you have a disagreement;" b) "expresses affect or love

for you c) "insults or criticizes you or your ideas" (reverse coded); d) encourages/helps with

things important to you;" and e) "isolates you from family and friends." All items were on a 3-

point Likert scale, and possible responses were 1 (never), 2 (sometimes), and 3 (often). The

Cronbach's alpha ($\alpha = .62$) was slightly lower than the acceptable range, but sufficient for use in

the current study. Higher scores reflected a higher level of relationship quality, and lower scores

demonstrated lower levels of relationship quality.

Outcome Variables

Internalizing behaviors were assessed using average scales scores of primary caregivers

report of children's internalizing behaviors on the Child Behavior Checklist (CBCL)

(Achenbach, 1992) when the children were 3, 5, and 9 years old. Primary caregivers were asked

whether or not the focal child displayed certain internalizing behaviors. Sample items are the

following: worries, cries a lot, complains of loneliness, feels too guilty, and refuses to talk.

Possible responses were 0 (not true), 1 (somewhat or sometimes true), and 2 (very true or often

true). An average scale score was created for the all of the internalizing items assessed at each time point (child age). The Cronbach's alphas for the average scale score at each time point: age 3 (α = .80), age 5 (α = .71), and age 9 (α = .88) years were acceptable. Higher scores indicate a higher level of internalizing behaviors and lower scores reflect lower levels of internalizing behaviors.

Externalizing behaviors were assessed using average scales scores of primary caregivers report of children's externalizing behaviors on the Child Behavior Checklist (CBCL) (Achenbach, 1992) when the children were 3, 5, and 9 years old. Primary caregivers were asked whether or not it was true that the focal child displayed certain externalizing behaviors. Sample items include the following: argues a lot, gets in many fights, has temper tantrums or hot temper, screams a lot, and teases a lot. Possible responses were 0 (not true), 1 (somewhat or sometimes true), and 2 (very true or often true). An average scale score was created for the all of the externalizing items assessed at each time point (child age). The Cronbach's alphas for the average scale score at each time point: age 3 (α = .89), age 5 (α = .78), and age 9 (α = .90) years were acceptable. Higher scores indicate a higher level of externalizing behaviors and lower scores reflect lower levels of externalizing behaviors.

Control Variables and Moderating Variables

Race was assessed by one dummy variable, one indicating being African American and zero indicating being European American. *Child Sex* was dummy-coded with 1 indicating a male focal child and 0 indicating a female focal child. Furthermore, *Marital Status* was also a dummy variable (1=married; 0=not married). *Paternal Age* was a continuous variable reflecting fathers' age in years. *Paternal Education* was assessed by a 9-point Likert scale indicating the

highest grade completed, and possible responses were 1 (no formal education), 2 (less than 8th

grade), 3 (some high school), 4 (high school diploma), 5 (GED), 6 (some college), 8 (bachelor's

degree), and 9 (graduate degree). *Household income* was assessed by a 9-point Likert scale

indicating the total household income reported by the father. Possible responses were 1

(<$5,000), 2 ($5K – $9,999), 3 ($10K – $14,999), 4 ($15K – $19,999), 5 ($20K – $24,999), 6

($25K - $34,999), 7 ($35K - $49,999), 8 ($50K – $74,999), and 9 (>$75K).

Analytic Strategy

The first step of analysis included examining the univariate and bivariate statistics for the

variables of interest. Secondly structural equation modeling was used to test the hypothesized

model in Figure 1. Within that model, growth modeling was used to examine the developmental

trajectories for internalizing and externalizing behaviors in children from ages 3 to 9. Primary

caregiver ratings on the CBCL at ages 3, 5, and 9 served as observed variables for the latent

intercept and slope factors. The intercept was centered at age 3, which will allow for the

interpretation of the intercept to indicate levels of internalizing and externalizing behaviors at

age 3. The slope factor indicated the rate of change in internalizing and externalizing behaviors

from age 3 to age 9. Paternal postpartum depression when the children were born was allowed to

predict the growth in internalizing and externalizing behaviors directly, but also through its effect

on father involvement, and relationship quality assessed when the children were 3 years old. In

turn, father involvement and relationship quality were also allowed to directly predict change in

internalizing and externalizing behaviors. Furthermore, we tested if the effects of paternal

depression on internalizing and externalizing trajectories were moderated by father involvement

and relationship quality. And lastly, a multiple group analysis was conducted, which compared

the hypothesized model across fathers with a female focal child and fathers with a male focal

child as well as across the two races (EA, AA). These analyses were conducted with Mplus (Version 6; Muthen & Muthen, 1998-2010). Lastly, missing data were not imputed; rather, available data from all 843 families were used in analyses by using full information maximum likelihood (FIML) estimation with robust standard errors. FIML estimation is one of the best methods for dealing with missing data (Acock, 2005). Model fit was assessed by a χ^2 statistic/degrees of freedom ratio less than 5 and a RMSEA less than .10 (Wheaton et al., 1977).

Results

Descriptive Statistics

Univariate statistics are presented in Tables 1a and 1b. Table 1a presents the descriptive statistics for the full sample and the African American and European American subsamples. Furthermore, Table 1b presents the descriptive statistics for the full sample and the male and female focal child subsamples. The distributional qualities of all study variables were examined; and the log transformation for paternal depression (child age 0), and all of the internalizing and externalizing variables was utilized in order for these variables to meet the assumptions for their use in linear methods. No other variables needed transformation. T-tests were conducted in order to determine if significant differences for mean scores were observed based on race and child sex. For racial differences, African American fathers report higher levels of postpartum depression in comparison to European Americans (M=0.65, t =-4.42, p<.001for AAs; M=0.56 for EAs), and lower levels of relationship quality when their children are 3 years old in comparison to European American fathers (M=2.62, t =2.65, p<.01for AAs; M=2.67 for EAs). Furthermore, African American fathers report lower averages on all of the control variables when compared to European Americans: age (M=27.48, t =8.66, p<.001for AAs; M=30.19 for

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EAs), income (M=5.12, t =18.48, p<.001for AAs; M=7.06 for EAs), education (M=4.47, t

=20.31, p<.001for AAs; M=5.95 for EAs), and marriage (M=0.16, t =24.19, p<.001for AAs;

M=0.58 for EAs). Few sex differences in the univariate statistics are observed. Only paternal

age (M=28.68, t =2.53, p<.05 for girls; M=27.94 for boys) is statistically and significantly

different between fathers with a female focal child in comparison to fathers with a male focal

child.

Table 1a. Study variables means, standard deviations in the whole sample (N = 3,301) and in the
sub-samples of African American (n = 2,407) and European American fathers (n = 894).

	Range		Overall Sample (n = 3,301)		African American (n = 2,407)		European American (n = 894)	
	Min	Max	M	SD	M	SD	M	SD
Predictors								
Depression (0)	0	2.08	0.63	0.50	0.65***	0.63	0.56***	0.53
Relation qual (3)	1	3	2.64	0.33	2.62**	0.34	2.67**	0.30
Father inv (3)	0	7	4.54	1.07	4.55	1.10	4.53	1.02
Outcomes								
Internalizing (3)	0	1.01	0.28	0.18	0.28	0.18	0.27	0.18
Internalizing (5)	0	0.83	0.22	0.16	0.22	0.16	0.22	0.16
Internalizing (9)	0	1.10	0.13	0.14	0.13	0.14	0.14	0.13
Externalizing (3)	0	1.10	0.48	0.22	0.48	0.22	0.47	0.22
Externalizing (5)	0	0.88	0.26	0.16	0.26	0.25	0.26	0.25
Externalizing (9)	0	1.08	0.19	0.16	0.19	0.16	0.19	0.15
Controls								
Age (0)	15	53	28.29	7.42	27.48***	7.47	30.19***	6.93
Income (0)	1	9	5.82	2.43	5.12***	2.39	7.06***	1.96
Education (0)	1	9	4.91	1.84	4.47***	1.49	5.95***	2.11
Married (0)	0	1	0.28	0.45	0.16***	0.36	0.58***	0.49

[a] Results from t-tests; age of child in parentheses; ***p<.001, ** p<.01, ~p<.10

Table 1b. Study variables means, standard deviations in the whole sample (*N*=3,301) and in the sub-samples of fathers with a female focal child (*n*=1,560) and fathers with a male focal child (*n*=1,740).

	Range		Overall Sample (*n* = 3,301)		Female Focal Child (*n* = 1,560)		Male Focal Child (*n* = 1,740)	
	Min	Max	*M*	*SD*	*M*	*SD*	*M*	*SD*
Predictors								
Depression (0)	0	2.08	0.63	0.50	0.62	0.49	0.63	0.50
Relation qual (3)	1	3	2.64	0.33	2.65	0.33	2.63	0.33
Father inv (3)	0	7	4.54	1.07	4.53	1.09	4.56	1.04
Outcomes								
Internalizing (3)	0	1.01	0.28	0.18	0.28	0.17	0.28	0.18
Internalizing (5)	0	0.83	0.22	0.16	0.22	0.16	0.23	0.15
Internalizing (9)	0	1.10	0.13	0.14	0.13	0.14	0.14	0.14
Externalizing (3)	0	1.10	0.48	0.22	0.47	0.22	0.48	0.22
Externalizing (5)	0	0.88	0.26	0.16	0.26	0.17	0.26	0.16
Externalizing (9)	0	1.08	0.19	0.16	0.19	0.16	0.19	0.16
Controls								
Age (0)	15	53	28.29	7.42	28.68*	7.57	27.94*	7.27
Income (0)	1	9	5.82	2.43	5.82	2.41	5.82	2.45
Education (0)	1	9	4.91	1.84	4.95	1.82	4.88	1.85
Married (0)	0	1	0.28	0.45	0.30	0.46	0.27	0.45

[a] Results from t-tests; age of child in parentheses; * $p<.05$, ~ $p<.10$

Table 2. Pearson correlation coefficients for study variables (N=3301)

	1	2	3	4	5	6	7	8	9
1. Depress (0)	--								
2. Rel_qual (3)	-.12***	--							
3. Dad_inv (3)	.04~	.14**	--						
4. Int (3)	.00	.03	-.03	--					
5. Int (5)	-.01	-.02	.02	.03~	--				
6. Int (9)	-.00	.01	.00	.02	.00	--			
7. Ext (3)	.01	-.02	-.03	.60***	.02	-.01	--		
8. Ext (5)	-.00	.02	-.03	.07***	.42***	-.01	.07***	--	
9. Ext (9)	-.02	-.03	-.01	.01	.03	.63***	-.01	-.01	--

*~p < .10; **p < .01; ***p < .001*

Birvariate Analyses

Pearson correlations for the variables in the study are presented in Table 2. Postpartum depression is negatively associated with relationship quality at age 3. Furthermore, relationship quality at child age 3 is positively related to father involvement at child age 3. The strongest

associations are observed between internalizing and externalizing behaviors. For example, when children are 3 years old, internalizing behavior is positively associated with externalizing behavior ($r = .60$, $p <.001$), and when children are 5 years old, internalizing behaviors are positively related to externalizing behaviors ($r = .42$, $p <.001$). Furthermore, internalizing behaviors at age 9 were also positively related externalizing behaviors at age 9 ($r = .63$, $p <.001$). Therefore, on average, it appears that higher levels of internalizing behaviors are related to higher levels of externalizing behaviors during the same ages, and vice versa.

Growth Models

Unconditional Growth Model

An unconditional growth model with no predictors was fit to determine if internalizing and externalizing behaviors significantly change from ages 3 to 9. We remind the reader that internalizing and externalizing behaviors have been logged over the 3 time periods from age 3 to 9 to normalize their asymmetrical distributions in order to utilize linear methods. However, all fitted plots will show the change trajectories in the original metric of internalizing and externalizing behaviors by anti-logging the values for these variables. The model fit statistics (χ^2/df $=3248.54/15$; $RMSEA =.28$, $p <.001$; $SRMR =.14$) were questionable due to being above an acceptable range ($RMSEA <.10$; $SRMR <.10$) and well above standard conventional cutoffs (χ^2/df $=5$; $RMSEA <.05$; $SRMR <.05$) (Kline, 2011); therefore, the results should be interpreted with caution. However, in the context of this study, our focus is not on change in these domains, which has been documented in many studies (Bongers et al., 2003; Coie & Dodge, 1998; Twenge & Nolen-Hoeksema, 2002), but whether change in these domains is predicted by father involvement, paternal postpartum depression, and fathers' relationship quality with the birth

mother. This is the first study to examine the influences of these predictors on growth in externalizing and internalizing behaviors; therefore, we are more interested in the conditional models that follow. The unconditional growth model revealed that significant change occurs for both internalizing and externalizing behaviors from age 3 to age 9. The average growth trajectory for internalizing behaviors indicates that, at age 3, children display higher levels of internalizing behaviors ($M_{Int} = 0.28$, $p < .001$) and slightly, yet significantly, decrease over time through age 9 ($M_{Slope} = -0.025$, $p < .001$). Furthermore, the average growth trajectory for externalizing behaviors indicates that, at age 3, children display higher levels of externalizing behaviors ($M_{Int} = 0.41$, $p < .001$) and slightly, yet significantly, decrease over time through age 9 ($M_{Slope} = -0.041$, $p < .001$). Extremely limited variance or no variance is observed for the intercepts and slopes for internalizing ($\sigma^2_{Int} = .003$, $p = .001$; $\sigma^2_{Slope} = .00$, $p = .16$) and externalizing behaviors ($\sigma^2_{Int} = .002$, $p = .10$; $\sigma^2_{Slope} = .00$, $p = .06$). However, given that the variances are either significant or closely approaching significance, we decided to add predictors to the model to explain the limited variance in all of the growth parameter across both domains – internalizing and externalizing behaviors. But, this lack of variance in the latent variables for the intercepts and slopes for internalizing and externalizing behaviors is the reason that the amount of variance predicted in these latent grow parameters is so close to 1 in many of the fitted models. Essentially, little variance exists, and almost all of it is predicted.

In reference to the unconditional growth model, the growth parameters are not related to each other for either internalizing ($r = .00$, $p < .01$) or externalizing behaviors ($r = .00$, $p = ns$), which indicates that children's levels of internalizing and externalizing behaviors at age 3 are not related to their rate of change in either internalizing or externalizing behaviors from age 3 to age 9. However, across domain correlations were found, in that, the slope for internalizing behaviors

is positively related to the slope for externalizing behaviors ($r = .001$, $p < .01$); additionally, the slope for internalizing behaviors is negatively related to the intercept for externalizing behaviors ($r = -.003$, $p < .001$). Therefore, when the rate of decline in internalizing behaviors is rapid, the rate of decline in externalizing behaviors is also rapid. However, higher levels of externalizing behaviors at age 3 are related to slower rates of change in internalizing behaviors from age 3 to 9.

Conditional Model

The conditional model (see Figure 2), which included paternal depression (logged) when children were born and father involvement and intimate relationship quality when they were 3, had an acceptable model fit ($\chi^2/df = 1841.07/46$; $RMSEA = .11$, $p = .00$; $SRMR = .07$). However, the results should be interpreted with caution due to the fit indices being within an acceptable range ($RMSEA < .10$; $SRMR < .10$), but above the standard conventional cutoffs ($\chi^2/df = 5$; $RMSEA < .05$; $SRMR < .05$) (Kline, 2011). The average growth trajectory for internalizing behaviors controlled for all of the predictors indicates that, at age 3, children display higher levels of internalizing behaviors ($M_{Int} = 0.27$, $p < .001$) and slightly, yet significantly, decrease over time through age 9 ($M_{Slope} = -0.025$, $p < .01$). Furthermore, the average growth trajectory for externalizing behaviors indicates that, at age 3, children display higher levels of externalizing behaviors ($M_{Int} = 0.43$, $p < .001$) and slightly, yet significantly, decrease over time through age 9 ($M_{Slope} = -0.037$, $p < .001$). For this model, higher levels of postpartum depression in fathers is related to lower levels of intimate relationship quality when their children are 3 years old ($\beta = -.08$, $p < .001$), and postpartum depression was unrelated to father involvement when their children are 3 years old. In addition, none of the predictors exhibit a significant relationship with any of the growth parameters. Furthermore, the possible amount of explainable variance, which

was minimal, for the intercept ($R^2 = 99\%$) and slope ($R^2 = 99\%$) is fully explained for

externalizing behaviors, and little to no variance is explained for the intercept ($R^2 = 0.7\%$) and

slope ($R^2 = 1\%$) for internalizing behaviors. In addition, little to no variance is predicted for

father involvement ($R^2 = 0.2\%$) and intimate relationship quality ($R^2 = 2\%$) when children are 3

years old. Lastly, the growth parameters are not related to each other for either internalizing ($r =$

.00, $p < .01$) or externalizing behaviors ($r = .00$, $p = $ ns), which indicates that children's levels of

internalizing at age 3 are not related to their trajectory of change in internalizing and

externalizing behaviors from age 3 to age 9.

A fitted plot was created to illustrate the average trajectories of change in internalizing

and externalizing behaviors for prototypical children (See Figure 3). Since none of the

predictors significantly predicted any of the growth parameters, the average levels for all of the

predictors were utilized to construct the average trajectories of change in internalizing and

externalizing behaviors for an average child in this population, controlled for paternal post-

partum depression and father involvement and intimate relationship quality when the child is 3.

Overall, both internalizing and externalizing behaviors decrease from ages 3 to 9, and

externalizing behaviors are slightly higher than internalizing behaviors at age 3. However, at age

9, levels of internalizing and externalizing behaviors are relatively the same.

Figure 2. Structural equation model of the relations among constructs for postpartum depression, intimate relationship quality (child age 3), father involvement (child age 3), and the growth parameters—full sample (standardized estimated correlations in parentheses) (*N*=894). Only significant relationships are shown.
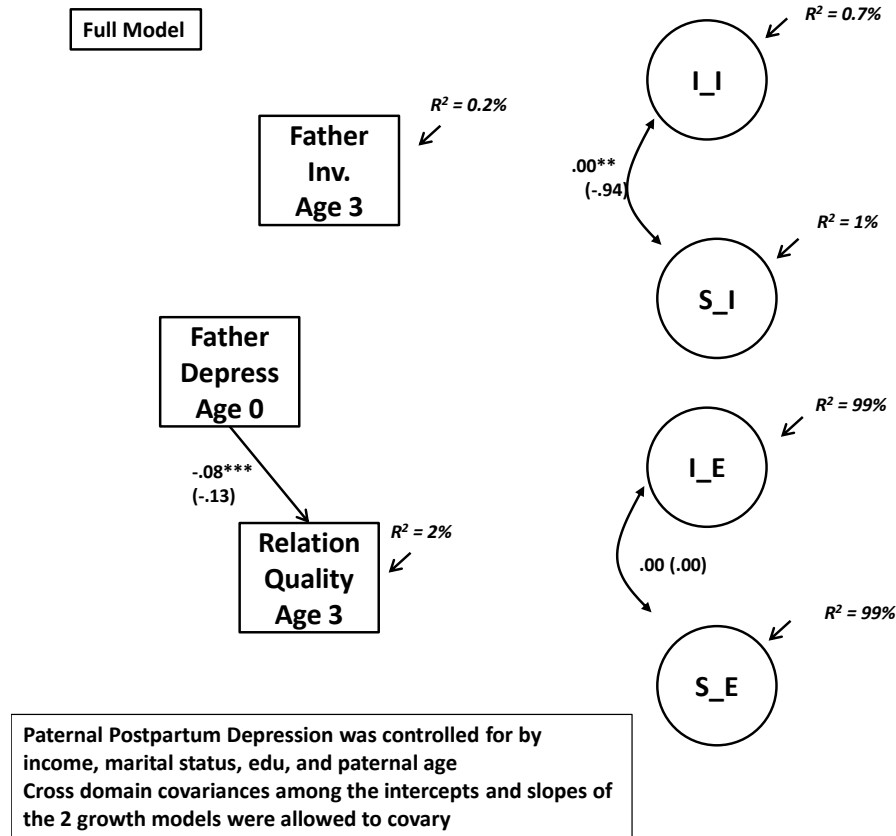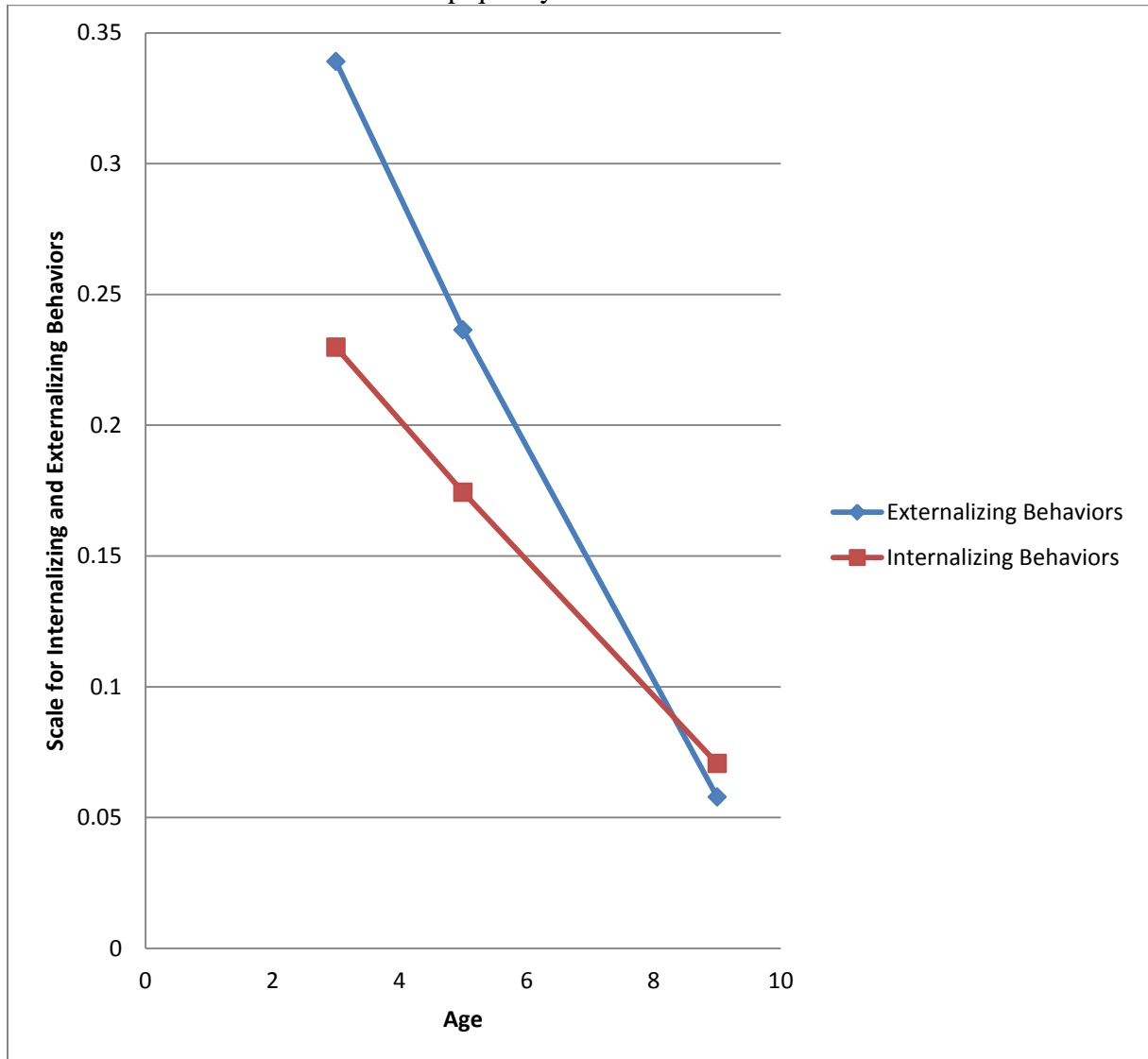
Figure 3. Change in internalizing and externalizing behaviors from age 3 to 9 controlled for paternal postpartum depression, father involvement and relationship quality at age 3 for a prototypical child whose fathers have average levels of postpartum depression and father involvement and intimate relationship quality when children are 3.

Moderation of Growth Models across European and African American Children

A multiple-group analysis was conducted to determine if race has a moderating effect on the hypothesized model, and two groups included in this analysis are: 1) African American fathers and 2) European American fathers (see Figures 4 and 5). Model fit statistics indicate that the fit was not ideal, but acceptable (χ^2/df =2412.65/99; *RMSEA* =.12, *p* = .00; *SRMR* = .14). Yet

again, the results should be interpreted with caution due to the fit indices being close to an acceptable range (*RMSEA* <.10; *SRMR* <.10), but above the standard conventional cutoffs (χ^2/df =5; *RMSEA* <.05; *SRMR* <.05) (Kline, 2011). The average growth trajectory for internalizing behaviors controlled for all the predictors indicates that, at age 3, African American children display higher levels of internalizing behaviors (M_{Int} = 0.27, *p* <.001) and slightly decrease over time through age 9 (M_{Slope} =-0.018, *p* =.14); however the slope is not significant. Furthermore, the average growth trajectory for externalizing behaviors indicates that, at age 3, African American children display higher levels of externalizing behaviors (M_{Int} = 0.43, *p* <.001) and slightly, yet significantly, decrease over time through age 9 (M_{Slope} =-0.035, *p* <.05). For European Americans, the average growth trajectory for internalizing behaviors controlled for all the predictors indicates that, at age 3, children exhibit higher levels of internalizing behaviors (M_{Int} = 0.25, *p* <.001) and slightly, yet significantly, decrease over time through age 9 (M_{Slope} =-0.032, *p* <.05). Furthermore, the average growth trajectory for externalizing behaviors indicates that, at age 3, European American children display higher levels of externalizing behaviors (M_{Int} = 0.42, *p* <.001) and slightly, yet significantly, decrease over time through age 9 (M_{Slope} =-0.037, *p* =.05).

Father involvement when children are 3 years old has a positive effect on the slope for internalizing behaviors (β = .003, *p* <.05) for European Americans, such that higher levels of father involvement when children are 3 years reduce the change in children's internalizing behaviors from age 3 to 9, and lower levels of father involvement increase the change in children's internalizing behaviors from age 3 to 9. This relationship is not significant for African Americans.

A fitted plot was created to illustrate the average trajectories of change in internalizing

and externalizing behaviors for prototypical children of European American and African

American ethnicity. Due to the significant relationship of father involvement on the slope for

internalizing behaviors, high and low values (+1 SD and -1 SD) for father involvement at age 2

were used to construct the trajectories of change for internalizing behaviors for both European

American and African American children. Average levels of postpartum depression and intimate

relationship quality at child age 3 were also used due to these predictors being insignificant.
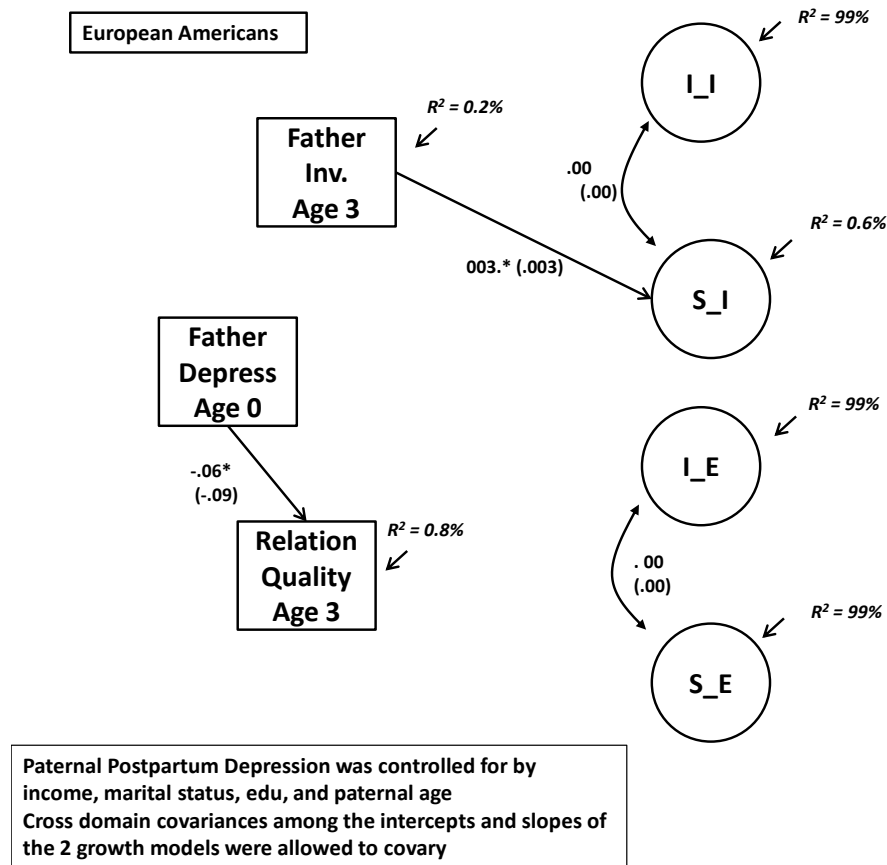
Figure 4. Structural equation model of the relations among constructs for postpartum depression, intimate relationship quality (child age 3), father involvement (child age 3), and the growth parameters—European American sample (standardized estimated correlations in parentheses) (N=894). Only significant relationships are shown.

European Americans

$R^2 = 99\%$

I_I

$R^2 = 0.2\%$

Father Inv. Age 3

.00 (.00)

$R^2 = 0.6\%$

003.* (.003)

S_I

Father Depress Age 0

$R^2 = 99\%$

I_E

-.06* (-.09)

Relation Quality Age 3

$R^2 = 0.8\%$

. 00 (.00)

$R^2 = 99\%$

S_E

Paternal Postpartum Depression was controlled for by income, marital status, edu, and paternal age
Cross domain covariances among the intercepts and slopes of the 2 growth models were allowed to covary

Figure 5. Structural equation model of the relations among constructs for postpartum depression, intimate relationship quality (child age 3), father involvement (child age 3), and the growth parameters—African American sample (standardized estimated correlations in parentheses) (*N*=894). Only significant relationships are displayed.
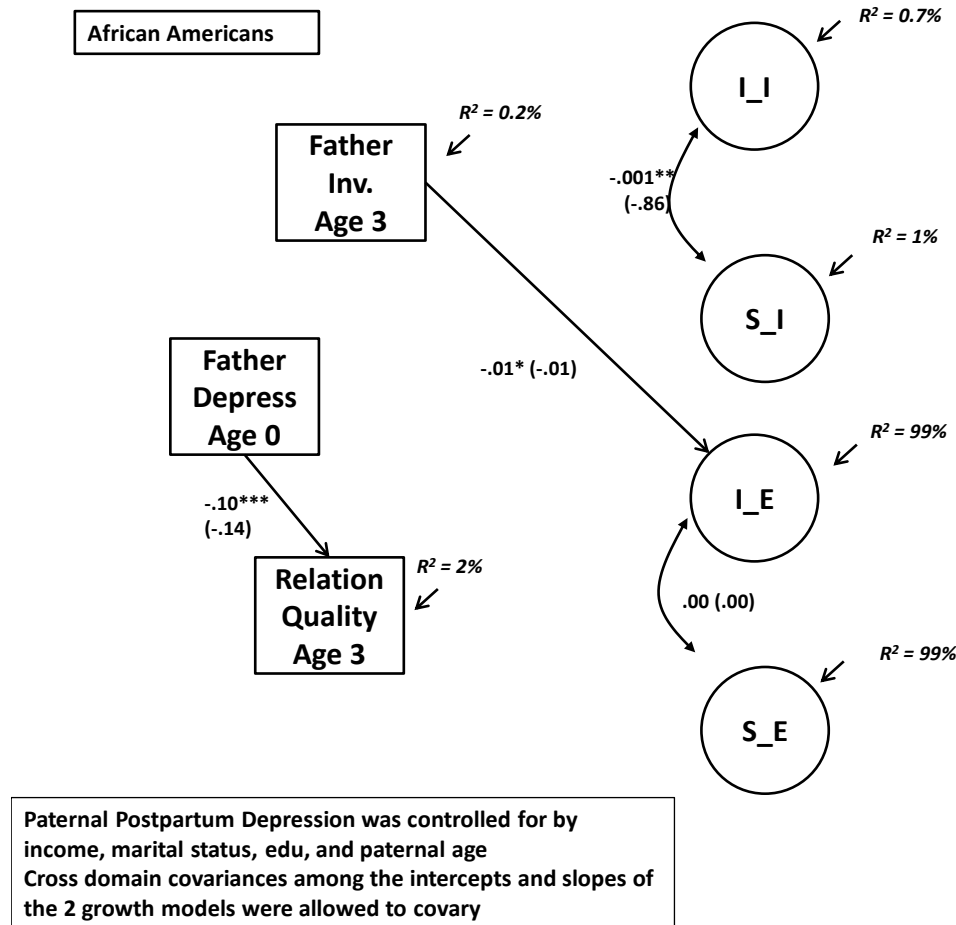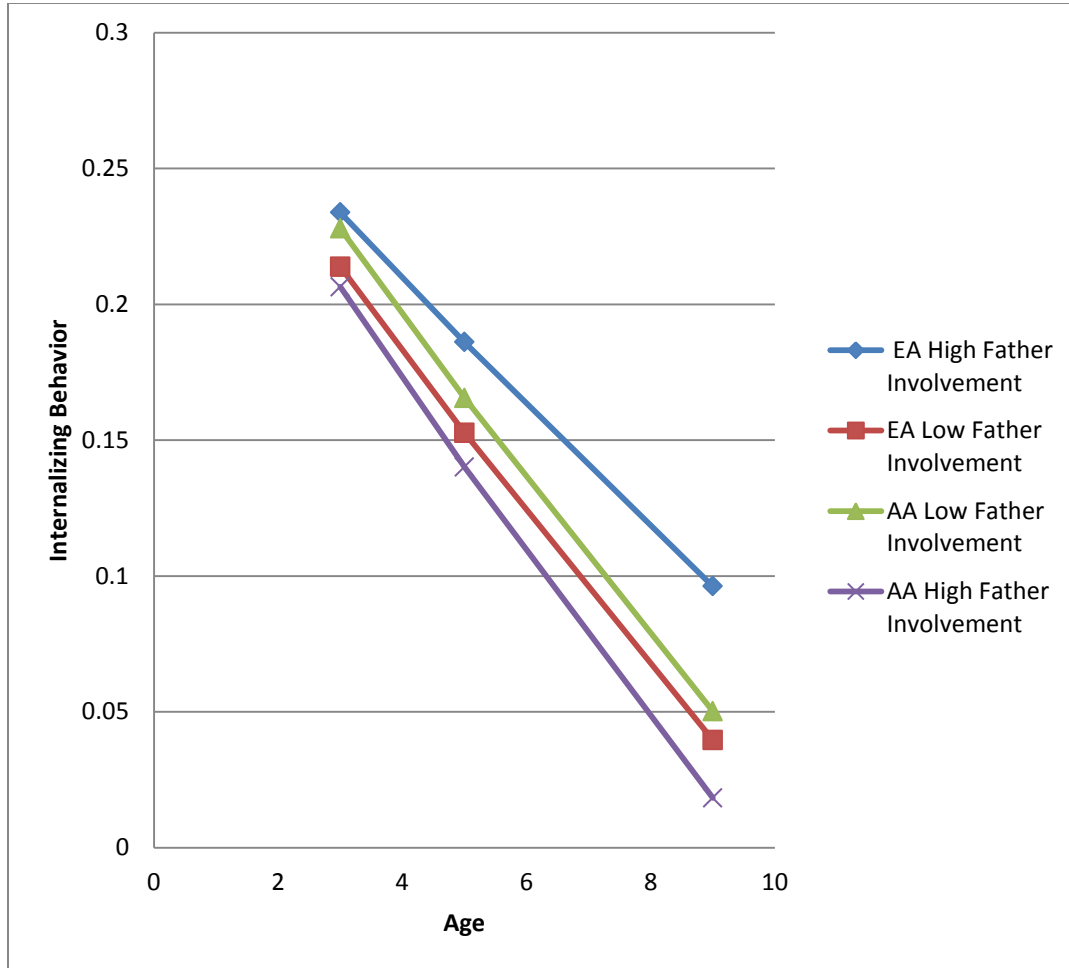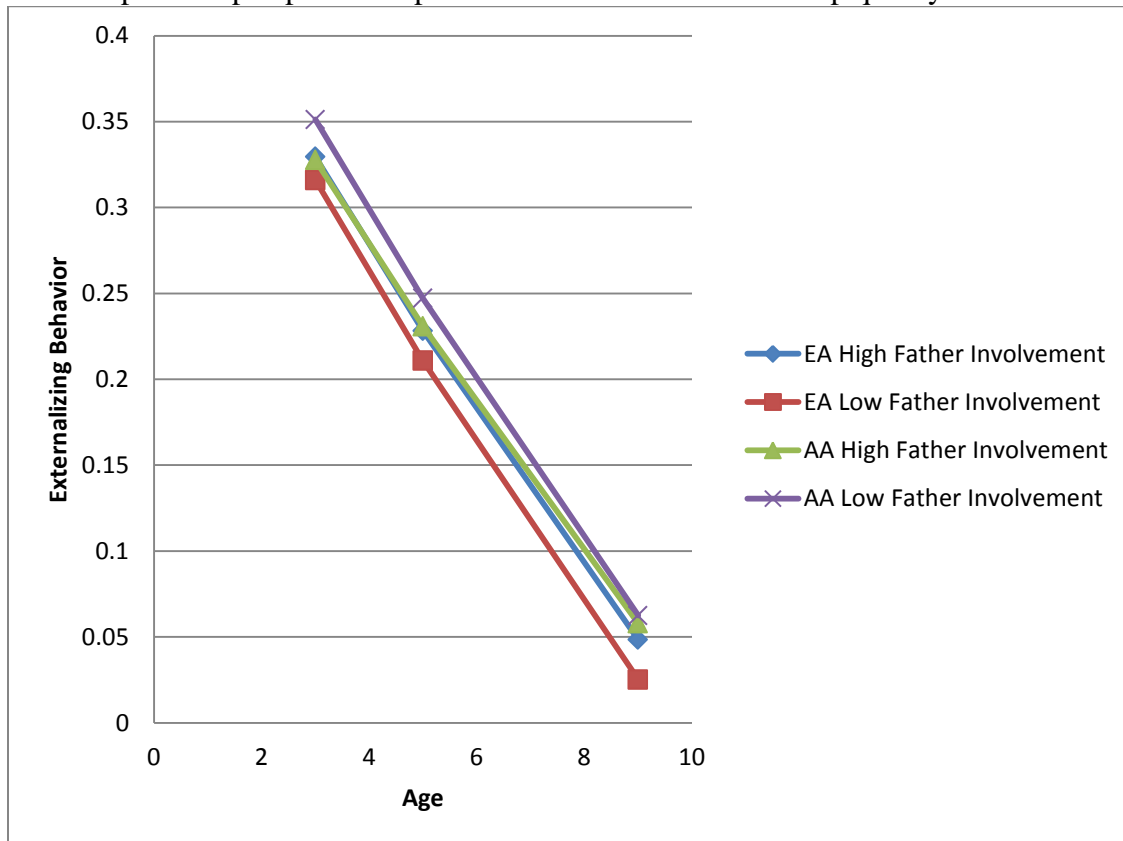
Figure 6. Change in internalizing Behavior of AA and EA children from age 3 to 9 controlled for paternal postpartum depression, father involvement and relationship quality at age 3 for prototypical children whose fathers have high and low levels of father involvement at age three and average levels of postpartum depression and intimate relationship quality when children are 3.

For African Americans, father involvement at child age 3 is negatively related to the

intercept for externalizing behaviors ($\beta = -.01$, $p < .05$), in that, higher levels of father

involvement when children were 3 years old are related to lower levels of externalizing

behaviors when children are 3 years old. This relationship is not significant for European

Americans. A plot for prototypical children was created to illustrate the effect of father

involvement at child age 3 on the intercept for externalizing behaviors just as it was for European

American children (Figure 7). Due to the significant relationship of father involvement on the

intercept for externalizing behaviors, high and low values (+1SD and -1SD) for this variable were used to create the trajectories of change for their externalizing behaviors. Average levels of postpartum depression and intimate relationship quality at child age 3 were also used due to these predictors being insignificant.

Figure 7. Change in externalizing behavior of AA and EA children from age 3 to 9 controlled for paternal postpartum depression, father involvement and relationship quality at age 3 for prototypical children whose fathers have high and low levels of father involvement and average levels of paternal postpartum depression and intimate relationship quality when children are 3.

In addition, for African Americans, the level of internalizing behaviors for children at age 3 is negatively related to their trajectory of change in internalizing behaviors from age 3 to 9 years ($r = -.001$, $p < .01$). Therefore, higher levels of internalizing behaviors in African American children when they were 3 years old are related to steeper declines in internalizing behaviors from age 3 to age 9; however, none of the growth parameters for European Americans are related

to each other for internalizing or externalizing behaviors. Lastly, the possible amount of explainable variance, which is minimal, for the intercept ($R^2 = 99\%$) and slope ($R^2 = 99\%$) is fully explained for externalizing behaviors both European and African Americans. Little to no variance is explained for the intercept ($R^2 = 0.7\%$) and slope ($R^2 = 1\%$) for internalizing behaviors for African Americans. Furthermore, the minimal amount of possible variance to explain for the intercept ($R^2 = 99\%$) of internalizing behaviors for European Americans is explained, and practically no variance is explained for the slope ($R^2 = 0.6\%$) for European American internalizing behaviors.

Moderation of Growth Models across Child Sex

To determine if sex of the focal child has a moderating effect on the hypothesized model, an analysis of the effect of child sex on the paths in the hypothesized model are examined in a multiple group model (see Figures 8 and 9). Model fit statistics indicate that the fit was not ideal (χ^2/df =2021.88/86; *RMSEA* =.12, *p* = .00; *SRMR* = .09). And similar to previous models, the findings should be interpreted with caution due to the model fit indices being close to an acceptable range (*RMSEA* <.10; *SRMR* <.10), but above the standard conventional cutoffs (χ^2/df =5; *RMSEA* <.05; *SRMR* <.05) (Kline, 2011). The average growth trajectory for internalizing behaviors controlled for all the predictors indicates that, at age 3, girls display higher levels of internalizing behaviors ($M_{Int} = 0.25$, *p* <.001) and slightly decrease over time through age 9 (M_{Slope} =-0.027, *p* <.05); however the slope is not significant. Furthermore, the average growth trajectory for externalizing behaviors indicates that, at age 3, girls display higher levels of externalizing behaviors ($M_{Int} = 0.47$, *p* <.001) and slightly, yet significantly, decrease over time through age 9 (M_{Slope} =-0.054, *p* <.001). The average growth trajectory for internalizing behaviors controlled for all the predictors indicates that, at age 3, boys exhibit higher levels of

internalizing behaviors ($M_{Int} = 0.28$, $p < .001$) and slightly decrease over time through age 9

($M_{Slope} = -0.024$, $p = .0$), and their rate of change was approaching significance. Furthermore, the

average growth trajectory for externalizing behaviors indicates that, at age 3, boys display higher

levels of externalizing behaviors ($M_{Int} = 0.43$, $p < .001$) and slightly, yet significantly, decrease

over time through age 9 ($M_{Slope} = -0.032$, $p = .05$).

In examining differences based on child sex, none of the predictors are significantly

related to the growth parameters for boys. However, postpartum depression has a negative effect

on the change in externalizing behaviors in girls from age 3 to age 9 ($\beta = -.006$, $p < .05$), such that

higher levels of paternal postpartum depression are related to steeper declines in externalizing

behaviors for girls from age 3 to age 9. Furthermore, father involvement when children are 3

years old is positively related to the negative slope for externalizing behaviors in girls ($\beta = .003$,

$p = .10$), in that higher levels of father involvement are related less steep changes in externalizing

behaviors for girls from age 3 to 9 years old, and vice versa. This relationship is only

approaching significance for girls.

Father involvement when children are 3 years old has a positive influence on the slope

for internalizing behaviors in girls from age 3 to 9 years old ($\beta = .002$, $p = .09$); therefore, higher

levels of father involvement when girls are 3 years old reduce the change of internalizing

behaviors in girls from age 3 to age 9. However, this relationship is only approaching

significance and is not observed for boys.

Fitted plots were created to illustrate the average trajectories of chance in internalizing

and externalizing behaviors for prototypical male and female children. Due to the significant

relationship of father involvement and postpartum depression on the slope for externalizing

behaviors, high and low values for these variables (+1SD and -1SD) were used to create the

trajectories of change for externalizing behaviors. Average levels of intimate relationship quality

at child age 3 were also used due to this predictor being insignificant.
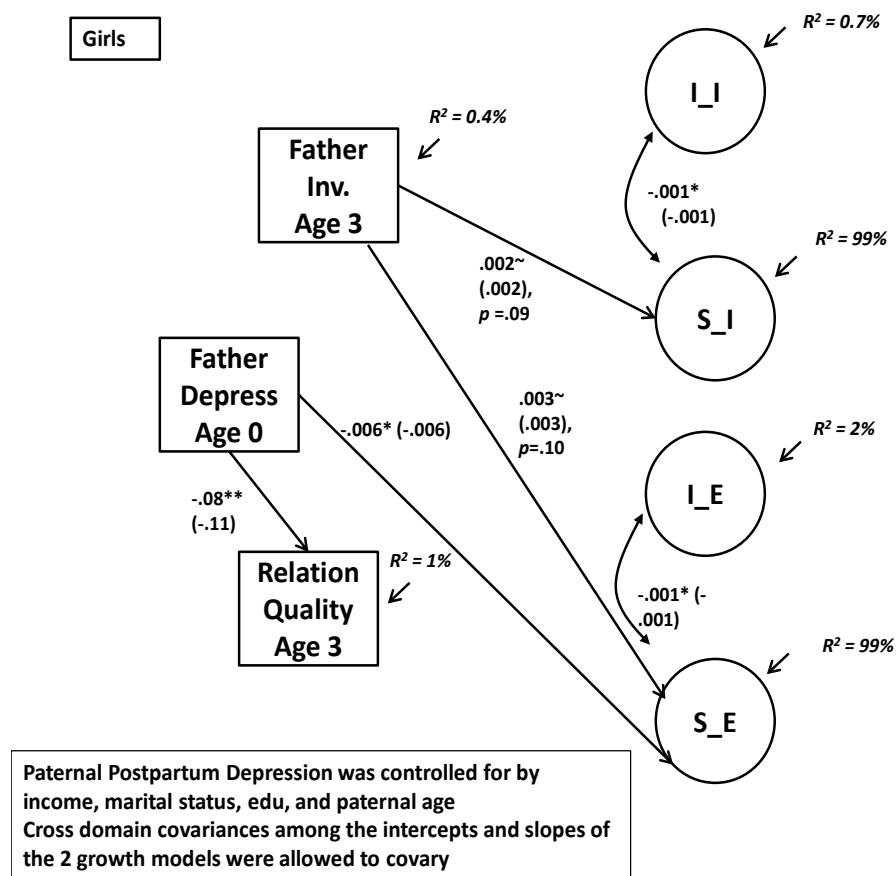
Figure 8. Structural equation model of the relations among constructs for postpartum depression, intimate relationship quality (child age 3), father involvement (child age 3), and the growth parameters—Female focal child sample (standardized estimated correlations in parentheses) (*N*=1560). Only significant relationships are shown.

Figure 9. Structural equation model of the relations among constructs for postpartum depression, intimate relationship quality (child age 3), father involvement (child age 3), and the growth parameters—Female focal child sample (standardized estimated correlations in parentheses) (*N*=1560). Only significant relationships are displayed.
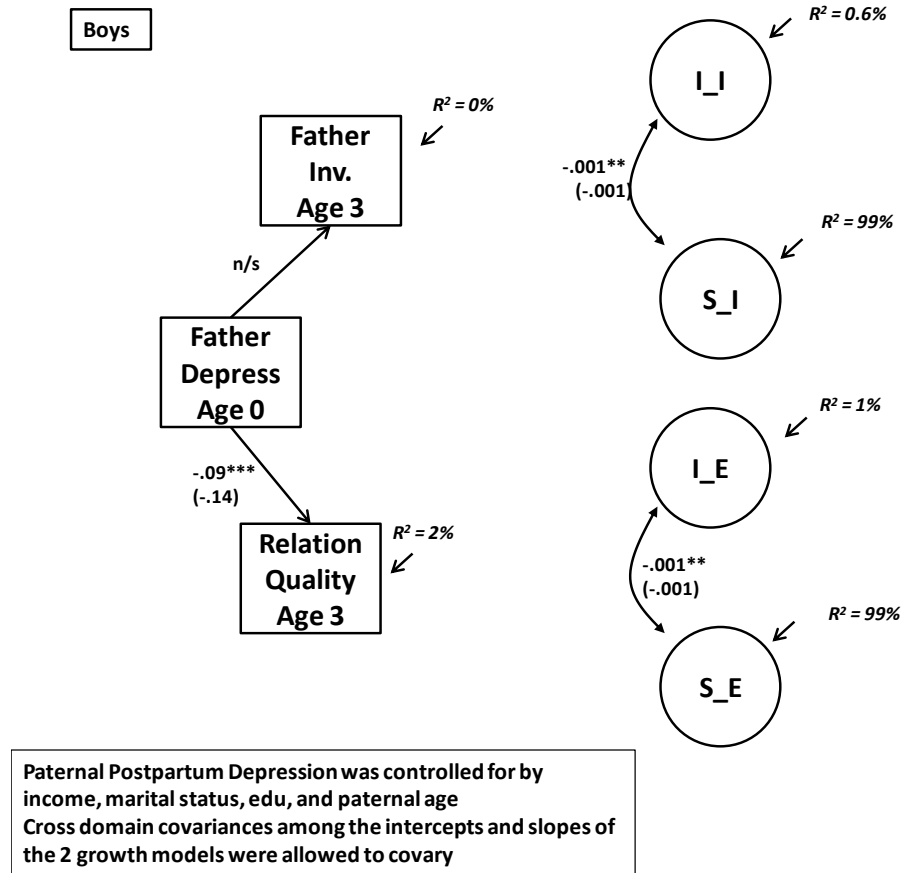
Figure 10. Externalizing Behavior of boys and girls from age 3 to 9 at low levels of paternal postpartum depression, high levels of father involvement and relationship quality at age 3 held at its mean for prototypical children.
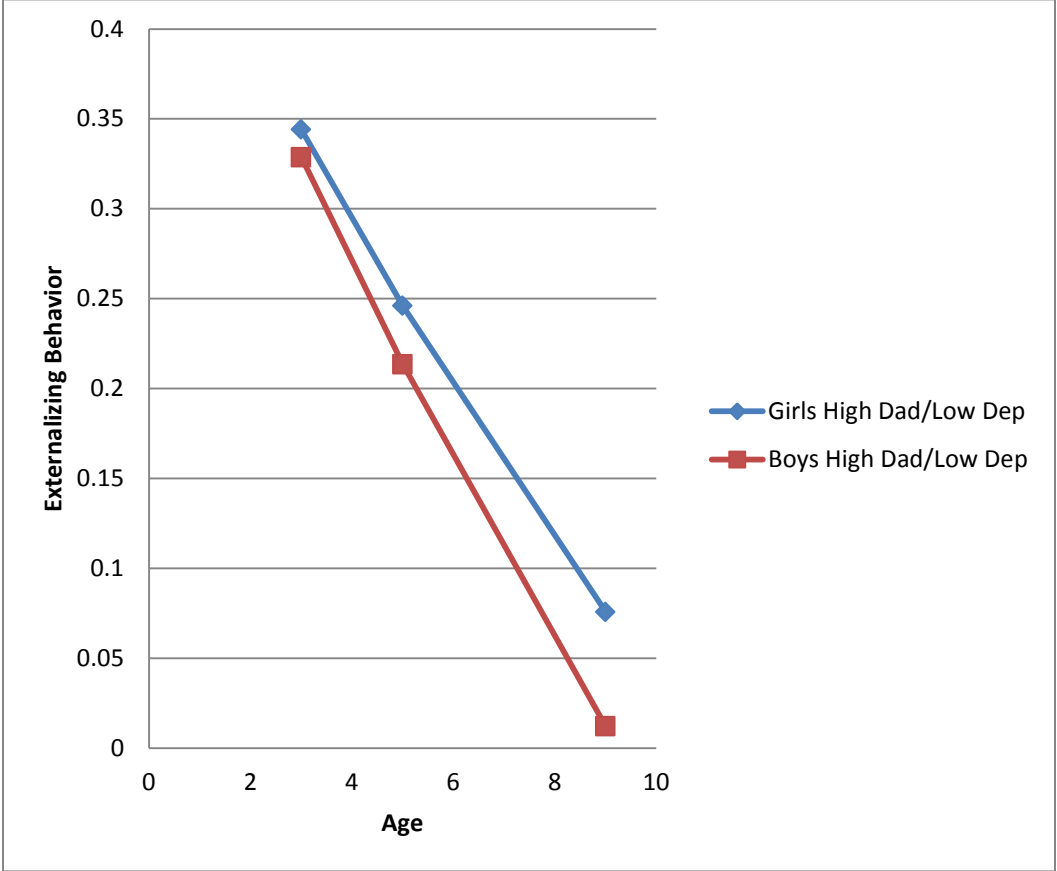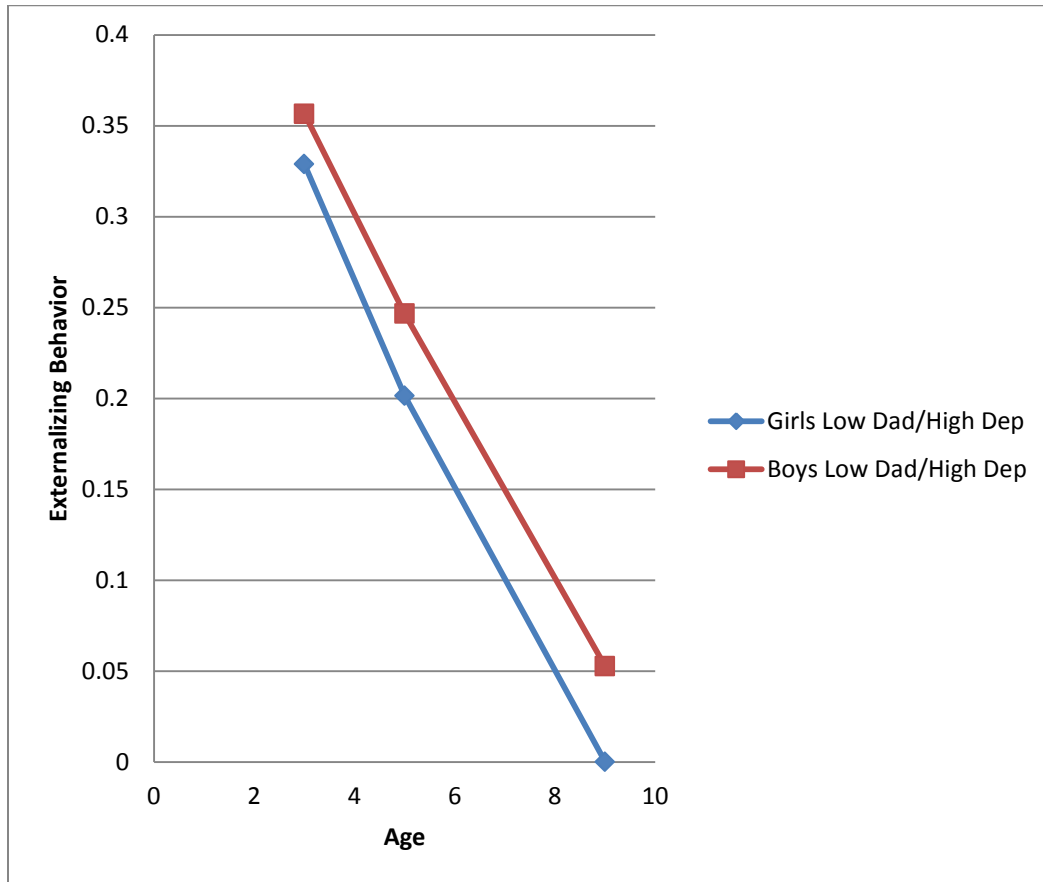
Figure 11. Externalizing Behavior of boys and girls from age 3 to 9 at high levels of paternal postpartum depression, low levels of father involvement and relationship quality at age 3 held at its mean for prototypical children.

In reference to similarities for boys and girls, postpartum depression was negatively related to intimate relationship quality when children are 3 years old for both boys ($\beta = -.09$, $p < .001$) and girls ($\beta = -.08$, $p < .01$). Therefore, higher levels of paternal postpartum depression are related to lower levels of intimate relationship quality when children are 3 years old. In addition, similarities across boys and girls exist for the correlations between the growth parameters. For both boys and girls, the initial level of internalizing behaviors at age 3 is negatively related to the slope of internalizing behaviors from age 3 to age 9, in that, higher levels of internalizing behaviors at age 3 are related to steeper declines in internalizing behaviors for both boys ($r = -.001$, $p < .01$) and girls ($r = -.001$, $p < .05$). Furthermore, a negative

relationship between the growth parameters for externalizing behaviors is also observed for both boys ($r = -.001$, $p < .01$) and girls ($r = -.001$, $p < .05$). Lastly, the possible amount of explainable variance, which was extremely limited, for the externalizing slope ($R^2 = 99\%$) and internalizing slope ($R^2 = 99\%$) is fully explained for both boys and girls. Little to no variance is explained for boys' intercepts for internalizing ($R^2 = 0.6\%$) and externalizing ($R^2 = 1\%$) behaviors; and little no variance is explained for girls intercepts for internalizing ($R^2 = 0.7\%$) and externalizing ($R^2 = 2\%$) behaviors.

Discussion

Limited empirical attention has been given to the long-term effects of paternal postpartum depression on children's development. Therefore, the current study was an effort to provide insight on the indirect effects of paternal postpartum depression (via father involvement and intimate relationship quality), and its direct effects on children's internalizing and externalizing trajectories from age 3 to 9. Based on the theoretical direction of Critical Race Theory (Collins, 2000; Dill & Zambrana, 2009), racial differences were presumed to be present in the current study; therefore, race was included as a moderator. Furthermore, based on previous research observing sex differences for internalizing and externalizing behaviors in children (Engle & McElwain, 2011; Hammarberg & Hagekull, 2006; Stacks & Goff, 2006), we tested for the moderating effects of child sex on the paths in the hypothesized model. Lastly, findings from the current study are modest due to the relatively poor fit of the models; therefore, the following discussion presents explanations and conclusions that should be interpreted with caution. Furthermore, due to the moderating effect of race and child sex, the findings for the conditional growth model are only preliminary.

Intervening Effects

In reference to the major focus of the current study – the intervening roles of father involvement and intimate relationship quality when children were 3 years old on the relationship between paternal postpartum depression and children's internalizing and externalizing behavior trajectories from age 3 to 9 – neither father involvement nor intimate relationship quality serve as intervening variables in any of the models. Few studies have examined this specific question; however, the null findings in the current study do not correspond with findings from previous research observing a significant mediating role for marital/intimate relationship quality between paternal depression and children's problem behaviors (Cummings et al., 2005). These null findings for the intervening role of father involvement and intimate relationship quality at age 3 may be due to the 3 year time lapse between the assessment of postpartum depression and the intervening variables. It could be possible that an intervening role could have been detected if examined with a cross-sectional design.

Child Outcomes: Internalizing and Externalizing Behaviors

Based on the findings from the unconditional growth model, internalizing and externalizing behaviors decrease between ages 3 to 9 years old. This finding supports previous research on externalizing behaviors in children, which has found that externalizing behaviors typically decline from early childhood to middle childhood (Coie & Dodge, 1998; Keiley et al., 2003). However, the decline observed for internalizing behaviors counters previous research indicating that internalizing behaviors remain relatively stable during childhood (Bongers et al., 2003). Taken together, it could be possible that as children age, they may become more

proficient in controlling their impulses and coping with distressing experiences; thus, they may

be less likely to display internalizing and externalizing behaviors as they get older.

Direct Effects

Paternal postpartum depression is negatively related to intimate relationship quality when

children are three years old in all of the fitted models. This finding highlights how fathers'

psychological distress experienced after the birth of a child may have negative implications for

intimate relationship functioning well beyond infancy. A wealth of current research indicates

that paternal depression negatively affects intimate relationship quality (Cummings & Davies,

1994; Paulson et al., 2011; Ramchandani et al., 2011). Based on our findings, it appears that

those negative effects may have long-term consequences for intimate relationship quality.

Furthermore, child sex moderated the effect of paternal postpartum depression on the rate of

change in externalizing behaviors, in that, paternal postpartum depression has a negative

influence on the change in externalizing behaviors for girls from age 3 to age 9. Therefore, girls

have a steeper decline in their externalizing behaviors between ages 3 to 9 when their fathers

experience higher levels of depression. This relationship was not significant for boys. This

finding is rather surprising, and it could be possible that girls are less inclined to display

externalizing behaviors when their fathers are depressed due to the possibility that they are more

aware of their fathers' distress and may want to avoid behaviors that may further exacerbate

paternal distress. This potentially higher level of girls' awareness of their fathers'

distress/depression may result from gender socialization, in that, girls are taught to more readily

display and recognize vulnerable feelings (Helibrun, 1965). Furthermore, with irritability and

hostility being more typical of depressive symptomatology of men (Madsen & Juhl, 2007;

Winkler et al., 2004), it could be possible that girls are more likely shy away from behaviors that may cause irritability or hostility in their fathers (i.e. externalizing behaviors).

Lastly, the race moderation analyses revealed that father involvement is important for internalizing and externalizing trajectories for both African Americans and European Americans. For example, for African Americans, father involvement at child age 3 is negatively related to the intercept for externalizing behaviors; therefore, higher levels of father involvement when children are 3 years old are related to lower levels of externalizing behaviors when children are 3 years old. This relationship is not significant for European American fathers. This finding supports previous research demonstrating a negative relationship between father involvement and children's externalizing behaviors (Gryczkowski, Jordan, & Mercer, 2010). Furthermore, for European American fathers, father involvement at age 3 has a positive influence on the slope for internalizing behaviors; thus, higher levels of father involvement reduce the change in internalizing behaviors from age 3 to 9. This finding does not support the assumptions of the current study based on previous findings indicating a negative relationship between father involvement and children's internalizing behaviors (Rinaldi, & Howe, 2012). Once again, it could be possible that in the context of traditional gender socialization (Helibrun, 1965) fathers may be more inclined to encourage their boys to avoid the display of vulnerable feelings due to traditional views of masculinity. Therefore, for boys, higher levels of father involvement may indeed be related to slower declines in internalizing behaviors over time when compared to girls. Taken together, it appears that father involvement may not be universally protective for problem behaviors in children and has differential outcomes for European American and African American children's internalizing and externalizing trajectories. Therefore, less global and more

specific constructs are needed for tapping into the nuanced dynamics and effects of fathers' engagement with their children.

Limitations

An important caveat for the current study is consideration of the little to no variance that is explained for the growth parameters, which was a consequence of the limited amount of variance in the intercepts and slopes of internalizing and externalizing behaviors for this population. In general, children of these fathers are experiencing change very similarly across ages 3 to 9. Furthermore, the model fit statistics were not ideal; therefore, the results should be considered with discretion. Lastly, it would have been ideal to control for paternal depression when their children were 3 years old; however, paternal depression was assessed by a different assessment tool in the Fragile Families data set, in which an extremely limited number of the participants completed all of the items in the depression inventory used at child age 3. Furthermore, there was practically no variance in paternal depression when their children were 3 years old.

In reference to the moderation effects of race, it may have been more ideal to examine the moderation effects of socioeconomic status (SES). Considerable variability in education and income levels existed for European and African American fathers, with African American fathers reporting lower levels of education and income. In addition, previous research has demonstrated strong links between lower levels of SES and depressive symptomatology (Butterworth et al., 2009). And lastly, SES is a malleable construct while race is unchanging; therefore, it may be more promising to focus on SES for intervention purposes.

Strengths

The current study provides possible support for the long-term effects of paternal postpartum depression on later intimate relationship quality and the trajectory of growth in externalizing behavior in children from age 3 to 9. Furthermore, a better understanding of children's typical internalizing and externalizing behaviors across early childhood through middle childhood was also provided. Lastly, a more comprehensive understanding of the differential influence of ethnicity and child sex on the current hypothesized model was also a contribution.

Future Directions

Building upon the goals of the current study, it would be important to examine a similar paradigm with a more strengths-based approach. It would be imperative for researchers to gain a better grasp on understanding how later father involvement and intimate relationship quality may buffer the effects of paternal postpartum depression on positive child outcomes such as social competence, academic achievement, etc. Furthermore, it would be interesting to investigate the effects of the current model on more positive child outcomes over time. Lastly, the current study highlights a current shortcoming of fatherhood research: most studies examine fairly global constructs of father involvement, which are unable to tease apart the myriad of ways that fathers impact the lives of their children. Methodologically, father involvement as a unitary construct may be losing its validity, and the use of mixed methods may provide insight on the gaps that need to be filled in our quantitative methods and operationalization of tenants of father involvement. Furthermore, it would be interesting to utilize hierarchical linear modeling to include the additive effect of maternal depression on the hypothesized model. And lastly, due to

children's' trajectories for internalizing and externalizing behaviors being relatively the same, it would be important to test how postpartum paternal depression may affect the trajectories of father involvement and intimate relationship quality across time. Overall, these efforts may lead to more detailed answers and questions, which will ultimately result in a more comprehensive understanding of how fathers uniquely contribute to the lives of their children.

IV.   General Conclusion

Many studies have found associations between paternal involvement and children's adjustment (Amato & Rivera, 1999; Marsiglio et al., 2000; Pfiffner et al., 2001; Toldson, 2008); however, little is known about the processes by which paternal involvement affects children's well-being. Furthermore, few studies have investigated process models for the effects of father involvement on child development with the use of complex contextual frameworks and longitudinal data (Cummings et al., 2005). Therefore, the current two studies contribute to research on father involvement, for both studies examined complex process models for fathering and its effects on child development; while concomitantly, examining these models with longitudinal data. Study one examined the cascade effects of fathers' past experiences with their own biological fathers on their psychological distress (paternal depression) when their children are newborns, intimate relationship quality when their children are newborns and 3 years old, father involvement when their children are 3 years, and child outcomes when their children are 5 years old. Study two focused on the long-term effects of paternal postpartum depression on father involvement and intimate relationship quality when children are 3 years old and the intervening role of father involvement and intimate relationship quality on the relationship between paternal postpartum depression and children's internalizing and externalizing behaviors at age 3 and over time from age 3 to 9. Essentially, both studies were novel research designs that are some of the first attempts at testing theoretical explanations for the mechanisms by which

fathering influences child development, namely Belsky's (1984) process model for the determinants of parenting.

In reference to the most noteworthy finding in study one, the significant negative relationship between fathers' past experiences with their own biological fathers on their depressive symptomatology when their children are born, addresses an important gap in the literature on the intergenerational transmission of fathering practices. This relationship was true for all fathers in the study; no differences were observed based on paternal race or sex of the focal child. Few, if any studies, have examined how fathers' past experiences with their own fathers may have implications for fathers' psychological distress. Furthermore, study one examined this relationship during an important developmental period for both fathers and children – the transition into parenthood for fathers and the earliest stage of life for children, infancy. Therefore, based on the findings from study one, it appears that fathers' positive experiences with their own biological fathers when they themselves were children may reduce the likelihood of experiencing depression when their children are newborns. Based on the vulnerable nature of infancy developmentally, fathers' positive experiences with their own biological fathers during childhood may have indirect positive influences on the infants of these fathers. This conclusion is only speculative, for the current study did not examine the influence of paternal depression when children are newborns on infant outcomes. Conversely, fathers' negative childhood experiences with their own fathers may have negative implications for their infants via compromised psychological distress, namely a heightened risk for depression.

In addition, study one predicted a considerable amount of variance in intimate relationship quality across all populations studied. Therefore, fathers' past childhood experiences with their own biological fathers have indirect influence on fathers' intimate

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relationship functioning when children are 3 years old via paternal depression (child age 0) and intimate relationship quality (child age 0). Interestingly, fathers' past childhood experiences with their biological fathers has implications for both the individual (i.e. psychological distress) and relational (i.e. intimate relationship quality) functioning of fathers. Yet again, the indirect influence of fathers' past childhood experiences with their own biological fathers on later intimate relationship functioning via paternal depression and intimate relationship quality when children are newborns is a novel finding for research examining the intergenerational effects of fathering. Unfortunately, little variance in the child outcomes examined in study one was predicted, and significant relationships between the predictors and child outcomes were only found for children's pro-social, internalizing, and externalizing behaviors at age 5. However, child sex had an important moderating role for the child outcomes, such that male children appeared to be more affected by the involvement of their fathers and the combined effect of father involvement and intimate relationship quality. None of the predictors were significantly related to any of the child outcomes for girls.

In reference to the findings from study two, father involvement and intimate relationship quality when children are 3 years old did not serve as intervening variables between paternal postpartum depression and children's internalizing and externalizing trajectories. It could be possible that the overall 9 year time span of the data utilized for study two may be the cause for the null effects. However, paternal postpartum depression was negatively associated with intimate relationship quality when children are 3 years old. This finding supports the wealth of research support demonstrating a negative relationship between paternal depression and intimate relationship quality (Cummings et al., 2005; Ramchandani et al., 2011). Interestingly, study two found that father involvement when children are 3 years old and paternal postpartum depression

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significantly predicted internalizing and externalizing trajectories from age 3 to 9 only for girls, and not boys. This finding refutes previous research indicating that father involvement is more influential for boys in comparison to girls (Leavell et al., 2012). It could be possible that most studies have not found this specific moderating influence for child sex on children's internalizing and externalizing behaviors in the context of father involvement and fathers' intimate relationship quality based on most studies examining paternal influences on static outcomes for children instead of developmental outcomes that occur over time.

Taken together, findings from both studies assist in providing a more thorough understanding of the effects of fathers' involvement and individual functioning on children's development. When considering the findings from study one in isolation of the findings from study two, it appears that father involvement and intimate relationship quality when children are 3 years old only has implications for male children. However, study two indicates that both father involvement and paternal depression significantly influence girls' internalizing and externalizing trajectories, such that higher levels of father involvement when girls are 3 years old was related to a slower decline in internalizing and externalizing behaviors over time from 3 years old to 9 years old for girls. Furthermore, paternal postpartum depression increased girls' decline in externalizing behaviors over time from 3 years old to 9 years old. In study two, the growth parameters for internalizing and externalizing trajectories were not significantly associated with any of the predictors for boys. Collectively, study one and two demonstrate that father involvement and paternal individual functioning have important implications for developmental outcomes in both boys and girls.

Many practical implications for interventions with fathers and their partners stem from this dissertation. In reference to the possibility that fathers' negative childhood experiences may

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increase the likelihood of experiencing depression when their children are born, it would be important to provide mental health supports for fathers when their children are born. These supports could consist of group therapy, psychoeducation, and medical services, if needed. Furthermore, in consideration of the *Fathering Vulnerability Hypothesis* (Goeke-Morey & Cummings, 2007), it would be important to provide support for fathers' relationships with their intimate partners. This could consist of couple's therapy and relationship education. It would be ideal to work with expectant couples before the birth of their child in order to increase realistic expectations for parenthood, troubleshoot for problem areas, and build upon the skills that are needed for successful parenthood.

Overall, it appears that the past experiences of fathers, whether they date back to family of origin experiences with their own fathers or postpartum depression when their children are born, have important implications for fathers' later individual (psychological distress), relational (intimate relationship quality), and parental functioning (father involvement). Furthermore, the long-term consequences of these paternal experiences may extend to their children's development well into middle childhood. And lastly, the current dissertation sheds light on the complex manner by which father involvement is multiply determined and affects children's well-being and development over time.

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