Abstract

Father involvement is a critical aspect of family life with implications for child and parental physical and socioemotional health, couple relationship quality, and union stability. Yet, father involvement has been almost exclusively investigated in married families, most often via maternal-reports that underestimate involvement and with unidimensional or global measures of father involvement despite evidence that suggests father involvement is multidimensional. Pathways to family formation in the U.S. are increasingly diverse; over 40% of births now occur to unmarried women, at least 60% of whom are cohabiting with their child’s father, and approximately 40% of whom will remain in a longer-term cohabitation (more than one year). Hence, there is a significant need for research on father involvement among diverse families.

This project advances scholarship on father involvement by empirically testing the most recent multidimensional conceptualization of father involvement among married and continuously cohabiting families during a critical period in the life course: the transition to parenthood. Further, this project bridges the sociological and psychological literatures on married and unmarried father involvement by utilizing multimethod and multidimensional measures of father involvement from two key data sources. The New Parents Project is a short-term, longitudinal study of a community sample of first-time, dual-earner parents that includes paternal self-report questionnaires, videotaped
observations, and time-diary data that were exploited to test Pleck's (2010) conceptualization of father involvement for married fathers. The *Fragile Families and Child Wellbeing Study*, a nationally-representative sample of births to married and unmarried parents in large U.S. cities provides self-reports of involvement from unmarried fathers, a group historically absent in research on father involvement (Coley, 2001), and was used to test Pleck’s conceptualization of father involvement for continuously cohabiting fathers and compare father involvement across fathering contexts (i.e., marriage/cohabitation).

In Chapter 1, I provide a brief introduction into the changing family landscape in the U.S. and implications for fathers’ roles in family life. In Chapter 2, I draw on the *New Parents Project* to test recent father involvement theory in married families using structural equation modeling (SEM) and confirmatory factor analysis (CFA). Chapter 3 tests this same theory in the *Fragile Families and Child Wellbeing Study* using CFA and a multiple groups approach to test for differences in the structure and composition of father involvement across fathering context. Cluster Analysis was also used to validate latent involvement factors and identify groups of fathers based on the saliency of the involvement domains. In Chapter 4, I use the measures of involvement constructed in Chapter 3 to explore the multidimensional development of father involvement over children’s early years (ages 1-3) using reciprocal structural equation models. Finally, I close by offering my final thoughts and conclusions about the study as a whole in Chapter 5.
Dedication

For you Daddy. Love, your Sunshine.
Acknowledgments

I would like to extend my sincere gratitude to my co-advisors, Drs. Claire Kamp Dush and Sarah Schoppe-Sullivan for their guidance and support throughout the years. From the start of my program, Dr. Kamp Dush introduced me to research by incorporating me into the New Parents Project as a time diary coder – a position that blossomed and led to numerous research opportunities. This first research experience was integral in shaping my current research and ideas about family and father involvement. Much in the same way, Dr. Schoppe-Sullivan gave me numerous opportunities to collaborate with her students on various projects. These collaborations not only expanded my professional skills, but fostered long-term friendships that I am grateful for. I would also like to express many thanks to Dr. Tasha Snyder. Dr. Snyder and I developed a working relationship when we collaborated on a project together. I appreciated her helpful guidance, patience, and support while I was learning to work with longitudinal datasets and coding complicated relationship transitions. I feel privileged to have had a mentoring team that has pushed me to excel and helped me up when I fell short. Most importantly, I am forever grateful to Drs. Kamp Dush, Schoppe-Sullivan, and Snyder for recognizing my family-first orientation and providing me with the flexibility to maximize my professional goals while at the same time fulfilling my primary role as a mother.
Last but not least, I would like to thank JP, Summer, Tyler, and Parker for supporting me on this long journey. I understand that my transition has meant changes for each of you, and you have managed this with grace. JP, you have always supported me, encouraging me to finish when many times I was ready to throw in the towel. I am forever indebted to you for allowing me the time to explore, grow, and become the strong woman I am today. Thank you from the bottom of my heart.
Vita

May 2001 ......................................................Milford Senior High School

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Publications


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Fields of Study

Major Field: Human Development and Family Science
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Chapter 1: Introduction

The landscape of the American family has undergone significant changes in recent decades. The majority of mothers with young children work outside the home (U.S. Census Bureau, 2011), and women and men are increasingly delaying marriage (Cruz, 2013), but not necessarily parenthood (Arroyo, Payne, Brown, & Manning, 2012). Nonmarital births in the U.S. have increased to record highs; in 2013, 41% of all births were to unmarried parents, with the highest proportions of nonmarital births occurring to racial and ethnic minorities (Martin, Hamilton, Osterman, Curtin, & Mathews, 2013). A driving force behind the increase in nonmarital births are births to unmarried couples who cohabit, or co-reside (Raley, 2001). Over 60% of nonmarital births occur to cohabiting parents (Payne, Manning, & Brown, 2012), and data from the Fragile Families and Child Wellbeing Study suggest that close to 80% of nonmarital births occur to parents who are at least romantically involved (England & Edin, 2007).

Scholarship on family formation in recent decades has been pivotal in furthering our understanding of the driving forces behind these demographic shifts and their consequences for families, mothers and children in particular. Although family scholars widely agree that fathers play a central role in family life and have become more involved with children than ever before (Sayer, Bianchi, & Robinson, 2004), current research on fathers, particularly unmarried, low-income, and cohabiting fathers, continues to be limited (Coley, 2001). Father involvement has been almost exclusively
investigated in married families, most often via maternal-reports that underestimate involvement (Mikelson, 2008). Moreover, most studies have relied on unidimensional, or global measures of father involvement, although the construct is multidimensional, consisting of related yet distinct types of involvement that are best measured using multiple methods (Schoppe-Sullivan, McBride, & Ho, 2004). Though major efforts to correct this pattern of omission have been undertaken, including the large scale collection of data from low-income and unmarried fathers in both the Fragile Families and Child Wellbeing Study and the Early Childhood Longitudinal Studies, scholarship on cohabiting fathers in particular has only recently picked up pace.

**Marriage: A Fading Institution?**

It has become increasingly clear to researchers and even the general population that marriage and childbearing have become decoupled. Just a few decades ago, an unmarried, pregnant mother would likely have married relatively quickly before the birth of her child, a "shotgun" marriage (Brown, 1967), that would in theory provide the expected child with a stable two-parent home. Yet, significant social changes in the U.S. since the 1950s, such as the introduction of the Pill, the sexual revolution, and the fight for gender equality have brought about marked changes in marriage. In general, a greater cultural emphasis on individual freedom/choice, personal development, and self-fulfillment paved the way for current demographic trends now commonly referred to as the "retreat from marriage", including historically high ages at first marriage (~26.5 for women, ~29 for men; CPS, 2014) and premarital cohabitation as commonplace (Kennedy & Bumpass, 2008). Further, there have been significant changes regarding the demographic composition of cohabiters; early cohabiters were typically highly educated
and childless (Smock, 2000), whereas today's cohabiting couple is likely to be younger, less educated, and have at least one child (e.g., Smock & Manning, 2004).

Indeed, marriage increasingly symbolizes a life course "capstone" (Cherlin, 2010), something to be achieved following the completion of education, career attainment, and financial security. This shift from the notion of marriage as a foundation upon which to build a life, to that of marriage as a marker of achievement in life, has shaped the ways in which couples approach intimate relationships and parenthood. For some couples, living together, or cohabiting, represents a testing ground for relationship success, one that limits the loss to the individual should the relationship end. These couples may actively work to avoid parenthood until they are certain their marriage will not fail. For others, cohabitation may be more of a transitory state that buys couples time to achieve the perceived social standards for marriage, such as financial stability, educational attainment, or home ownership. As such, some couples will cohabit in response to an unplanned pregnancy, termed a "shotgun cohabitation" (Lundberg, 2007). This pattern may be brought about by lower rates of consistent contraceptive use among low SES women (Reeves & Venator, 2015). Still others may actively decide to have children with their cohabiting partner and choose to delay or forgo marriage altogether (Manning & Smock, 2003). Regardless of how cohabiting relationships form, most new cohabiting parents do have high hopes for future marriage (Reichman, Teitler, Garfinkel, & McLanahan, 2001), but many are burdened by financial difficulties and are unable to attain the insurmountably high standards now socially required to enter marriage (Gibson-Davis, Edin, & McLanahan, 2005; Waller & Peters, 2008).
Some scholars have suggested that these demographic shifts in family formation are evidence of the deinstitutionalization of marriage, marked by a weakening of the social norms governing marriage behavior, such as legal commitment (i.e. no-fault divorce, eliminating common-law marriage; Cherlin, 2010), the breakdown of traditional gender roles both inside and outside of the household, and a greater acceptance of premarital sex and cohabitation (Cherlin, 2004). Yet others have argued that the institution of marriage is still strong (Lauer & Yodanis, 2010), as evidenced by the fact that nearly all U.S. adults will marry at least once in their lifetime (Cherlin, 2010). From this perspective (e.g., Lauer & Yodanis, 2010), marriage as an idealized state represents a "gold standard" relationship that has been historically successful, is familiar, and thus is imitated even when couples are searching for an alternative. This can be seen by the fact that the lives of cohabiting and married couples are remarkably similar; couples live together, raise children, and provide resources for the household (Kerr, Moyser, & Beajout, 2006; Le Bourdais & Lapierre-Adamczyk, 2004). Although only time will tell whether marriage will become an artifact of the past, what is clear is that families today are increasingly stratified by socioeconomic status (McLanahan, 2009), and many cohabiting couples are simply unprepared to withstand the challenges of new parenthood. Indeed, fewer than 40% of cohabiting parents will remain together until their child's 5th birthday (Kamp Dush, 2011). These differences signal an alarming trend for children born to cohabiting parents that sets children on trajectories of cumulative disadvantage throughout their life course, paving diverging destinies (McLanahan, 2009).
The Life Course Perspective

A defining feature of the controversy surrounding marriage today is the historically high age at first marriage. The focus on age is not inconsequential, but reflects an underlying perception that the timing of major life events, such as marriage, is important for the individual, couple, and the future family. In his research on children from the Great Depression, Elder (1974) recognized the importance of an interdisciplinary approach toward understanding human development, combining historical, sociological, and psychological perspectives to understand the factors that were important in shaping the life courses of individuals across two generations. This study provided the foundation for Elder's (1998) Life Course Theory, a holistic perspective that identifies several key factors that influence the developmental life course: historical time and place, the timing of key transitions, the concept of linked lives, and human agency. Historical time and place are essential to shaping the life course; shared social, political, and historical context create experiences that are uniquely shared by individuals dependent upon their own development.

The timing of major developmental milestones in life, such as graduating from high school or college, marriage, or parenthood, all shape the life course. For instance, parenthood prior to the completion of high school places individuals on vastly different life course trajectories than parenthood following the completion of college. This perspective also maintains that our lives are interdependent, linked through family and particularly our relationships with close family members, like partners and children. Thus, individual, social, and historical experiences are both shared and expressed through family relationships. Finally, human agency describes an individual's control over
choices and actions that may alter the life course. In this way, individuals can adapt to the constraints of their socio-historical location and make the best of their circumstances. In essence, Elder proposes that a person’s development is shaped and formed by these various factors, setting in motion who they become and how their life unfolds.

Historically, marriage has preceded parenthood almost unanimously through modern times. A reversal in the ordering of marriage and parenthood has considerable implications for the life course trajectories of parents and children. Marriage and parenthood represent significant turning points in a man's life (Knoester, Petts, & Eggebeen, 2007; Nock, 1998), and the timing and ordering of these turning points is shaped by socioeconomic circumstances now more than ever (Carlson & England, 2011). Unmarried fathers are more likely than their married counterparts to become parents earlier in the life course and often have lower education and more tenuous financial circumstances when compared to married fathers (Manning & Brown, 2012). Thus today’s disadvantaged fathers may experience parenthood, rather than marriage, as a primary turning point in their life. Because unmarried men may have yet to achieve the individual, social, and economic characteristics that are important for high quality parenting and stable romantic relationships (e.g., McLanahan, 2009), unmarried men may not be well equipped to take on the roles and responsibilities of fatherhood. Thus, a life course perspective suggests that early parenthood shapes the opportunities available for fathers, the success of the couple relationship, and the development of children.

**Father Involvement**

Father involvement is a critical aspect of family life with implications for child and parental physical and socioemotional health (Flouri & Buchanan, 2003; Teitler,
2001), couple relationship quality (Levy-Shiff, 1994), and marital stability (Spearin & Goldscheider, 2010). As such, father involvement represents an important pathway to life success for children. Fathers who are involved during childhood protect their adolescents from psychological maladjustment; these benefits extend into adulthood for girls and are in addition to the benefits conferred by mother involvement (Flouri & Buchanan, 2003). Involved fathers may encourage mothers to adopt healthy pregnancy behaviors, directly contributing to maternal health and indirectly to child wellbeing (Teitler, 2001). Married couples are more satisfied when fathers are involved (Levy-Shiff, 1994), and this satisfaction may contribute to a decreased risk for divorce (Spearin & Goldscheider, 2010). Today's fathers are increasingly encouraged to be highly involved with their children (Pleck & Pleck, 1997). Although for some time unmarried fathers were perceived to be less involved than married fathers (e.g., Townsend, 2002), recent work suggests that cohabiting and married fathers' involvement with young children is remarkably similar (e.g., Manning & Brown, 2012).

In their classic paper, family scholars Lamb, Pleck, Charnov, and Levine (1987) cited direct interaction, responsibility (indirect care), and accessibility (availability) as key components of father involvement; most sociological and psychological studies have relied on this framework. Pleck (2010) updated this conceptualization to reflect our growing knowledge of fathering and its links with positive child development through authoritative parenting practices. The revised domains include positive engagement, warmth and responsiveness, and control. These domains will be discussed in greater detail in the following Chapters. To date, no study has validated Pleck's (2010) father involvement theory.
Structure of Dissertation

This dissertation consists of three studies that describe early fathering experiences in married and cohabiting families. Two of these studies directly engage the current debate on the deinstitutionalization of marriage by examining differences in fathering behaviors among married and cohabiting fathers. The remaining study is an effort to validate the most recent conceptualization of father involvement in married families using the gold standard for research, multiple methods of assessment. In Chapter 2, I use multidimensional, multimethod measures of father involvement and Confirmatory Factor Analysis (CFA; Joreskog, 1969) to test the validity of Pleck's (2010) revised conceptualization in married families at the transition to first-time parenthood. This study is an effort to both confirm recent theory and provide researchers with measurement recommendations for future research. Chapter 3 takes on the current debate on the deinstitutionalization of marriage by using CFA to test the validity of the revised father involvement model in the contexts of marriage and cohabitation. This study also makes an effort to examine variation in fathering behaviors using Cluster Analysis to identify groups of fathers based on the saliency of the father involvement domains. In Chapter 5 I use reciprocal structural equation models to explore how the father involvement domains are interrelated over time, and whether these links differ for married and cohabiting fathers. Finally, in Chapter 6 I describe overall conclusions and implications for future research based on the findings of the three studies. Specifically, I focus on the importance of qualitative and mixed-methods research for addressing the significant methodological challenges facing fatherhood researchers.
The Data

Data for this study come from two sources, the New Parents Project (NPP) and the Fragile Families and Child Wellbeing Study (FFCWB; Reichman, Teitler, Garfinkel, and McLanahan, 2001). Each source provides longitudinal, panel data and has detailed measures of father involvement from mothers and fathers. The NPP has rich, multimethod data from primarily married parents across the transition to parenthood, when children were 3 and 9 months old. The FFCWB is a nationally representative dataset of births to married and unmarried parents living in large U.S. cities, and includes self-report measures of father involvement from mothers and fathers when children were 1 and 3 years old. Using both data sources allows me to take advantage of the unique methodological and sampling strengths of each dataset. Table 1 contains descriptions of key measures, advantages, and drawbacks of each dataset.

Tables 2 and 3 compare the NPP and FFCWB parents in terms of demographic characteristics. First, Table 2 makes comparisons based on the full samples of parents in each study. For the most part, parents in each sample are drastically different in terms of their socioeconomic and family circumstances. Parents in the FFCWB study are younger, less educated, and a greater proportion are racial minorities. Fewer fathers and mothers were employed, household income was lower, and parents in the FFCWB study had previous children, often by multiple partners. A greater proportion of parents in the FFCWB study were cohabiting, and the marriages that were present in the FFCWB study were together for a shorter period of time. There was no difference in the length of cohabiting relationships across the two full samples.
Table 3 provides demographic comparisons based on the samples selected for use in the current study. To best compare the contexts of marriage and cohabitation, fathers in the FFCWB study were selected only if they remained continuously married or cohabiting (no relationship transitions) from the time of their child's birth until age 3. Although the NPP study did contain cohabiting fathers, the number was too low \((n = 27)\) to ensure accurate and robust findings. Thus, only married fathers were selected for the study using NPP data. Most demographic differences between the two samples remained; however parents in the selected FFCWB and NPP samples were similar in age and the length of marital relationships was comparable.

Compared to the general population of new parents, the FFCWB parents are remarkably similar in terms of age (mothers = 26 years; Martin et al., 2015; fathers = 27 years; Guzzo & Payne, 2014), but different in terms of education (54% of new mothers in the general population have at least some college) and racial composition (white = 53%, Hispanic = 25%) (Livingston & Cohn, 2010). In contrast, the NPP project represents a sample of relatively advantaged new parents who are slightly older, more educated, and less racially diverse than the general population of new parents.
Table 1. Comparison of Available Measures in NPP and FFCWB Studies

<table>
<thead>
<tr>
<th></th>
<th>NPP</th>
<th>FFCWB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive Engagement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Report (Days Per Week)</td>
<td>4-items (e.g., singing or playing games)</td>
<td>6-items (e.g., singing or playing games; Kamp Dush, Kotila, &amp; Schoppe-Sullivan, 2011; Kotila &amp; Kamp Dush, 2012)</td>
</tr>
<tr>
<td>Observation</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Time Diary (Minutes)</td>
<td>10-items (e.g., reading, talking, listening; Yeung, Sandberg, Davis-Kean, and Hofferth, 2001)</td>
<td>No</td>
</tr>
<tr>
<td><strong>Warmth and Responsiveness</strong></td>
<td>Delight in Parenting (Bradley et al., 1997)</td>
<td>Hugged or showed physical affection (Years 1 and 3). Expressed love or appreciation (Year 3).</td>
</tr>
<tr>
<td>Self-Report (Days Per Week)</td>
<td>12-items. (e.g., % of time responsible for taking the child to the doctor or getting up with them at night; Parental Responsibility Scale (McBride and Mills, 1993)</td>
<td>Mothers report (0-4); that father took the child places they need to go and looked after children when needed (Kotila &amp; Kamp Dush, 2012)</td>
</tr>
<tr>
<td>Time Diary</td>
<td>Intrasiveness; Detachment</td>
<td>No</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cox &amp; Crnic (2003); Elliston, McHale, Talkbot, Parmley, &amp; Kuersten-Hogan (2008)</td>
<td>Intrasiveness; Detachment</td>
<td>No</td>
</tr>
<tr>
<td>Time Diary (Minutes)</td>
<td>13 items. (e.g., picking up or dropping off the child, attending doctor appointments)</td>
<td>No</td>
</tr>
</tbody>
</table>
Table 2. *Demographic Comparison of Fragile Families and New Parents Project*

<table>
<thead>
<tr>
<th></th>
<th>Fragile Families</th>
<th>New Parents Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>27.94*</td>
<td>7.19</td>
</tr>
<tr>
<td>Mother</td>
<td>25.28*</td>
<td>6.04</td>
</tr>
<tr>
<td>Father Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.18*</td>
<td>-</td>
</tr>
<tr>
<td>Black</td>
<td>0.49*</td>
<td>-</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.28*</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>0.04</td>
<td>-</td>
</tr>
<tr>
<td>Mother Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.21*</td>
<td>-</td>
</tr>
<tr>
<td>Black</td>
<td>0.47*</td>
<td>-</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.27*</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>0.04</td>
<td>-</td>
</tr>
<tr>
<td>Father Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than HS</td>
<td>0.31*</td>
<td>-</td>
</tr>
<tr>
<td>HS</td>
<td>0.35*</td>
<td>-</td>
</tr>
<tr>
<td>Some College</td>
<td>0.10*</td>
<td>-</td>
</tr>
<tr>
<td>College</td>
<td>0.10*</td>
<td>-</td>
</tr>
<tr>
<td>Mother Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than HS</td>
<td>0.35*</td>
<td>-</td>
</tr>
<tr>
<td>HS</td>
<td>0.30*</td>
<td>-</td>
</tr>
<tr>
<td>Some College</td>
<td>0.24*</td>
<td>-</td>
</tr>
<tr>
<td>College</td>
<td>0.11*</td>
<td>-</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>0.89*</td>
<td>-</td>
</tr>
<tr>
<td>Mother (Year 1/3\text{rd} Trimester)</td>
<td>0.55*</td>
<td>-</td>
</tr>
<tr>
<td>Multipartnered Fertility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>0.37*</td>
<td>-</td>
</tr>
<tr>
<td>Mother</td>
<td>0.36*</td>
<td>-</td>
</tr>
<tr>
<td>Household Income</td>
<td>31994*</td>
<td>31567</td>
</tr>
<tr>
<td>Relationship Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>0.24*</td>
<td>-</td>
</tr>
<tr>
<td>Cohabitng</td>
<td>0.36*</td>
<td>-</td>
</tr>
<tr>
<td>Single</td>
<td>0.40*</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. * Indicates significant differences at $p < 0.05$. HS = High School.
### Table 3. Comparison of Selected FF Sample to Selected NPP Sample

<table>
<thead>
<tr>
<th></th>
<th>Fragile Families Continuously Married or Cohabiting</th>
<th>New Parents Project Married Only</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>30.42</td>
<td>6.79</td>
</tr>
<tr>
<td>Mother</td>
<td>27.96</td>
<td>6.08</td>
</tr>
<tr>
<td>Father Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.36*</td>
<td>-</td>
</tr>
<tr>
<td>Black</td>
<td>0.29*</td>
<td>-</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.29*</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>0.06</td>
<td>-</td>
</tr>
<tr>
<td>Mother Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.38*</td>
<td>-</td>
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*Note.* * Indicates significant differences at $p < 0.05$. HS = High School.
Chapter 2: A Test of the Revised Conceptualization of Father Involvement in Married Families

Father involvement is a critical aspect of family life with implications for child and parental physical and socioemotional health (Flouri & Buchanan, 2004; Teitler, 2001), couple relationship quality (Levy-Shiff, 1994), and union stability (Spearin & Goldscheider, 2010). Yet, father involvement has most often been studied via maternal-reports that underestimate involvement (Mikelson, 2008). Moreover, many studies have relied on unidimensional, or global measures of father involvement, although the construct is multidimensional, consisting of related yet distinct types of involvement that are best measured using multiple methods (Schoppe-Sullivan, McBride, & Ho, 2004). When studies do assess father involvement using paternal self-report, these data suffer from significant drawbacks including greater recall error (Kan & Pudney, 2008), social desirability in responses (Press & Townsley, 1998), and an overestimation of time use in general (Juster & Stafford, 1991). Although recent efforts have been made to distinguish between types of involvement to more accurately reflect its multidimensional nature (i.e., Carlson, McLanahan, & Brooks-Gunn, 2008; Hohmann-Marriott, 2011), most have employed a dated conceptualization of father involvement (e.g., Lamb, Pleck, Charnov, & Levine, 1987) in which each component has few linkages with positive child outcomes (Pleck, 2010). Given that public policy efforts designed to increase father involvement have been driven by research underscoring the importance of fathers to children's socioemotional wellbeing (e.g., Flouri & Buchanan, 2003), it is imperative that
Researchers focus on those components of involvement that are the most proximal to children's development.

The primary goal of this project was to test the validity of the most recent theoretical conceptualization of father involvement in married families. The New Parents project, a short-term, longitudinal study of 182 dual-earner parents provided detailed information regarding first-time fathers' involvement with their 3 and 9 month old infants using multiple methods, including self-reports, observations, and time diary assessments of involvement. First, I constructed multi-method latent indicators of each involvement domain when infants were 3 and 9 months old. Next, I used Confirmatory Factor Analysis (CFA; Joreskog, 1969) to test a three-factor model of involvement coinciding with the most recent theoretical conceptualization of father involvement (Pleck, 2010). Last, CFA was used to test a second-order single-factor model of involvement to confirm the multidimensional nature of the construct.

Revised Theoretical Conceptualization of Father Involvement

In his reconceptualization of father involvement, Pleck (2010) merged a history of primarily quantitative father involvement research with the quality-focused field of parenting research by incorporating dimensions of authoritative parenting into his father involvement framework. Pleck (2010) drew upon research suggesting that parental engagement in specific types of "enrichment" activities fostered children's positive development and better educational outcomes (Pleck, 1997; Pleck & Masciadrelli, 2004) and refocused the engagement domain toward activities that promote healthy child development and re-terming the domain positive engagement. Our multi-method
measures of positive engagement include self-reports and time diaries of involvement in key activities that promote healthy infant development.

Pleck (2010) also documented increasing research focusing on the quality, rather than the quantity, of the father-child interaction and its importance to children's socioemotional development (Carlson, 2006; Hofferth, 2003). Accordingly, he incorporated dimensions of warmth and responsiveness from the larger psychological child development literature into this second domain. Warm fathering promotes children's sympathy, prosocial moral reasoning, and prosocial behaviors (Carlo, Mestre, Samper, Tur, & Armenta, 2011), and enhanced reading and math skills in middle childhood (Coley, Lewin-Bizan, & Carrano, 2011), important foundations for healthy child and adult development. Sensitive fathering during infancy helps build strong attachment bonds between father and child (Lucassen et al., 2011) and fosters healthy socioemotional development in children of all ages (Grossmann et al., 2002; Trautman-Villalba, Gschwendt, Schmidt, & Laucht, 2006). Sensitive fathering during infancy may protect children from developing behavior problems in early childhood; Longitudinal research directly links a father's lack of sensitivity with his three month old infant with greater externalizing problems when children reached one year (Ramchandani et al., 2011). The measure of warmth and responsiveness includes self-reports of delight in parenting and observational measures of fathers' sensitivity, positive affect, and negative regard from videotaped father-infant interactions.

Finally, Pleck (2010) noted the importance of a father's involvement and influence in the managerial aspect of his child's life, including providing authoritative, positive control. Most often investigated under the broad category of responsibility, a
father's knowledge of the child's whereabouts (Carlson, 2006; Hofferth, 2003) and authority over child-related decisions (Pleck & Hofferth, 2008) are typical markers of the revised domain. Authoritative parents monitor their children and set clear standards for conduct (Baumrind, 1966), supporting high self-esteem and social competence (Darling, 1999) and portending fewer socioemotional behavior problems during childhood (Amato & Rivera, 1999). In infancy, authoritative parents provide appropriate levels of control, remaining engaged and providing scaffolding for development without intruding on the child's activities. Measures of the control domain include self-reports of fathers' participation in and influence over child-related decisions and observational measures of fathers' intrusiveness and detachment in video-taped father-infant interactions.

**Measurement of Father Involvement**

For decades our knowledge of father involvement was based primarily on maternal reports; fathers are difficult to retain in studies and have sometimes simply been overlooked (Day & Lamb, 2003). In part due to national initiatives that focused on fatherhood, researchers have increasingly incorporated fathers into their research designs, although information on father involvement continues to be limited. For instance, fathers may provide self-reports on the frequency of their child-related involvement, complete time diary reports of time spent and activities with children, or participate in staged observations that evaluate the quality of father-child interactions. But rarely do studies include direct father-reports of father involvement using multiple methods and time points. This study includes self-report, time diary, and observational measures of involvement assessed at multiple time points in an effort to reduce measurement error and provide a more accurate assessment of each father involvement domain.
Positive Engagement

As notions of shared parenting and equality in the division of childcare became more engrained in social constructions of fatherhood, father involvement was widely studied using quantitative methods, comparing mothers and fathers in time-based terms. Within the broadly-defined domain of engagement (i.e., Lamb et al., 1987), scholars often utilized stylized measures such as self-reported frequencies of fathers' direct interactions with children over a specified period of time (Carlson et al., 2008; Hofferth & Anderson, 2003). In these measures, questions are preceded with, "How often," or "How many days per week," does the father participate in a specified activity with the child. Broad categories of activities are often vague and limited, potentially failing to capture the diversity of a fathers' involvement with his child. Moreover, this method requires the respondent to aggregate involvement over time, lending itself to high recall bias (Juster, Ono, & Stafford, 2003). Despite these drawbacks, frequency measures can provide a broad assessment of salient father-child activities that may be missed with more detailed assessments that capture time use only on a particular day.

In contrast to stylized methods, time diary methods provide a chronology of events over a specified day, lessening recall and social desirability bias (Kan & Pudney, 2008). Time diaries record additional information such as primary, secondary, and tertiary activities, location, and who else was there, providing a more complete picture of day-to-day parenting time use. These measures have evolved from simple time charts such as the Interaction/Accessibility Time Chart (McBride, 1990) to full-scale time diary investigations of domain-specific father involvement (McBride & Mills, 1993; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). The level of detail provided by the time diary
allows for the construction of a positive engagement measure based on fathers'
descriptions of a wide range of developmentally-appropriate activities they participated in
with their infant during their day.  

*Warmth and Responsiveness*

For quite some time scholars have agreed that the quality of the father-child
relationship is an important contributor to positive child development (Lamb, 2010); self-report measures tapping into the quality of interactions are widely prevalent in
demographic research on father involvement. For example, Carlson (2006) used
frequency measures of father-child closeness reported by children to measure the degree
of warmth within father-child relationships. Similarly, Hofferth (2003) measured
paternal warmth using a self-reported frequency measure; however this measure was not
child-specific, and like any relationship, father-child relationships may vary between
children. The current study's self-reported measure of warmth contains items taken from
the Parental Investment in Child Scale (PIC; Bradley, Whiteside-Mansell, Brisby, &
Caldwell, 1997), and describes feelings of delight that are often seen in first-time parents,
such as a pleasurable mental preoccupation with the child and the desire to hold and
cuddle the child. Arguably however, self-reports are insufficient to capture the dyadic
father-child relationship, and self-reports of this aspect of involvement (i.e., warmth and
responsiveness) may suffer from considerable social desirability bias (Kan & Pudney,
2008).

In general, the gold standard of father involvement measurement should eliminate
subjective reporting bias and provide an objective assessment of this dyadic relationship.
As such, observations of father involvement are perhaps the most appropriate for
assessing fathers' warmth and responsiveness with his infant and have been widely utilized in research exploring the father's dynamic relationship with his child (e.g., Shannon, Tamis-LeMonda, & Cabrera, 2006). The observed measure of positive and negative regard and sensitivity were adapted from previous work (Cox & Crnic, 2003) and assess warm, developmentally sensitive parenting of infants, providing a more objective complement to the self-reported measures of fathers' feelings of enjoyment and delight.

Control

This involvement domain has been investigated the least among the three and is most often measured using stylized methods. Fathers typically respond to frequency measures of control, such as how often they know where their child is and what they are doing (e.g., Hofferth, 2003; Carlson, 2006), but infants' greater dependency may inflate these limited measures. More often, frequency measures of activities such as taking children to the daycare or doctor have been used to assess fathers' involvement in responsibility (Kotila & Kamp Dush, 2012; Ryan, Kalil, & Ziol-G, 2008), an earlier version of the control domain and now closely aligned with indirect care, a subcomponent of Pleck's (2010) revised conceptualization. In line with trends to compare parents' involvement in childrearing, other measures were designed to capture the fathers' involvement relative to mothers, such as The Parental Responsibility Questionnaire (PRQ; Lamb et al., 1988), allowing fathers to report responsibility for a task regardless of whether or not he performed it. Compared to the frequency assessments, the PRS provides greater detail regarding the fathers' authority over child-
related decisions without directly assessing the degree of influence. These measures also include a small scale measuring the fathers' degree of influence in child-related decisions.

Authoritative control during infancy may be best captured through observations of father-child interactions, as appropriate control includes scaffolding and structuring of development based upon signals from the child (Pratt, Kerig, Cowan, & Cowan, 1988). The observed measure of father-child interactions using scales adapted from previous work (Cox & Crnic, 2003; Elliston, McHale, Talbot, Parmley, & Kuersten-Hogan, 2008) measure fathers' intrusiveness and detachment. Intrusive parenting behaviors are adult-centered and controlling, intruding on the child's autonomy and self-direction. In contrast, detached behaviors are mechanical, distant, impersonal and perfunctory, and signal emotionally uninvolved and asynchronous parenting that is mistimed to the child's needs and fails to scaffold development. The multi-method measure of authoritative control provides the first look at the revised control domain including aspects of authoritative parenting.

Method

The New Parents Project (NPP) was a longitudinal study of 182 primarily married dual-earner, first-time parents residing in a large Midwestern city. Couples were recruited in 2008-2009 during the third trimester of pregnancy through childbirth education classes, newspaper advertisements, and flyers at doctor’s offices, pregnancy and healthcare centers. To be eligible for participation, parents must have been 1) either married or cohabiting, 2) at least 18 years of age, 3) expecting their first child, 4) the biological parents of the child, 5) able to read and speak English, and 7) employed prior to their child’s birth and planning to return to paid employment shortly after the birth of
Data were collected during the third trimester and 3, 6, and 9 months postpartum. Mothers and fathers independently completed questionnaires that were either online (third trimester only) or mailed to their home address. The sample was limited to only married fathers at the 3 (n = 152) and 9 (n = 136) month assessments.

Time diary data collection closely resembled the format followed by the American Time Use Survey (ATUS; U.S. Bureau of Labor Statistics, 2006). Parents provided a detailed assessment of their time use on their most recent workday and nonworkday. Parents were asked to recall their activities beginning at 4am on a target day and ending at 4am on the following day, reporting the time each activity began and ended, any simultaneous activities (up to two additional activities), their location, and if others were present during the activity. To ensure accurate reporting, trained interviewers reviewed the pen-and-paper time diaries with each parent in person or over the phone. After data collection, research assistants listened to the interviews and reviewed the pen-and-paper time diaries, and then classified activities into broader categories based upon an expanded version of the ATUS coding manual.

At the 3 and 9 month assessments, fathers were video-recorded participating in a 5-minute play interaction with their infant. At 3 months the interaction took place in the parent’s home, and at 9 months the interaction took place in the lab or at the parents’ home if the parents were unavailable to come to the lab. At each assessment, fathers were given a bag containing three developmentally appropriate toys and asked to play with their infant like they would if they had a few extra minutes in their day. Fathers were not required to use the toys. In the 3 month assessment, fathers played independently with their infant for the first 3 minutes and then the mother entered the
room to observe (no interference in the father-infant interaction) for the remaining 2 minutes; these interactions were coded separately. Scores for each construct were significantly correlated across the two episodes at the 3 month assessment and were averaged. Fathers played with their infant independently for the full 5 minutes at the 9 month assessment.

Attrition analyses for time diary measures for the full sample of fathers (182) are reported in detail in Kotila, Schoppe-Sullivan, and Kamp Dush (2013). Of the full sample of fathers, 6(3.3%) fathers did not complete the survey at 3 months, and 31(17%) did not complete the survey at 9 months. Of the full sample, 15(8.2%) fathers did not complete the in-home observations at 3 months, and 30(16.5%) fathers did not complete the observations at 9 months. Logistic regression analyses (available from author) were performed to determine demographic characteristics associated with attrition at each assessment. For both the survey and observational data, older fathers were more likely to be missing at 3 months, and non-white fathers were more likely to be missing at 9 months.

Overall, missing data was relatively low for married fathers in the full sample (n = 155). Only 1(0.6%) married father did not complete any portion of the study (i.e. survey, observational, time diary) at 3 months, and only 17(11%) married fathers did not complete any portion of the study at 9 months. One hundred and thirty-four married fathers (86%) completed both the 3 and 9 month assessments and 3(1.9%) married fathers did not complete any assessment. Of the married fathers, 3(1.9%) were missing questionnaire data at 3 months, and 21(13.5%) were missing questionnaire data at 9 months. Nine (5.8%) married fathers were missing observational data at 3 months, and
21(13.5%) were missing observational data at 9 months. At 3 months, 30(19.4%) married fathers were missing a workday time diary, and 24(15.5%) were missing a non-workday diary. At 9 months, 28(18.1%) married fathers were missing a workday diary, and 22(14.2%) married fathers were missing a non-workday diary. Logistic regressions (available from author) showed that married men with less than a college education were more likely to be missing observational data at the 3 month assessment. No other differences were found.

Positive Engagement

*Days per week engaged.* The number of days during the previous week (0 to 7) fathers participated in the following positive engagement activities with their infant were averaged; playing games like peek-a-boo, singing, reading, playing inside, visiting relatives, and hugging. Scale reliabilities were .74 and .67 at 3 and 9 months, respectively. Similar versions of this measure have been used in previous research investigating fathers' engagement (e.g., Kotila et al., 2013; Carlson et al., 2008).

*How often engaged.* Fathers also reported how often they participated in the following positive engagement activities with their infants; diapering, bottle feeding, solid feeding, holding, ticking, putting to bed, bathing, walking, and dressing the infant. Responses ranged from 1 to 6 and including the following options; *not at all, rarely, a few times a month, a few times a week, about once a day, more than once a day.* Scale reliabilities were .72 and .73 at 3 and 9 months, respectively.

*Time diary positive engagement.* Fathers' time in positive engagement was measured using workday and nonworkday time diaries. The following developmentally appropriate activities were included in the measure: reading, playing with the child,
talking and listening to the child, physical care for the child (waking the child up or getting the child ready to go somewhere), feeding the child, changing the child’s diaper, preparing meals or bottles for the child, putting the child to bed, bathing the child, and dressing the child. Time (in minutes) across activities was summed to produce the total time fathers spent in positive engagement activities with their infant. Primary, secondary, and tertiary activities were included; however, time was not double-counted. For example, fathers who reported spending 5 minutes reading to the child while simultaneously playing with the child received a total of 5 minutes for positive engagement, rather than 10. Workday and nonworkday diaries were coded separately. Similar versions of this measure have been used in prior research investigating fathers’ positive engagement (Kotila et al. 2013; Jia, Kotila, Schoppe-Sullivan, & Kamp Dush, forthcoming; Lang et al., 2014).

**Warmth and Responsiveness**

*Delight.* Three items from the Delight subscale of the Parental Investment in the Child questionnaire (Bradley et al., 1997) were used to capture pleasure in the father's involvement with his infant. Fathers were asked how often they 1) found themselves thinking of their child, 2) wanted to cuddle and hold their child, and 3) thought it was more fun to get something new for their child than for themselves. Responses ranged from 1 = *Never* to 5 = *Always*, and Cronbach's alpha was .62 and .55 at 3 and 9 months, respectively.

*Sensitivity.* Sensitivity ratings come from Cox & Crnic's (2003) qualitative coding scale for father-child interactions. Fathers' sensitivity/responsiveness is a measure of how the father observes and responds to the infant's social gestures, expressions, and
signals as well as responds to cries, frets, or other expressions of negative affect by the infant. In order for the interaction to be rated as highly sensitive, the research assistant must view the interaction as child-centered. Interactions were rated on a scale from 1 (Not at all characteristic) to 5 (Highly characteristic). Interrater reliability was .93 and .77 for 3 and 9 months, respectively.

Positive regard. Positive affect is rated based on the quality, quantity, uniformity, brightness, and genuineness of affect (Cox & Crnic, 2003). Father's positive feelings toward the child are evidenced by behaviors such as: speaking in a warm tone, expressive face, hugging, smiling, laughing, praise. Interactions were rated from 1 (Not at all characteristic) to 5 (Highly characteristic) and interrater reliability was .75 and .83 for 3 and 9 months, respectively.

Negative regard. Negative regard is rated based on both the frequency and intensity of non-verbal and verbal indicators (Cox & Crnic, 2003). Some markers of negative regard include: disapproval, tense body, abruptness, roughness, calling child unflattering names, teasing in a non-playful manner. The scale was rated from 1 (Not at all characteristic) to 5 (Highly characteristic), where higher values indicated more frequent or intense displays of negative regard. Interrater reliability was .82 and .82 at 3 and 9 months, respectively.

Control

Parental responsibility scale. Fathers completed an expanded version of the Parental Responsibility Scale (PRS; McBride & Mills, 1993), measuring the proportion of time (0 to 100 percent) mothers vs. fathers were responsible for common child-management tasks; parents could be responsible for tasks without actually performing
them. A subset of items was selected from this scale to reflect fathers' participation in the daily management of their infant's life. Fathers were asked to report the percentage of time they were responsible for the completion of the following child-related management tasks: 1) making doctor appointments, 2) taking the child to preventative healthcare checks, 3) buying clothes, 4) buying toys, 5) determining when to take child to the doctor due to illness, 6) selecting appropriate clothes, 7) making childcare arrangements, 8) babyproofing the home, 9) staying home or making arrangements for a sick child, 10) selecting an appropriate bedtime, 11) selecting an appropriate childcare arrangement, and 12) staying or getting up with the child at night. Items 1 and 8 are developmentally-appropriate modifications of the original PRS scale. Scale reliabilities were .82 and .82 at 3 and 9 months, respectively.

Influence over child-related decisions. The fathers' degree of influence over child-related decisions was assessed using a 3-item scale using the following questions: "How much influence do you have in making major decisions about, 1) your baby, 2) healthcare for your baby, and 3) childcare for your baby?" Fathers responded using a scale ranging from 1 = no influence to 5 = full influence. Scale reliability was .89 and .86 at 3 and 9 months, respectively.

Intrusiveness. Intrusiveness is mainly characterized by an adult-centered interaction (Cox & Crnic, 2003). Intrusive fathers may display the following behaviors: imposing their own agenda on the child, continuing or escalating an activity after the child has averted their gaze or expressed negative affect, not allowing the child a "turn", overwhelming the child with rapid succession of toys, continued engagement after the child has lost interest. This scale was rated from 1 (Not at all characteristic) to 5 (Highly
characteristic), where higher values indicate more frequent and intense intrusive behavior. Interrater reliability was .73 and .57 for the 3 and 9 month assessments, respectively.

**Detachment.** Detachment is characterized by a lack of emotional involvement or disengagement and unawareness of the child's needs for appropriate interaction to facilitate involvement with objects or people. Detachment may be displayed by the following behaviors: no contingent reactions to infant’s vocalizations or actions, no scaffolding, unawareness of child’s requests for attention or reaches for toys, asynchrony in affect and responses. The detachment rating scale was adapted from Elliston et al. (2008) and interactions were rated on a scale from 1 (*Not at all characteristic*) to 5 (*Highly characteristic*) and interrater reliability was .70 and .69 at 3 and 9 months, respectively.

**Analysis Plan**

Latent variables of each father involvement domain (e.g., positive engagement, warmth and responsiveness, control), were constructed from the available indicators (individual scale items) using Structural Equation Modeling (SEM). Confirmatory factor analysis (CFA; Joreskog, 1969) was used to test the validity of the revised father involvement conceptualization in married families. First, I tested the theorized conceptualization using a multidimensional, three-factor model mapping onto each latent involvement indicator at 3 and 9 months separately. The conceptual model is pictured in Figure 1. A good fitting model with significant factor loadings would provide support for the validity of Pleck's (2010) revised father involvement conceptualization in married families. Next I tested a second-order, single-factor model using all latent indicators as
factor loadings onto a larger involvement construct. A poor fitting model would further support for the multidimensional model, provided the multidimensional model fits well.

Measurement invariance was assessed following Bollen and Hoyle (1990) to ensure model stability and theoretical consistency across time. Metric invariance, a weak form of measurement invariance implying that the same latent construct is measured over time, was assessed. This is because the study was longitudinal and infants undergo significant developmental growth in the first 9 months of life. Further, mean levels of father involvement were also expected to increase (Lang et al., 2014). These factors precluded testing for more strict measurement invariance including equivalence of factor loadings and intercepts.

Model fit was evaluated using chi-square test statistics, root mean square of approximation (RMSEA; Steiger, 1990) and the comparative fit index (CFI; Bentler, 1990). Modifications were made following guidelines established by Sorbom (1989) and using a conservative cutoff of 10, over two-and-a-half times the standard 3.84 cutoff. Acceptable model fit statistics are below .05 and above .90 for the RMSEA and CFI, respectively. All analyses were performed using Stata12 and missing data were estimated using the Full Information Maximum Likelihood (FIML) estimation command, which estimates missing data for individuals who either attrited or who had item-level missing data due to non-response. This method is the gold-standard in estimating missing data in samples with approximately 25% missing data on any one variable of interest (Johnson & Young, 2011).
Results

Sample Characteristics and Descriptive Statistics

The sample of dual-earner, married, new fathers was relatively advantaged. On average, fathers were 31 years old (SD = 4.36) when their partner was in the third trimester of pregnancy. The majority of fathers were white (89%) and were college educated (75%). Correlations between all latent variable indicators at are listed separately by month of assessment in Tables 1 and 2. At the item level, most indicators of involvement were significantly correlated with other items measuring the same involvement domain. There were also several items that were correlated with items that measure other involvement domains. Notably, there were few significant correlations between the observed and survey measures of warmth and responsiveness, and observed and survey measures of control.

Item-level descriptive statistics for father involvement measures are listed in Tables 3 (3 months) and 4 (9 months). Turning to Table 3, we see that fathers spent slightly more than an hour and a half per workday, and a little over 3 hours per nonworkday, with their 3 month old infants. On average, fathers were engaged in developmentally appropriate activities with children the majority of the week at 3 months and participated in care-related tasks frequently. At the 3 month assessment, fathers reported they had a lot of influence in making major decisions, healthcare decisions, and childcare-related decisions. Fathers reported their degree of responsibility for childcare-related tasks ranged from 28% (making doctor appointments) to 76% (babyproofing). This indicated, for example, that fathers were responsible for making doctor appointments for their 3-month-old infants 28% of the time. Fathers reported that they
thought about, wanted to cuddle, and thought their baby was fun to play with nearly all of the time when infants were 3 months. On average, trained observers rated sensitivity and positive regard as somewhat characteristic of fathers, whereas intrusiveness and detachment were minimally characteristic, and negative regard was not at all characteristic at the 3 month assessment.

Turning to Table 4, we see that fathers spent nearly two hours on the workday, and over 4 hours on the nonworkday, in positive engagement activities with their 9 month old infants. Fathers reported engaging in developmentally appropriate activities with 9 month infants nearly 6 days per week, and reported engaging in care-related tasks most of the time. On average, fathers reported having a lot of influence over major, healthcare, and childcare decisions. Fathers reported having responsibility for a range of child-related tasks from 30% (making doctor appointments) to 76% (selecting childcare arrangements) of the time at 9 months. On average, fathers reported that they thought about, wanted to cuddle, and though their child was fun nearly all of the time at 9 months. In the observed interactions, sensitivity and positive regard were rated as somewhat characteristic of fathers. Intrusiveness and detachment were minimally characteristic, and negative regard was not at all characteristic of fathers in observed interactions at 9 months.

Measurement Models

Positive engagement. The latent indicator of fathers' positive engagement was constructed using the following indicators at each assessment: time diary positive engagement on the workday and nonworkday (separately), days per week engaged, and how often engaged. The 3 month latent variable fit the data well; $\chi^2 (2) = 1.22 \ p = 0.54$;
RMSEA = 0.00; CFI = 1. All factor loadings were significant and no modifications were suggested. The 9 month latent indicator also fit the data well with no suggested modification indices; \( \chi^2 (2) = 0.87, \ p = 0.65; \) RMSEA = 0.00; CFI = 1.

**Warmth and Responsiveness.** A latent variable of fathers' warmth and responsiveness was constructed using the questionnaire and observational measures. The 3 month model fit the data poorly (\( \chi^2 (9) = 68.77, \ p = 0.00; \) RMSEA = 0.21; CFI = 0.54) and nonsignificant factor loading patterns suggested that Sensitivity, Positive Regard, and Negative Regard were not part of the same latent construct. Next, two separate latent variables, each representing different aspects of warmth and responsiveness, were constructed using the survey and observational items at 3 months separately. The first model including only the delight survey measure items was exactly identified (\( \chi^2 (0) = 0.00; \) RMSEA = 0.00; CFI = 1.00) and factor loadings for each item were significant and above the standardized 0.30 cutoff. The second model included only the observed measures of warmth and responsiveness. The model was exactly identified (\( \chi^2 (0) = 0.00; \) RMSEA = 0.00; CFI = 1.00) and factor loadings for each item were above the standardized cutoff, with the exception of the loading for the Negative Regard item (\( \beta = -0.26 \)). The low loading is likely due to low variation in the Negative Regard measure and the item was retained. Last, a two-factor model was constructed using the latent variables above. The model fit the data well (\( \chi^2 (8) = 8.35; \) RMSEA = 0.02; CFI = 0.99) and all factor loadings were significant; However, the survey and observed latent variables were not significantly correlated (\( r = 0.01, \ p = 0.30 \)). The variable was constructed at 9 months using survey and observational measures and again fit the data poorly (\( \chi^2 (9) = 63.93; \) RMSEA = 0.20; CFI = 0.37). Again, factor loading patterns suggested that the observed
indicators were not a part of the same latent construct. Two new latent variables were fit at 9 months using the survey and observed warmth and responsiveness items separately. Both models were exactly identified ($\chi^2(0) = 0.00; \text{RMSEA} = 0.00; \text{CFI} = 1.00$) and all factor loadings were above the standardized cutoff with the exception of Negative Regard. As before, the Negative Regard item was retained for subsequent analyses. As with the 3 month data, a two-factor model was constructed using the 9 month data. This model did not converge and thus was deemed inadequate.

Control. The latent variable representing the control domain was constructed at each assessment using all items from the survey-based Parental Responsibility Scale and Influence Over Child-Related Decisions scale, and the observed measures of Intrusiveness and Detachment. The initial 3 month model fit the data poorly ($\chi^2(119) = 504.29, p = 0.00; \text{RMSEA} = 0.15; \text{CFI} = 0.47$) and a series of further modification indices were suggested. Error covariances were correlated and the final control multi-method model fit the data well; $\chi^2(113) = 141.49, p = 0.04; \text{RMSEA} = 0.04; \text{CFI} = 0.96$. However, the observed Intrusiveness and Detachment items did not load significantly onto the control latent factor. A second model was tested to determine whether the survey and observed items represented two latent aspects of fathers' control. In order to construct a latent variable with two items (Intrusiveness and Detachment measures), the latent variable containing the three survey items was correlated with the latent variable containing the observational measures; this model did not converge.

Due to the lack of significant correlation between the observed and survey control items and the inability to construct a model incorporating the observed items, these items were eliminated from subsequent 3 month analyses. Next, a model containing only the
survey-reported control items was constructed. The initial model fit the data poorly ($\chi^2(90) = 473.13, p = 0.00$; RMSEA = 0.17; CFI = 0.47) and several modifications were suggested. Error covariances were correlated and the final model fit the data well; $\chi^2(84) = 114.87, p = 0.01$; RMSEA = 0.05; CFI = 0.96. Factor loadings for fathers' influence over major decisions and healthcare decisions were slightly below the standardized cutoff (major $\beta = 0.25$; healthcare $\beta = 0.24$) but were significant and retained in subsequent CFA analyses.

The initial 9 month model using all self-report and observed control indicators fit the data poorly ($\chi^2(119) = 439.69, p = 0.00$; RMSEA = 0.14; CFI = 0.50) and further modification indices were suggested. Modifications with indices greater than 10 were correlated and the final model fit the data adequately; ($\chi^2(114) = 215.07, p = 0.00$; RMSEA = 0.08; CFI = 0.84). Factor loadings for items measuring fathers' degree of influence over child-related decisions, and fathers' observed authoritative control during videotaped interactions, were not significant, suggesting these items did not measure the same latent control construct as those items representing fathers' degree of responsibility.

Given that the measure of participation in indirect care activities was closely related to the indirect care subcomponent of the Pleck (2010) revised conceptualization, and that the observed measures of authoritative control were not significantly correlated with any of the survey-based items, a two-factor model of control was constructed using the PRS and Influence Over Child-Related Decisions scales as separate latent factors. The observed measures were excluded from further analyses. Latent variables were constructed separately prior to fitting the theorized two-factor control model. The initial model using the PRS items fit the data poorly and additional modification indices were
suggested; ($\chi^2(54) = 155.21, p = 0.00; \text{RMSEA} = 0.12; \text{CFI} = 0.76$). Suggested error covariances were correlated and the final PRS latent variable fit the data well and all factor loadings were significant and above the standardized cutoff; ($\chi^2(51) = 80.07, p = 0.01; \text{RMSEA} = 0.07; \text{CFI} = 0.93$). The 9 month Influence latent variable was exactly identified and all factor loadings were significant and above the standardized cutoff.

Next, a two-factor model of control using the final PRS and Influence latent variables was constructed. The initial two-factor model fit the data well; ($\chi^2(86) = 123.06, p = 0.01; \text{RMSEA} = 0.06; \text{CFI} = 0.94$) and all factor loadings were significant and all factor loadings were above the 0.30 standardized threshold. The PRS and Influence latent variables were marginally correlated ($r = 0.01, p = 0.08$).

**Measurement Invariance**

*Positive engagement.* Configural measurement invariance was first tested on the positive engagement latent variables at 3 and 9 months (see Analysis Plan for a detailed description). The unconstrained model fit the data well; ($\chi^2(13) = 9.60, p = 0.73; \text{RMSEA} = 0.00; \text{CFI} = 1.00$). Next, metric invariance was tested by constraining the factor loadings (means) of each 3 month latent variable indicator with its 9 month counterpart. The constrained model provided excellent fit to the data; ($\chi^2(16) = 7.58, p = 0.96; \text{RMSEA} = 0.00; \text{CFI} = 1.00$). The $\chi^2$ difference test was used to compare the fit of the second model to the first; there was no significant loss in model fit, confirming metric invariance.

*Warmth and responsiveness.* The 3 and 9 month warmth and responsiveness latent variables were tested for configural measurement invariance. First, the model containing only the survey items was tested. This model provided excellent fit to the
data; ($\chi^2(5) = 3.16, p = 0.68; \text{RMSEA} = 0.00; \text{CFI} = 1.00$. Next, factor loadings were constrained to test for metric invariance; the model fit the data well ($\chi^2(7) = 3.85, p = 0.80; \text{RMSEA} = 0.00; \text{CFI} = 1.00$) and there was no significant loss in model fit, confirming metric invariance. Following this, the model containing only the observed measures of warmth was tested for configural invariance. This model fit adequately ($\chi^2(5) = 11.51, p = 0.04; \text{RMSEA} = 0.09; \text{CFI} = 0.96$). Next, factor loadings were constrained to test for metric invariance; there was no significant loss in model fit ($\chi^2(7) = 14.04, p = 0.05; \text{RMSEA} = 0.08; \text{CFI} = 0.96$), confirming metric invariance over time.

**Control.** Measurement invariance was not tested for the control measure due to the inability to fit similar (one-factor) models of control at each assessment.

**Confirmatory Factor Analysis**

To assess the validity of the most recent multidimensional conceptualization of father involvement in married families using multiple methods, CFAs were tested at 3 and 9 months. Latent variables that were constructed above representing fathers' involvement in positive engagement, warmth and responsiveness, and control were intercorrelated to test the internal consistency of the revised theoretical construct.

**3 Months.** At 3 months, a four-factor model representing fathers' positive engagement, warmth and responsiveness (survey and observational) and control was tested. The initial theorized model fit the data adequately; ($\chi^2(263) = 364.92, p = 0.00$, RMSEA = .05, CFI = .90). Modification indices were suggested, however they were neither theoretically nor statistically sound. Latent factors representing the involvement domains were significantly intercorrelated with the exception of the observed warmth factor (Survey Warmth and Control $r = 0.43, p = 0.00$; Survey Warmth and Positive
Engagement factor $r = 0.39, p = 0.00$; Control and Positive Engagement factor $r = 0.52, p = 0.00$). The observed warmth factor was not significantly correlated with any other involvement factor. All factor loadings were significant and above the 0.30 threshold with the exception of loadings for fathers' observed Negative Regard ($\beta = -0.26$) and influence over major ($\beta = 0.26$) and healthcare decisions ($\beta = 0.25$). Factor loadings for the observed warmth items ranged from $\beta = -0.26$ to $\beta = 0.78$. Factor loadings for the survey warmth items ranged from $\beta = 0.53$ to $\beta = 0.77$. PRS scale items loaded on the latent control factor ranging from $\beta = 0.37$ to $\beta = 0.67$, and the Influence scale items loaded onto the latent control factor ranging from $\beta = 0.25$ to $\beta = 0.31$. Survey and time diary items representing fathers' positive engagement loaded onto the latent positive engagement factor ranging from $\beta = 0.34$ to $\beta = 0.53$.

Because the observed warmth and responsiveness factor was not significantly intercorrelated, and because other observed father involvement items were already removed from the analysis, a second CFA containing only the three latent factors, a model that was more closely aligned with the theoretical model, was tested. This model also fit adequately ($\chi^2(200) = 305.23, p = 0.00$, RMSEA = 0.06, CFI = 0.89) and all factor loadings were significant. Factors representing the involvement domains were significantly intercorrelated (Figure 2). Factor loadings for the warmth and responsiveness items ranged from $\beta = 0.54$ to $\beta = 0.76$. Items from the PRS scale loaded onto the control latent factor ranging from $\beta = 0.37$ to $\beta = 0.67$, and items from the Influence Over Child Related Decisions scale loaded onto the control latent factor ranging from $\beta = 0.25$ to $\beta = 0.40$. Positive engagement items loaded on to the factor ranging from $\beta = 0.40$ to $\beta = 0.52$. 
Finally, a second-order CFA was tested to determine whether the three involvement domains could be linked with an overarching "involvement" construct. This model did not converge, thus an additional model whereby each item was loaded onto a single factor was constructed. Model fit was adequate ($\chi^2(203) = 374.06, p = 0.82$, RMSEA = 0.07, CFI = 0.82) and modifications were suggested. Final model fit was adequate ($\chi^2(202) = 343.12, p = 0.00$, RMSEA = 0.07, CFI = 0.85) and all factor loadings were significant with the exception of fathers' reports of the frequency of childcare, which was marginal. Moreover, factor loadings for several items were at or below the standardized threshold: reports of how often engaged $\beta = 0.27$, time diary workday engagement $\beta = 0.29$, frequency reports of childcare $\beta = 0.19$, influence of major $\beta = 0.26$ and healthcare $\beta = 0.26$ decisions, think about baby $\beta = 0.30$, think baby is fun $\beta = 0.30$). The slightly worse model fit coupled with greater number of insignificant and weak factor loadings suggests that father involvement at 3 months was best captured through the use of multidimensional measures.

9 Months. Next, the 9 month involvement measures were tested using a five-factor CFA, representing fathers' involvement in positive engagement, warmth and responsiveness (survey and observational), control (influence over child-related decisions measure), and indirect care (PRS), based on results from the latent variable measurement models reported above. The initial five-factor model did not converge, likely due to sample size constraints. As with the 3 month data, a large, single-factor model was constructed by loading each item onto the single latent factor at 9 months; this model also did not converge, suggesting either sample size issues or a real lack of fit for the unidimensional model.
Because the observational data in the warmth and responsiveness domain proved difficult throughout the previous analyses, a four-factor model was tested excluding the observational data, as was also done at 3 months. The initial four-factor model fit the data well ($\chi^2(200) = 238.26, p = 0.03$, RMSEA = 0.04, CFI = 0.95) and all factor loadings were significant and all loadings were above the standardized cutoff. The warmth and responsiveness factor was not significantly correlated with the control or positive engagement factors, and the indirect care factor was not correlated with the positive engagement factor. Correlations between latent factors are listed in Figure 3. Factor loadings for the warmth and responsiveness domain ranged from $\beta = 0.47$ to $\beta = 0.65$. Loadings for the indirect care domain ranged from $\beta = 0.70$ and $\beta = 0.92$. Items representing fathers' control loaded onto the factor ranging from $\beta = 0.35$ to $\beta = 0.68$. Positive engagement items loaded onto the latent factor ranging from $\beta = 0.39$ to $\beta = 0.64$.

As with the 3 month data, a second-order CFA, whereby each of the four latent factors was loaded onto a single latent construct was tested but did not converge. Next, a single-order factor was tested by loading each item individually onto a single first-order latent factor. The initial model fit the data poorly; $\chi^2(206) = 531.63, p = 0.00$, RMSEA = 0.11, CFI = 0.56. Modification indices were suggested, but followed either atheoretical patterns, or patterns that would have further clustered items together by the theorized father involvement domains. Further, many of the items were not initially significantly associated with the single-order latent factor (e.g., cuddle, think baby is fun, take child to doctor, buy clothes, buy toys, take care of child when ill, select clothes, stay home with child when sick, select care arrangements, get up with child at night, number of days per
week positive engagement, time diary workday positive engagement, how often father engaged). Thus, for these reasons it is reasonable to conclude that, as with the earlier time point, father involvement was best measured using multiple dimensions.

Discussion

This study was the first to test Pleck's (2010) revised model of father involvement in married families at a critical turning point in the life course, the transition to parenthood. The sample of married, dual-earner fathers selected for this study represents a contemporary group of men who are challenged by current cultural conceptions of fatherhood (e.g., Deutch, 2001) to become actively involved in their children's daily lives, ranging from changing diapers, to comforting, and even taking responsibility for health- or care-related tasks. This sample of fathers was also assessed using a multi-method, approach, a gold-standard in research that reduces overall measurement bias - a frequent issue in self-report data (Juster & Stafford, 1991; Kan & Pudney, 2008; Press & Townsley, 1998). Overall, there was strong support for Pleck's (2010) revised conceptualization of father involvement; latent factors for fathers' positive engagement, warmth and responsiveness, control, and indirect care (9 months only) were identified. Further, all factors at 3 months, and four out of six factors at 9 months, were significantly or marginally (9 months only) correlated. This is in line with previous findings that suggest factors are often, though not always, significantly intercorrelated (Pleck, 2010).

Importantly, the longitudinal nature of this study provided the opportunity to test Pleck's (2010) conceptualization during two time points that represent significant changes in the development and capabilities of infants, when they were just 3 and 9 months old. These first-time fathers were experiencing the rapid development of infants from laying
and cooing to sitting and crawling, and even walking. Over these first few months, fathers established routines with their children, playing with them, caring for them, and expressing their love and affection. Both initial measurement models and tests of measurement invariance over time showed that there seemed to be little change over time in the constructs of positive engagement and survey-based warmth and responsiveness. However, there was little similarity in the control domain or in the observed measures (discussed in detail below) over time. At 3 months, the survey items representing control were representative of a single-latent factor, whereas at the 9 month time point, the scales were clearly distinct from each other. At first glance, this finding may indicate that the scale used to measure fathers' influence over child-related decisions at 9 months was more indicative of a subdomain of Pleck's (2010) involvement model, termed indirect care. According to Pleck (2010), this domain represents the father's power and influence over the child's well-being, and is separate from fathers' actual participation in this type of child-related care and management. The Influence Over Child-Related Decisions measure was not distinct from the additional survey control measure at the earlier time point, potentially indicating that father control differentiates over time from a set of ill-defined activities to more clearly defined standards and responsibilities. Though Pleck (2010) does not speculate on the topic, these findings suggest that the "subdomain" of indirect care may arise out of the earlier control domain. As fathers begin to form bonds with young children through their positive engagement and warmth (Grossman et al., 2002), they may also begin to recognize their child's additional needs for care and desire to exert more power and authority over child-related decisions. This pattern may be especially prominent in dual-earner families given the
need for fathers to increasingly participate in solo care (Roxburgh, 2012; Wang & Bianchi, 2009).

From a developmental standpoint, differentiation would make adaptive sense. Fathers who are able to shift and shape their involvement based on the needs of the individual child are likely those who are most successful at maintaining strong relationships with them. As children grow, fathers' engagement may differentiate to include time spent in cognitively-stimulating activities, time spent practicing an extracurricular, and time spent in leisure. Further, as children age, a father's positive engagement may differentiate depending on the child's gender; Leavell, Tamis-LeMonda, Ruble, Zosuls, & Cabrera (2011) found gendered patterns of engagement based on literacy and physical activity when children were as young as 2 years old. This study did not consider the potential for father involvement to be constructed differently based on the child gender, but given that child gender is a significant determinant of father involvement (Belsky, 1984; Ihinger-Tallman, Pasley, & Buehler, 1993) it may be possible that the domains, their differentiation (if any), and the intercorrelations between them, are shaped by child gender, particularly as children age (Hill & Lynch, 1983; McKinney & Renk, 2008).

It is less clear whether differentiation over time would take place in the warmth and responsiveness domain. On the one hand, as children become increasingly independent in adolescence, a fathers' warmth and responsiveness may become more distinct, representing unique aspects of quality parenting that may not always coincide with each other. For instance, as authority figures for adolescents (see Laursen, Wilder, Noack, & Williams, 2000), fathers may be less inclined to display behaviors that are
responsive to the adolescents' requests. On the other hand, fathers spend little time with adolescent children (Larson & Richards, 1991) and may be less in tune to their teenager's needs. If present, both situations may result in a weaker correlation between measures of warmth and measures of responsiveness, potentially resulting in differentiation. These potentials should be tested.

On a less positive note, the emergence of the subdomain at 9 months may also be indicative of the general transition to a more traditional (gendered) division of labor among new parents (Katz-Wise, Priess, & Hyde, 2010). At first, the infant's significant reliance on the mother, and the mother's familiarity with the infant's needs, may limit the degree to which fathers can effectively exert their influence over child-related decisions separately from their own performance of activities that are closely related to domains of influence measured using the Influence Over Child-Related Decisions scale (i.e., medical and child-related care). Yet, over time, the movement toward a more traditional division of labor (Katz-Wise et al., 2010) and fathers' greater understanding of children's needs may have given fathers greater power over negotiating these decisions with the mother regardless of whether or not he actually was highly involved in those aspects of his child's care.

A major strength of this study was the use of multiple methods to measure involvement in each fathering domain. Given Pleck's (2010) emphasis on the qualitative aspects of a father's involvement, such as his warmth and responsiveness and authoritative control, this study incorporated observational measures of videotaped father-infant interactions. Although it was initially expected that these qualitative measures may serve to strengthen latent involvement factors, this was not the case.
Instead, issues with the observed measures arose almost immediately at the correlation stage; there were no significant correlations between the survey or time diary measures and the observed measures. This proved to be problematic throughout the analysis, and eventually the observed variables were removed.

There may be several reasons for this. First, low correlation between the survey and time diary and observed measures may indicate that observed interactions measure an element of the parent-child relationship that is in no way related to the frequency of interaction/activities performed (i.e., survey/time diary positive engagement/control) or the delight of being with the child (i.e., survey warmth and responsiveness). Rather, the observed rating may be more indicative of fathers' understanding of infant capabilities or knowledge of development. Indeed, in coding father-infant interactions, researchers frequently noted the disconnect between fathers' requests of children and their developmental capabilities.

Second, the observed measures of father involvement may have represented a single "quality" latent factor. This potential was tested several ways (not shown); using (1) two latent factors corresponding to warmth and responsiveness (sensitivity, positive regard, negative regard) and control (intrusiveness, detachment) and (2) one latent factor corresponding to observed quality (all observed measures). Unfortunately, only the 3 month observed measures produced an acceptable model fit, and only using the two-factor version. When entered into the larger CFA, the observed latent factors were not significantly correlated with any of the other factors, with the exception of fathers' positive engagement and observed control (intrusiveness, detachment). This provides some evidence to suggest that the observed control measure may capture aspects of
fathers' authoritative control that are absent in frequency or time-based measures, but that are related to the time fathers spend directly interacting with children. Though unexpected, this is not surprising given that positive engagement time gives fathers opportunities to develop less intrusive and detached interactions with children by observing and learning infants' cues (Anderson, 1996). Unfortunately, these conclusions are only speculative, given the difficulties replicating these results at the 9 month time point.

Though not used, findings regarding the observational data are instructive, and communicate to researchers the importance of multiple measurement methods. In this case, the survey and time diary measures were more similar in their measurement of father involvement, namely the activities fathers did with or for the child. In contrast, the observed measures may be more indicative of the overall synchrony (Feldman, 2003) in the father-child relationship, and less indicative of involvement measured primarily in terms of time. Future research may consider additional measures or ways to assess qualitative aspects of the father-child relationship using survey measures to test this hypothesis.

Limitations

This study used sophisticated statistical techniques, multiple measures, and multiple methods to construct and test current father involvement theory in a sample of married, dual-earner parents. Despite its numerous strengths, several limitations are important to note. First, the sample of fathers is highly selective and not representative of the general population of new parents in terms of age, (Guzzo & Payne, 2014), race, and education (Livingston & Cohn, 2010). These relatively high-resource fathers may have
had more opportunities to invest in multiple aspects of their children's lives than other fathers who may have greater barriers to their involvement, such as non-resident or incarcerated fathers.

Second, this study was relatively data-driven. Although theory was used as a guideline for all analyses, factors such as inadequate correlation between observed, survey, and time diary methods, item-level covariances, and inadequate dissimilarity in the model over time significantly contributed to the study's findings. Ideally, a multi-method, multi-domain approach should yield strong and robust findings, but this study demonstrates that greater complexity does not always produce the desired result. These measures of involvement were chosen due to convenience (i.e., they were available), rather than because they were developed in tandem and specifically for assessing father involvement in each domain. In fact, only one survey measure, the Parental Responsibility Scale (PRS; McBride & Mills, 1993), was developed specifically for measuring father involvement. More appropriate investigations should consider retaining the multi-dimensional, multi-method approach while adopting more congruent measures.

Finally, though the evidence strongly points to convergence with Pleck's (2010) revised father involvement theory, identical models were unable to be constructed over time. However, that the single-factor models of father involvement did not adequately fit current data at either time point continues to underscore prior research that stresses the importance of multidimensional measures of father involvement (e.g., Schoppe-Sullivan et al., 2004). Future research should recognize the potential for global involvement measures to "miss out" on the differentiated, highly individualized involvement that is
co-constructed with father and child over time by utilizing developmentally and contextually sensitive involvement measures.

Conclusions

In sum, this study demonstrates the potential utility of recent father involvement theory (Pleck, 2010) for describing father involvement in married, dual-earner, first-time parent families, as well as the challenges faced by researchers who strive to incorporate multiple measurement methods. Importantly, this study suggests the differentiation of early control father involvement into greater distinction between authority and management-related activities. At minimum, these findings point to the importance of a domain-specific, developmental approach to studying father involvement that considers the ways in which fathers' involvement must shift to accommodate the developmental shifts of both the father and child. This opens the door for future theory development, building upon Pleck's (2010) conceptualization and explicating how fathers' own and their children's development shapes the nature of the father involvement domains and their intercorrelations over time.
Figure 1

*Conceptual Model of Pleck (2010) Father Involvement Conceptualization*

+ Scale names only shown in the interest of space.
Figure 2

3 Month Confirmatory Factor Analysis - Three Factor Model (n = 152)

Note. $\chi^2(200) = 305.23, p = 0.000$, RMSEA = .06, CFI = .89. *** $p < 0.001$. Standardized estimates shown. + Scale names only shown in the interest of space. Individual scale items were used in the analysis.
Figure 3

9 Month Confirmatory Factor Analysis – Four-Factor Model (n = 134)

Note. $\chi^2(200)$ 238.23, $p = 0.03$, RMSEA = .04, CFI = .95. $^\wedge p < 0.10$, $^* p < 0.05$, $** p < 0.01$, $*** p < 0.001$. Standardized estimates shown. $^+$Scale names only shown in the interest of space. Individual scale items were used in the analysis.
Chapter 3: The (De)Institutionalized Father

The U.S. has seen significant family change in recent decades; the majority of mothers with young children work (Bianchi, 2011), women and men are delaying marriage (Cruz, 2013) but not necessarily parenthood (Arroyo, Payne, Brown, & Manning, 2012), and the majority of nonmarital births now occur to romantically involved, cohabiting couples (Payne, Manning, & Brown, 2012). Once concentrated among the educated, cohabiting couples with children are now primarily low-income and face significant financial barriers to marriage (Gibson-Davis, Edin, & McLanahan, 2005; Waller & Peters, 2008) despite their high hopes (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Some scholars have suggested that these demographic shifts are evidence of the deinstitutionalization of marriage, marked by a weakening of social norms that define behavior within marriage (Cherlin, 2010). Yet others have argued that the institution of marriage is still strong (Lauer & Yodanis, 2010), as evidenced by the fact that nearly all adults in the U.S. will marry in their lifetime (Cherlin, 2010).

In part due to increasing family diversity, social expectations regarding the role of the father in the family have changed. Today’s fathers are encouraged to be actively involved, engaging in diverse activities and exerting influence over child-related needs and management (Gerson, 2009). Contemporary ideals of father as co-parent, contributing equally to child-rearing with mothers (Deutsch, 2001), now govern the modern parenting experience and have placed an emphasis on the time fathers spend with
children. For the most part, fathers have heeded calls for increased involvement; fathers spend more time engaging with, caring for, and managing their children’s lives now than ever before (Bianchi, Robinson, & Milkie, 2006).

The purpose of this study is threefold. First, this study engages the current debate on the deinstitutionalization of marriage by comparing the involvement of low-income, stably married and cohabiting fathers along three theoretically important fathering dimensions. Second, this study provides the first test of recently revised theory on father involvement and tests for differences in the structure and composition of father involvement across family context. Third, this study identifies groups of fathers based on the saliency of the fathering dimensions in an effort to highlight important variation in early fathering behaviors that is often overlooked when examining mean differences. These goals are in an effort to provide measurement recommendations to researchers using the Fragile Families and Child Wellbeing dataset to investigate questions related to father involvement, as well as to researchers who are concerned about measurement issues that may arise when applying measures of father involvement to populations that differ from those in which the measures were developed.

Marriage and the Father

Father involvement among resident and nonresident fathers has been a major focus of family sociological empirical research for over 20 years. Concomitant demographic changes including the peak of the divorce rate in the 1980s and the rise in nonmarital fertility in the late 90s and throughout the 2000s led family sociologists to expand the literature on father involvement by comparing father involvement in resident and nonresident contexts. Sociological perspectives on father involvement suggest that
involvement is contingent upon a "package deal" (Townsend, 2002), or romantic relationship with the mother. Historically the package included marriage, and unmarried fathers were primarily nonresident and often minimally involved. Yet, today's unmarried fathers have changed; nearly 60% of nonmarital births occur to cohabiting fathers who share a residence with their romantic partner and shared child (Payne et al., 2012).

A sociological perspective on marriage suggests that the institution benefits married couples through legal protections, behavioral norms, and higher social status not available to unmarried couples (Nock, 1995). The public commitment to marriage and social expectations for men's behaviors provides the scaffolding necessary for the development of adult masculinity, marking marriage as a turning point in the life course for men (Nock, 1998). In the context of marriage, a father's paternity is established through birth alone; his children are dependents and his social role is defined by his status as a husband and father. Yet, the institution of marriage may also act as a barrier to his involvement with children; Parenthood often cements traditional gender role divisions within the home (Sanchez & Thomson, 1997), leaving mothers the primary care givers of children and fathers the main financial providers.

Compared to their married counterparts, cohabiting couples remain more committed to the idea of relationship equality (Nock, 1998). Cohabiting partners express an interest in sharing finances and household chores, although their actual performance of these chores may fall more closely along gendered lines (Brines & Joyner, 1999). This reality may reflect the couples’ desire to imitate marriage despite their inability to attain the now idealized capstone of the adult life course (Cherlin, 2010; Lauer & Yodanis, 2010). With increased social policy focusing on the wellbeing of children, fewer legal
distinctions now exist between married and unmarried parents (Applegate, Schwartz, & Holtzworth-Munroe, 2012), yet the parenting roles of men within cohabitating unions remain ill-defined. Thus, unmarried parents may enjoy greater flexibility in their parenting roles enabled by a lack of institutionalized parenting norms within the context of cohabitation (e.g., Manning & Brown, 2012), potentially encouraging unmarried fathers to become more involved with their children and in more diverse ways.

**Father Involvement**

In his revised father involvement model, (Pleck, 2010) outlined three primary involvement components: positive engagement, warmth and responsiveness, and control. Much prior research considered all the time fathers spent with their children as engagement, regardless of what fathers were doing with children (Pleck, 2010). Hence, the positive engagement domain includes only activities that aim to promote healthy child development. Pleck (2010) also documented increasing research focused on the quality, rather than the quantity, of father-child interactions and their importance to children's socioemotional development (Carlson, 2006; Hofferth, 2003). In response, he emphasized the importance of fathers' warmth and responsiveness by considering this aspect of involvement separately from engagement. This study is unable to capture fathers' responsiveness, and instead focuses primarily on warmth. Finally, Pleck (2010) noted the importance of a father's involvement and influence in child-related management tasks, labeling the domain control. Often investigated as “responsibility”, a father's knowledge of the child's whereabouts (Carlson, 2006; Hofferth, 2003), authority over child-related decisions (Pleck & Hofferth, 2008), and availability to watch children or
take them places they need to go (Kotila & Kamp Dush, 2012), are typical markers of this component.

In recent work, Manning and Brown (2012) find few differences in father involvement across union type (i.e. marriage or cohabitation); a main differentiating factor between married and cohabiting fathers was the time they spent reading with young children. These findings echo previous work that indicates similar time investments, displays of warmth, and responsibility for children when biological fathers share a residence with the child (e.g., Hofferth, 2006; Hofferth & Anderson, 2003).

However, not all evidence points toward similar involvement. Using data from the Three Cities Study, a study of low-income families, Angel et al. (2009) found that cohabiting fathers spent less time with children than married fathers, and mothers reported that cohabiting fathers took on less responsibility for managing the child's daily life. Given that inconsistent findings come from low-income, high risk samples, it is important to study questions of involvement similarity among economically vulnerable married and cohabiting couples.

The Present Study

This project advances sociological theory on father involvement by investigating early involvement among married and continuously cohabiting fathers in three ways: 1) comparing mean differences in involvement domains across fathering contexts, 2) testing the validity of the most recent conceptualization of father involvement across fathering contexts, and 3) identifying groups of fathers based on the saliency of the involvement domains. Today's fathers are exposed to a social context of increased acceptability of cohabitation, encouragement of involved fathering, and an emphasis on egalitarian
relationships. Cherlin (2010) suggests that the convergence in norms governing married and cohabiting unions, or the deinstitutionalization of marriage, portends greater similarities than differences in involvement between married and cohabiting fathers. Lauer and Yodanis (2010) contend that these changes reflect a "new" institution, and that union type will continue to distinguish fathering behaviors.

Although existing evidence indicates some similarity in father involvement across family context (e.g., Manning & Brown, 2012; Hofferth, 2006; Hofferth & Anderson, 2003), there is some indication that these differences may be more pronounced in low-income families (Angel et al., 2009). The Fragile Families and Child Wellbeing Study, a study of primarily low-income families, was used to test the validity of recent father involvement theory in married and cohabiting families. Confirmatory factor analysis (Joreskog, 1969) assessed whether the involvement dimensions (i.e. positive engagement, warmth, and control) were part of a larger "involvement" construct among all fathers. Structural equation modeling (SEM) and multiple groups analysis tested for differences in mean levels of father involvement, as well as in the composition of involvement domains, across fathering context. Finally, cluster analysis (Anderberg, 1973) validated the measures and identified typologies of fathers based on the saliency of the involvement domains.

Data and Method

Data come from the Fragile Families and Child Wellbeing Study, a nationally representative, panel study of births to unmarried (N = 3712) and married women (N = 1186) in large U.S. cities (Reichman et al., 2001). Parents were interviewed separately after their child's birth and re-interviewed when children were 1, 3, 5, and 9 years of age.
At Years 5 and 9, some involvement items that assessed fathers' positive engagement and warmth were eliminated or reworded, thus impeding the ability to test a similar three-factor model at each Year; data from birth through Year 3 were used. The sample included fathers who were either married or cohabiting from the child's birth until Year 3 ($n = 1330; 880$ married, 450 cohabiting). Demographic characteristics and mean comparisons of variables of interest are listed in Table 4.

**Measures**

*Positive engagement.* At each Year, fathers reported the number of days per week (0-7 days) they were involved in the following developmentally appropriate activities: 1) playing games, 2) singing, 3) reading, 4) telling stories, and 5) playing inside. Variations of this measure have been used extensively in investigations of father involvement using Fragile Families data (e.g., Carlson & McLanahan, 2006; Kotila & Kamp Dush, 2013; Kotila & Kamp Dush, 2012).

*Warmth.* At each Year, fathers reported the number of days per week (0-7 days) they hugged or showed physical affection to their child. At Year 3, two additional items were included; "...tell child you, 1) love and 2) appreciate them". Items from this measure come from the Child Development Supplement to the Panel Study of Income Dynamics study and have been used previously to measure warmth (e.g., Hofferth, Davis-Kean, Davis, & Finkelstein, 1999).

*Control.* Fathers were not asked questions about control, thus mothers' reports were used as a proxy. Mothers rated how often ($1 = \text{Rarely} - 4 = \text{Always}$) fathers 1) took the child places like the doctor or daycare, 2) were available to watch the child for a few hours (ranged from $2 = \text{Sometimes} - 4 = \text{Always}$ at Year 1), and 3) looked after the child
when mothers were busy. This measure has been previously used to investigate fathers' indirect care involvement, an aspect of control (Kotila & Kamp Dush, 2012; Kotila & Kamp Dush, 2013).

*Time-invariant controls.* Father age, race (*White, Black, Hispanic, Other*), and education (*Less than High School, High School, Some College, College Grad*) were included as dichotomous time-invariant controls, measured from birth.

*Time-variant controls.* Father employment (*Employed/Unemployed*) was included as a dichotomous time-variant control, measured each Year.

**Analysis Plan**

Latent variables of each involvement domain (e.g., positive engagement, warmth, and control), were constructed using available items and Structural Equation Modeling (SEM). The conceptual model is pictured in Figure 4. A good fitting model with significant factor loadings and standardized coefficients greater than 0.30 (Kline, 2014) provides support for the structural validity of Pleck's (2010) revised three-factor model. Next, a single-factor model was tested, where all item-level indicators were loaded onto one factor. A poor fitting single-factor model provides further support for the three-factor, multidimensional model.

To test whether mean levels of involvement, and the theorized three-factor structure, varied across fathering contexts, a multiple groups approach was used. The full (unconstrained) model containing all fathers was used as the baseline model for testing group comparisons. The unconstrained model represents configural (i.e. structural) invariance, in that it allows for factor intercepts and loadings to vary across groups but retains the three-factor structure and configuration. Next, the model was fit separately for
each group (i.e. married/cohabiting) to ensure adequate initial fit across fathering contexts. Constraints were independently applied to each factor loading and the model was re-estimated to obtain a comparative $\chi^2$ value. A $\chi^2$ difference test was used to evaluate whether the applied constraint was valid. A decrease in model fit, indicated by a significant increase in the $\chi^2$ value, suggested the applied constraints were invalid. Invalid constraints were removed prior to testing additional constraints. Constraints on factor loadings represent weak factorial invariance, which suggests that each item contributes similar weight to the overall involvement factor (i.e. domain) across fathering contexts; i.e., the latent construct is similar for married and cohabiting fathers.

Finally, constraints were applied to item intercepts if factor loadings were found to be invariant. When intercepts are equivalent across groups, group differences in item means can be attributed to group differences in the latent factor. Strong group invariance is achieved when all factor loadings and intercepts are invariant across groups. At minimum, configural invariance must be supported to suggest similarities in involvement across fathering context. Partial invariance may be achieved if most factors and intercepts are invariant across groups (Byrne, Shavelson, & Muthén, 1989). In group comparisons of the three-factor model, factor covariances were also set equivalent to test for similarity in the configuration of father involvement across fathering contexts.

Although no longitudinal analyses were conducted, measurement invariance was assessed on the positive engagement and control domains following Bollen and Hoyle (1990) to ensure theoretical consistency was retained across Years. Due to the longitudinal nature of the study, the significant developmental growth of children between Years 1 and 3, and the expected co-occurring increase in father involvement
(Lang et al., 2014), only metric invariance was assessed. Metric invariance is a form of weak factorial invariance and implies that the same latent construct was measured across Years.

All analyses were performed using Stata12. Full Information Missing Maximum Likelihood (FIML), which estimates missing data for item nonresponse or attrition, was used for SEM and CFA models. This method has been identified as a best practice for handling missing data that does not exceed 50% of the sample and provides considerable advantages over listwise deletion (Johnson & Young, 2011). $\chi^2$, the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) were used to evaluate model fit. The $\chi^2$ fit statistic should be nonsignificant, CFI values should be above .90 (Hu & Bentler, 1999), and RMSEA values should be below .08 (Browne, Cudeck, & Bollen, 1993) for acceptable model fit. Because the $\chi^2$ statistic is sensitive to degrees of freedom and sample size, RMSEA and CFI were weighted more heavily in decisions pertaining to model fit.

Results

Sample Characteristics

Demographic characteristics and mean comparisons on father involvement items are listed in Table 5. Compared to married fathers, cohabiting fathers were younger, less educated, a greater proportion were unemployed, and a greater share were minorities. There were few differences between married and cohabiting fathers on each indicator of involvement. At Year 1, married fathers reported more frequent reading and cohabiting fathers reported taking children to the doctor and daycare more often. At Year 3, married fathers reported more frequent reading and cohabiting fathers reported playing games,
telling children they loved them, and expressing appreciation more frequently. Married fathers’ greater involvement in reading at both Years is likely a function of their higher education.

**Positive Engagement Indicator**

Due to space limitations, path coefficients obtained from estimating each latent variable prior to fitting the three-factor model are not presented, but are available from the author.

**Year 1.** A latent indicator of positive engagement was constructed for all fathers using the five positive engagement items (see Figure 4). Time invariant and variant controls were loaded onto the latent construct to account for the significant demographic differences between married and cohabiting fathers. The baseline model adequately fit the data; $\chi^2 (37) = 204.32; p = 0.000; \text{RMSEA} = 0.06; \text{CFI} = 0.87$. Although modification indices were suggested (error correlations between reading and telling stories and playing games and legos), the most parsimonious model was opted for in favor of the constrained model to test for group differences. All factor loadings were significant and above the 0.30 standardized cutoff. Factor scores, which represent the average relative standing on the latent factor (DiStefano, Zhu, & Mindrila, 2009) were computed separately for married and cohabiting fathers using the *predict* post-estimation command in Stata12. Factor scores typically range from -3 to +3, and higher values indicate greater relative standing on the latent indicator, or in this case greater positive engagement. *T*-tests were conducted and significant differences were found (Married Mean = -0.28; Cohabiting Mean = -0.46; $t = -2.56; p = 0.01$), suggesting that, on average, married fathers were more engaged than cohabiting fathers at Year 1.
Multiple groups analysis was used to test for significant differences in the composition of the positive engagement construct across fathering contexts. First, the above model was fit separately for married and cohabiting fathers. Initial analyses indicated that the positive engagement latent indicator adequately fit for both groups, although the model fit was slightly worse for married fathers. Next, the unconditional group model was tested; $\chi^2 (74) = 243.641; p = 0.000; \text{RMSEA} = 0.059; \text{CFI} = 0.866$. Factor loadings for each item were individually constrained and $\chi^2$ difference tests were conducted; factor loadings were equivalent across groups. Finally, intercepts were constrained and difference tests were conducted; no significant loss in model fit resulted from constraining item intercepts. The final group model fit adequately; $\chi^2 (83) = 256.07; p = 0.00; \text{RMSEA} = 0.06; \text{CFI} = 0.87$, and all standardized factor loadings were above the 0.30 threshold. Thus, the composition of the positive engagement construct, at least when measured using these items, is similar across fathering contexts. Modification indices were suggested, but the most parsimonious model was retained.

Year 3. The positive engagement items and time-variant and invariant controls were used to construct a latent indicator of positive engagement for all fathers at Year 3. The full model fit the data well and all factor loadings were significant and above 0.30; $\chi^2 (37) = 193.34; p = 0.00; \text{RMSEA} = 0.06; \text{CFI} = 0.91$. Modification indices were suggested but the simplest model was retained. Factor scores were computed separately for married and cohabiting fathers and compared. There were no significant differences in the average relative rankings of married and cohabiting fathers on the latent engagement indicator, suggesting similar involvement across contexts (Married Mean = -0.31; Cohabiting Mean = -0.39; $t = -1.15; p = 0.25$).
Next, multiple groups analysis was used to test for compositional differences in the positive engagement domain across fathering contexts. Separate models were first tested for married and cohabiting fathers; model fit was acceptable for each group and factor loadings were significant and above the 0.30 threshold. The unconstrained group model was tested to establish a baseline fit; $\chi^2 (74) = 207.09; p = 0.00; \text{RMSEA} = 0.05; \text{CFI} = 0.92$. Factor loadings for each item were individually constrained and model fit was retested; loadings for telling stories and reading were not equivalent across groups. Intercepts were then constrained for items with equivalent factor loadings and model fit was retested. The final group model fit the data well; $\chi^2 (76) = 208.87; p = 0.00; \text{RMSEA} = 0.05; \text{CFI} = 0.92$. Differences in factor loadings across fathering contexts suggests that reading and telling stories hold different weight for married and cohabiting fathers' positive engagement involvement when children are 3.

Control Indicator

Year 1. Items representing fathers' control, as well as time-variant and invariant controls, were used to construct a latent indicator for all fathers. The baseline model fit well; $\chi^2 (16) = 62.09; \text{RMSEA} = 0.05; \text{CFI} = 0.92$. All factor loadings were significant and above the 0.30 threshold. Modification indices suggested correlating errors between fathers' availability to watch children and to look after them, however the uncorrelated model was opted for in favor of the more complex model. Factor scores were computed separately for each group and compared. No significant differences were found between married and cohabiting fathers' control involvement (Married Mean = -0.10; Cohabiting Mean = -0.07; $t = -1.20; p = 0.23$).
Next, tests for differences in the composition of fathers' control were conducted using multiple groups analysis. First, the model above was fit separately for married and cohabiting fathers; model fit was excellent for each group and factor loadings were above the 0.30 threshold. Next, the unconditional group model was fit to establish a baseline for testing invariance of factor loadings and intercepts. The unconditional group model fit well; $\chi^2 (32) = 78.17; \text{RMSEA} = 0.05; \text{CFI} = 0.92$. Next, factor loadings for each item were individually constrained and model fit was retested. Final model fit was excellent; $\chi^2 (33) = 78.23; \text{RMSEA} = 0.05; \text{CFI} = 0.93$ and all standardized loadings were above 0.30.

Factor loadings for taking the child to the doctor or sitter were not equivalent across groups. Differences in factor loadings between married and cohabiting fathers suggest that taking children to the daycare or doctor does not contribute to fathers' control involvement in the same ways across groups.

Year 3. Items measuring fathers' control, along with time-variant and invariant controls, were used to construct a latent indicator of control at Year 3. The model with all fathers adequately fit the data; $\chi^2 (16) = 101.99; \text{RMSEA} = 0.06; \text{CFI} = 0.84$, and all factor loadings were significant and above the 0.30 threshold. Factor scores were computed for married and cohabiting fathers, and $t$-tests were used to compare means. There were no significant differences in fathers' control involvement across fathering contexts (Married Mean = 0.02; Cohabiting Mean = 0.01; $t = 0.68; p = 0.50$).

Next, multiple groups analysis was used to test for group differences in the control indicator. Models were fit separately for married and cohabiting fathers. The fit for married fathers was poor ($\chi^2 (16) = 85.27; \text{RMSEA} = 0.07; \text{CFI} = 0.788$), and although modification indices were suggested to increase model fit, the simplest model was kept
for married fathers in the group model. The baseline group model fit adequately; \( \chi^2 (32) = 129.76; \) RMSEA = 0.07; CFI = 0.83. Factor loadings for each item were independently constrained across groups and model fit was retested; all factor loading constraints were valid. Finally, item intercepts were constrained across groups and model fit was reevaluated. Intercepts were equivalent across groups, confirming the similarity of the composition of control involvement across fathering contexts.

*Warmth Indicator*

*Year 3.* The three warmth items and time-variant and invariant controls were used to construct a latent indicator of warmth for all fathers at Year 3. The initial model fit adequately; \( \chi^2 (16) = 44.82; \) RMSEA = 0.04; CFI = 0.85. All factor loadings were significant and above the 0.30 threshold. Modification indices were suggested, but the simplest model was retained. Factor scores were computed separately for married and cohabiting fathers and compared. Cohabiting fathers reported significantly more frequently displays of warmth than married fathers; (Married Mean = -0.20; Cohabiting Mean = -0.18; \( t = 2.35; \) \( p = 0.02 \)).

Multiple groups analysis was used to test for compositional differences in the warmth domain. First, the latent variable was fit separately for married and cohabiting fathers. Model fit was excellent for cohabiting fathers and adequate for married fathers, although the factor loading for cohabiting fathers' appreciation was below the 0.30 threshold (\( \beta = 0.24 \)). Next, the unconstrained group model was tested to establish a comparative baseline model; \( \chi^2 (32) = 70.45; \) RMSEA = 0.04; CFI = 0.83. Factor loadings were individually constrained and model fit was retested; fathers' appreciation was not equivalent across contexts. Next, intercepts for items with equivalent factor loadings
were constrained; these constraints were valid. The final group model fit the data adequately; $\chi^2 (33) = 60.16; p = 0.003; \text{RMSEA} = 0.04; \text{CFI} = 0.87$. All factor loadings were above the 0.30 threshold with the exception of the item representing cohabiting fathers' appreciation ($\beta = 0.28$). Differences between married and cohabiting fathers' factor loadings suggests that appreciation is a stronger contributor to married fathers' warmth, and that appreciation may not be the best indicator of warmth for cohabiting fathers.

Measurement Invariance

Positive Engagement Indicator

To test whether the positive engagement latent indicator was consistent over time, measurement invariance was assessed incrementally. First, configural invariance was assessed by fitting an unconstrained model containing the latent indicators of positive engagement at Years 1 and 3, with correlations specified between the same items at each Year (i.e. Year 1 playing games and Year 3 playing games), as well as between the latent variables. The initial model was an adequate fit; $\chi^2 (111) = 456.74; p = 0.00; \text{RMSEA} = 0.05; \text{CFI} = 0.90$, and all factor loadings were significant and above the 0.30 threshold. Next, factor loadings were constrained across Years and model fit was retested following each constraint. Factor loadings for telling stories, playing inside, and playing games were not equivalent across Years, suggesting these items shift in importance for fathers' engagement as children age. Final model fit was acceptable and all factor loadings were significant and above the 0.30 standardized cutoff; $\chi^2 (112) = 458.74; \text{RMSEA} = 0.05; \text{CFI} = 0.90$. Variance in factor loadings over time is not unexpected given the significant development children undergo as they age from infancy.
into later toddlerhood. Fathers' engagement in particular likely undergoes significant shifts in structure as children are increasingly capable of more complex activities. Strict invariance, where intercepts are constrained over time, was not tested due to expected increases in the level of fathers' involvement as children age.

Control Indicator

Configural measurement invariance tests were conducted on the latent control indicator for all fathers following the steps used to assess the positive engagement indicator (see above). The initial, unconstrained model, fit the data well; $\chi^2 (50) 187.87; \text{RMSEA} = 0.05; \text{CFI} = 0.91$. Next, factor loadings were constrained across Years and fit was reevaluated; mothers' ability to count on fathers to look after children while they were busy was not equivalent across Years. The final model fit was excellent and all factor loadings were above the 0.30 cutoff; $\chi^2 (51) 188.07; \text{RMSEA} = 0.05; \text{CFI} = 0.91$. Strict invariance (equivalence of intercepts) was not assessed due to the expectation that fathers would increase in their levels of involvement over time (e.g., Lang et al., 2014). Unlike expectations for shifts in fathers' positive engagement over time, similarity for fathers' control involvement is understandable. During children's early years, there may be a set of "typical" indirect care activities, whereas entrance into school and extracurricular activities may be an impetus that shifts fathers' control involvement toward a more complex structure.

CFA

Year 1

To test the validity of the proposed three factor model, latent indicators for fathers' positive engagement and control, and the available single observed indicator for
fathers' warmth, were correlated and CFA was conducted. Due to space limitations, only the final between-groups model is listed in Table 5. First, the three-factor model was tested for all fathers. Model fit was adequate ($\chi^2 (67) = 278.46; p = 0.00; \text{RMSEA} = 0.05; \text{CFI} = 0.89$) and all factor loadings were significant and above 0.30. The involvement domains were significantly correlated (Engagement and Warmth $r = 0.08, p < 0.05$; Control and Warmth $r = 0.09; p < 0.05$; Engagement and Control $r = 0.10; p < 0.05$). To test whether all items loaded onto a larger, single dimension of father involvement, a second CFA was conducted. The single-factor model fit the data poorly; $\chi^2 (83) = 839.75; p = 0.00; \text{RMSEA} = 0.05; \text{CFI} = 0.59$, and most factor loadings were well below the 0.30 threshold, providing further support for the three-factor model. Further, modification indices for the single-factor model suggested correlating errors between items previously included in the same factor (i.e. between items representing engagement/control), again supporting differentiating between involvement domains.

Next, multiple groups analysis was used to test for group differences in the three-factor involvement model. First, the three-factor model was tested separately for married and cohabiting fathers. In each case, the models fit adequately and factor loadings were above the 0.30 cutoff. Next, the unconstrained group model was estimated and fit the data well; $\chi^2 (130) = 235.98; p = 0.00; \text{RMSEA} = 0.04; \text{CFI} = 0.94$. Factor loadings were individually constrained and model fit was re-evaluated. Factor loadings for reading, telling stories, and taking children to the doctor or sitter were not equivalent across fathering contexts. Intercepts for factors with equivalent loadings were then constrained, and no significant loss in model fit was noted. Finally, factor covariances were constrained across groups; constraints were valid. The final group model fit well; $\chi^2$
Involvement domains were significantly correlated for all fathers and all factor loadings were significant and above the 0.30 threshold. Factor loadings for reading and telling stories were stronger for cohabiting fathers.

**Year 3**

An initial three-factor model was tested for all fathers at Year 3, including time-invariant and variant controls (see Figure 4). Due to space limitations, only results for the final between-groups model are presented in Table 5. The initial model showed adequate fit; $\chi^2 (97) = 381.12; p = 0.00; \text{RMSEA} = 0.05; \text{CFI} = 0.90$. All factor loadings were significant and above the standardized 0.30 threshold. The involvement domains were significantly correlated; Engagement and Warmth $r = 0.62, p < 0.00$; Engagement and Control $r = 0.14, p < 0.00$; Warmth and Control $r = 0.13, p < 0.01$. Next, a single-factor model was tested and fit poorly; $\chi^2 (114) = 907.376; p = 0.00; \text{RMSEA} = 0.07; \text{CFI} = 0.70$. Again, modification indices suggested correlating errors between items that were previously included in separate involvement domains, thus providing further support for the validity of the three-factor model.

Next, multiple groups analysis was used to test for differences in the three-factor model across involvement contexts. First, the three-factor model was fit separately for married and cohabiting fathers; both models fit adequately, however the factor loading for the hug item on the warmth indicator was below the 0.30 threshold for married fathers $(\beta = 0.29)$. Nevertheless, the item was retained for group comparisons. The baseline group model fit was adequate; $\chi^2 (210) = 539.05; p = 0.00; \text{RMSEA} = 0.05; \text{CFI} = 0.88$. Factor loadings were independently constrained across groups and model fit was
compared. Factor loadings for playing games and expressing appreciation were not equivalent. Next, intercepts were constrained for items with equal factor loadings and model fit was reevaluated; all intercept constraints were valid. Last, covariances between involvement domains were constrained and found to be valid. The final group model fit was $\chi^2 (219) = 554.87; p = 0.00$; RMSEA = 0.05; CFI = 0.88. All factor loadings were significant and above the 0.30 threshold, with the exception of the "hug" item for married fathers ($\beta = 0.27$). The factor loading for expressing appreciation was significantly stronger for married fathers. Involvement factors were significantly correlated.

Cluster Analysis

Cluster analysis was used as a tool to validate the three-factor model of father involvement by identifying meaningful groups of fathers based on the saliency of the involvement domains (see Allen & Hawkins, 1999). This method classifies observations into groups given their similarity on a number of indicators (Kaufman & Rousseeuw, 1990). Factor means for each father involvement domain were generated from the three-factor model including all fathers at each Year and used as clustering variables. Each factor mean was standardized prior to use in the cluster analysis. Wards method (Ward, 1963), which uses squared Euclidian linkages to determine group membership and minimizes within-cluster variation, was used. The Calinski-Harabasz (1974) pseudo-$F$ index was used in conjunction with the clustering dendogram to determine the appropriate number of fathering groups. The number of groups corresponding to the largest pseudo-$F$ value were retained. Finally, the sample of fathers was randomly divided in half and cluster analyses were replicated on each random sample to address the reliability of the groupings (e.g., Thompson, 1996). Multinomial logistic regressions
tested whether demographic characteristics were significantly associated with group membership.

_Year 1_

Cluster analysis was conducted using factor scores generated from each latent variable (i.e. positive engagement and control) from the final CFA model containing all fathers at Year 1, in addition to the mean of the observed warmth indicator.

Examinations of the clustering dendogram and Calinski/Harabasz statistic confirmed four clusters of fathers, capturing nearly 80% of the sample (1054 fathers). Group sizes, group factor means, and the average of items used in each involvement scale (for ease of comparisons) are listed in Table 6.

Group means were compared to the average involvement means to help determine the classifications of fathers. Two main groups of fathers emerged, indicating consistently high (51% of sample), and consistently low (3% of sample) involvement in each domain. These groups have been termed "Highly Involved" and "Minimally Involved". Two additional groups, one high on warmth ("High Warmth" = 9% of sample), and one low on engagement ("Low Engagement" = 37% of sample) were also found. To test the reliability of the group classifications, the sample was randomly divided into two groups and cluster analyses were conducted again. These additional analyses confirmed the four groups and their individual classifications based on the saliency of the involvement domains (see Table 6).

_T-tests_ of mean comparisons were performed to ensure that actual differences in average involvement existed between groups. Average group involvement in each domain was distinct, with the exception of similar warmth between the "Highly
Involved" and "High Warmth" fathers, and similar engagement between the "Low Engagement" and "Minimally Involved" fathers. Multinomial logistic regressions (not shown) of demographic characteristics on group membership suggested that, compared to "Highly Involved" fathers, Hispanic fathers had nearly 2.30 times greater odds, and fathers identifying as "Other" races had 3.20 times the odds, of being in the "High Warmth" group. Compared to "Minimally Involved" fathers, those with a college education had a significantly lower odds of being in the "Low Engagement" (OR = 0.23; \( p < 0.05 \)) group. Compared to the "High Warmth" group, Hispanic fathers were less likely (OR = 0.53; \( p < 0.05 \)) to belong to the "Low Engagement" group.

**Year 3**

The CFA for all fathers at Year 3 was used to generate factor scores for each involvement domain, and factor scores were standardized before use. A cluster dendogram was used in conjunction with the Calinksi/Harabasz statistic to determine the number of fathering groups. Again, four groups of fathers were identified by comparing the average group involvement to average overall involvement, capturing all 1330 fathers. As before, a group of "Highly Involved" fathers (26% of sample) demonstrated consistently higher than average involvement in all domains, whereas a group of "Minimally Involved" (9% of sample) fathers demonstrated consistently low involvement in each domain. Two additional groups, termed "High Control" (45% of sample) and "Low Control" (19% of sample) also emerged. Next, the sample was randomly divided into two and retested for clustering. This analysis confirmed the robustness of the "Highly Involved" group, and partially confirmed the "Minimally Involved" and "High Control" groups (i.e. this result was replicated in one of the two random samples). A
"Low Engagement" group was found in both random samples, as was also found in Year 1.

*T*-tests were conducted to confirm that average involvement in each domain was significantly different across groups. All mean involvement levels were different with the exception of control between the "Low Control" and "Minimally Involved" group, and the "High Control" and "Highly Involved" group. Logistic regressions (not shown) showed that, compared to "Highly Involved" fathers, Hispanic fathers were more likely to be "Minimally Involved" (OR = 2.23; *p* < 0.01) and "High Control" (OR = 1.77; *p* < 0.05). Hispanic fathers were also more likely to belong to the "Low Control" group (OR = 1.70; *p* < 0.01). Fathers with less than a high school education were nearly 2 times more likely to be in the "Minimally Involved" group (OR = 1.95; *p* = 0.05). Compared to "Minimally Involved" fathers, married fathers were less likely to belong to the "High Control" group (OR = 0.51; *p* < 0.05), and more likely to be in the "Minimal Involvement" group when compared to the "High Control" group (OR = 1.98; *p* < 0.05).

Changes in group membership

Exploratory analyses were conducted to determine whether group membership was stable over time. Overall, 715 of 1054 (68%) fathers changed groups from Years 1 to 3. Group classifications were only consistent for the "High" and "Minimally Involved" groups, thus only changes between those groups are discussed. Four fathers became more involved and 12 fathers became less involved over time. High stability was found in the "High Involvement" group; 233 out of 540 fathers (43%) remained in the "High Involvement" group at both Years. In contrast, few fathers were classified as "Low Involvement" at both Years (8 out of 29 fathers 28%).
Discussion

This study tested sociological theory on the deinstitutionalization of marriage and the validity of recently revised father involvement theory in a contemporary sample of primarily low-income married and cohabiting fathers. Overall, considerable similarity in early father involvement between married and cohabiting fathers was found and the three-factor involvement structure was largely confirmed. This is in line with previous research indicating that fathers' involvement does not vary widely across family context when children are young (e.g., Manning & Brown, 2012), and supports Cherlin's (2010) notion of the deinstitutionalization of marriage. Further, in line with previous work on nonresident fathers (Cheadle, Amato, & King, 2010), "Highly Involved" and "Minimally Involved" groups of fathers were identified at each Year. On the whole, these findings are instructive and provide researchers using the Fragile Families and Child Wellbeing study with a set of domain-specific involvement measures that can be used to investigate questions of interest in greater detail. Differences that were found in involvement levels and composition point to the limitations of relying on survey measures that have been developed using married families and rarely tested among different populations.

Although involvement was strikingly similar across fathering context, important differences did emerge. Married fathers were more engaged with one-year-olds, and cohabiting fathers expressed greater warmth when their children were 3. Greater engagement among married fathers is likely a function of their higher levels of education. Educated fathers may be more aware of the importance of developmentally appropriate, enrichment-like activities (Quirke, 2006) that enhance children's capacity for learning, and thereby invest more of their non-work time in engagement activities. Cohabiting
fathers’ greater warmth may be an indication of the greater flexibility in parental roles afforded to cohabiting fathers whose family roles are less institutionalized (e.g., Manning & Brown, 2012). These fathers may be more apt to take on traditionally feminine parental roles, such as warmth, than married fathers, who may feel pressure to conform to traditional models of masculinity which emphasize breadwinning and limit the expression of emotions and feelings (e.g., Nock, 1998).

Pleck's (2010) revised involvement model was strongly confirmed for married and cohabiting fathers at both Years. This supports scholarship that points to a convergence of norms governing married and cohabiting unions, or the deinstitutionalization of marriage (Cherlin, 2010). Today's fathers are exposed to a variety of media messages that encourage actively involved fathering, such as the "Take Time to Be A Dad Today" media campaign and mothers' increased expectations for equality in parenting (Deutsch, 2001). Fathers who live up to these new cultural standards of involved fathering may receive affirmation and have higher quality romantic relationships with their partners, regardless of whether or not they are married. In fact, these incentives for active fathering may be even more salient for cohabiting fathers who may feel the need to establish strong father-child bonds due to the uncertainty surrounding the long-term prospects of the relationship (e.g., Edin, Nelson, & Reed, 2011).

There were several compositional differences in father involvement across fathering context. After accounting for differences in education, factor loadings for positive engagement items representing reading and telling stories were stronger for cohabiting fathers at Year 1. Given their lower education on average, cohabiting fathers
may place high value on activities they believe will give children a cognitive head start. This may shape cohabiting fathers' engagement to be more heavily focused around reading and telling stories and less diverse than married fathers' engagement. This is important and begs the question, is there greater variation in engagement activities between cohabiting and married fathers, and if so, to what extent does this shape children's development?

Similarly, the factor loading for expressing appreciation, an indicator of warmth, was stronger for married fathers at Year 3, and the "hug" item did not reach the loading threshold. These compositional differences also expose limitations of current survey items and underscore the importance of context-specific involvement measures. Although cohabiting fathers demonstrated greater average levels of warmth, expressing appreciation was not a strong indicator of their warmth. With fewer institutionalized fathering norms (Nock, 1998), cohabiting fathers may have greater variability in how they express warmth. This represents a challenge for future researchers to identify the many ways fathers display warmth and to empirically test whether there is greater flexibility in these displays for cohabiting fathers and the implications of variability for children's development.

The identification of subgroups of fathers with similar involvement characteristics is important in three ways. At both Years, a significant portion of fathers were "Highly Involved" with their children, although the proportion decreased over time; few fathers were "Minimally Involved" at either Year. Although these distinctions were not related to marital status, they may be more reflective of fathers' or couples' gender role ideology, or the extent to which they agree with the traditional division of household and child-
related labor in the home. Fewer fathers may subscribe to traditional ideologies today, explaining the lower numbers of "Minimally Involved" fathers. Second, there was high stability in "Highly Involved" fathers when compared to "Minimally Involved" fathers, mirroring the Cheadle et al. (2010) findings of a "High-Stable" involvement group, but contrasting findings of a "Low-Stable" group. This is not surprising given that Cheadle's (2010) research focused on nonresident fathers, who have greater barriers to involvement and less flexibility in shaping their own involvement time.

The cluster analysis exposed vulnerability for children as they age. Though most fathers were "Highly Involved" at Year 1, the largest group of fathers at Year 3 were classified as "High Control". Engagement and warmth are critical to children's development (Lamb, 2010; Pleck, 2010), and the absence of high involvement in these domains is striking. Although it is unclear why most fathers were in this group, developmental changes in children's capabilities and behavior in the third Year may play a role (i.e. increased independence and emotional outbursts). These changes may have left these fathers feeling unprepared to handle toddler's behavioral challenges and lead them to withdraw from engagement, which likely also limits displays of warmth. Several limitations of this study beyond the specific measurement limitations already discussed are worth mention. First, the sample of cohabiting fathers is highly selective. Over one-third of cohabiting unions typically end within the first year (McClain, 2011), and the majority of these end in break-ups rather than marriage. Thus, these fathers may represent a select group of fathers who may have been more invested in their family roles and more involved overall. Nevertheless, these stable cohabiting fathers are the most comparable comparison group for testing the deinstitutionalization of marriage
hypothesis. Second, agreement between the measurement and conceptualization of involvement domains was not always strong. For instance, Pleck's (2010) conceptualization of positive engagement included only activities demonstrated to promote children's healthy development. Items used in the current measure, like "playing games" were often vague and may not represent activities that specifically promote children's cognitive growth. Similarly, the warmth domain did not include assessments of responsiveness, and the control domain did not include measures of authoritative parenting, each critical components of Pleck's (2010) revised model.

This study revealed important similarities and differences in early father involvement in married and cohabiting families. Overall, similarity in married and cohabiting fathers' involvement is positive and suggests that children in two-parent homes, regardless of marital status, are reaping the benefits of today's involved fathering ideals. The few differences that were noted between married and cohabiting fathers are instructive and raise important questions regarding the fathering activities of cohabiting fathers and the individual and social characteristics that shape those differences. Observational studies in conjunction with recent qualitative work like Edin and Nelson's (2013) study of inner-city fathers may help shed light on these important differences. Although the institution of marriage seems to be changing with respect to fathers' family roles, father involvement is only one aspect of men's participation in the family. Future studies should test additional behaviors that have traditionally defined marriage, such as sexual frequency, rates of childbearing, and risk behaviors, to more fully assess whether the institution of marriage is truly fading.
Table 4. Sample Characteristics and Mean Comparisons of Father Involvement Indicators

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<td>4.71 (2.66)</td>
<td>378</td>
<td>3.65 (2.35)</td>
<td>793</td>
<td>3.81 (2.25)</td>
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<td>4.83 (2.31)*</td>
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<td>3.24 (2.70)*</td>
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<td>4.09 (2.35)*</td>
<td>793</td>
<td>3.61 (2.34)*</td>
<td>394</td>
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<td>Stories</td>
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<td>6.00 (1.80)</td>
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<tr>
<td>Hug</td>
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<td>6.87 (0.80)</td>
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<td>6.84 (0.80)</td>
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<td>6.86 (0.65)</td>
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<td>5.73 (1.86)*</td>
<td>791</td>
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<td>Looks After Child</td>
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<td>3.81 (0.45)</td>
<td>880</td>
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<td>Available to Watch</td>
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<td>760</td>
<td>3.76 (0.55)</td>
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<td>3.10 (0.98)</td>
<td>880</td>
<td>3.09 (1.07)</td>
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<td>880</td>
<td>0.15*</td>
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<td>0.21*</td>
<td>880</td>
<td>0.38*</td>
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<td>Less than High School</td>
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<td>0.38*</td>
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<td>High School</td>
<td>0.20*</td>
<td>880</td>
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<tr>
<td>Some College</td>
<td>0.29*</td>
<td>880</td>
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<tr>
<td>College</td>
<td>0.35*</td>
<td>880</td>
<td>0.02*</td>
<td>450</td>
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<tr>
<td><strong>Age (17-53)</strong></td>
<td>31.95 (6.21)*</td>
<td>880</td>
<td>27.48 (6.89)*</td>
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<td>-</td>
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<tr>
<td>Employed (yes/no)</td>
<td>0.95*</td>
<td>880</td>
<td>0.85*</td>
<td>450</td>
<td>0.94*</td>
<td>803</td>
<td>0.85*</td>
<td>414</td>
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Note. *Indicates differences between samples at the p < 0.05 level.
Table 5. *Confirmatory Factor Analysis (CFA) by Marital Status*

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<tr>
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<th>Year 1 (n = 1330)</th>
<th>Year 3 (n = 1330)</th>
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<tr>
<td></td>
<td>b (se)</td>
<td>p</td>
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<tr>
<td><strong>Positive Engagement</strong></td>
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<tr>
<td>Singing</td>
<td>1</td>
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<tr>
<td>Playing Games</td>
<td>0.43 (0.03)</td>
<td>0.000</td>
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<tr>
<td>Reading</td>
<td>0.97a;1.63b</td>
<td>0.000b</td>
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<tr>
<td>(0.09a; 0.27b)</td>
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</tr>
<tr>
<td>Stories</td>
<td>0.88a;1.69b</td>
<td>0.000ab</td>
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<tr>
<td>(0.09a;0.27b)</td>
<td></td>
<td></td>
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<tr>
<td>Playing Inside</td>
<td>0.45 (0.05)</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Warmth</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hug</td>
<td>1</td>
<td>-</td>
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<tr>
<td>Love</td>
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<tr>
<td>Appreciate</td>
<td>-</td>
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<tr>
<td><strong>Control</strong></td>
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<tr>
<td>Looks After Child</td>
<td>1.16 (0.11)</td>
<td>0.000</td>
</tr>
<tr>
<td>Available to Watch</td>
<td>0.85 (0.16)</td>
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<tr>
<td>Take to Doctor/Daycare</td>
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<td><strong>Factor Covariance</strong></td>
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<td>Positive Engagement*Warmth</td>
<td>0.14 (0.06)</td>
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<td>Positive Engagement*Control</td>
<td>0.05 (0.02)</td>
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<tr>
<td>Warmth *Control</td>
<td>0.03 (0.01)</td>
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*Note. 1* $\chi^2$ (136) 243.57, $p = 0.00$; RMSEA 0.03; CFI = 0.94.  
*2* $\chi^2$ (219) 554.87, $p = 0.00$; RMSEA 0.05; CFI = 0.88. Due to space limitations, coefficients for control variables are not reported.  
*Married.  b* Cohabiting.
Table 6. *Cluster Analysis of Father Involvement Domains at Years 1 and 3*

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<tr>
<th>Years</th>
<th>H.I.</th>
<th>Warmth</th>
<th>Engagement</th>
<th>Control</th>
<th>Year 3</th>
<th>Warmth</th>
<th>Engagement</th>
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<td>540</td>
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<td>5.74</td>
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<td>6.37</td>
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<th>Random Test Sample 1</th>
<th>Warmth</th>
<th>Engagement</th>
<th>Control</th>
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<th>Engagement</th>
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Note. *p < 0.05; **p < 0.01. H.I. – Highly Involved. L.E. = Low Engagement. L.C. = Low Control. H.W. = High Warmth. H.C. = High Control. M. I = Minimally Involved. Differences were not tested in random samples. ¹ Low Engagement group at Year 3. ² High Warmth group at Year 3. ³ Low Engagement group at Year 3.
Figure 4

Conceptual Model

Positive Engagement
- Playing Games
- Reading
- Singing
- Telling Stories
- Playing Inside (e.g., Legos)

Warmth and Responsiveness (Observed at Year 1)
- Hug
- Love (Year 3 Only)
- Appreciate (Year 3 Only)

Control
- Available to Watch Child
- Take to Doctor/Daycare
- Looks After Child

Control Variables (Age, Race, Education, Employment)
Chapter 4: Early Bonds, Strong Ties: Foundations of Married and Cohabiting Father Involvement

Fathers' early interactions with children are crucial to establishing involvement patterns that are sustained over time (Doherty, Erickson, & LaRossa, 2006). When fathers are involved, children fare better on a variety of socioemotional outcomes, such as reduced externalizing problems (Jia, Kotila, & Schoppe-Sullivan, 2012) and better cognitive development (Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008). A primary impetus for sustained father involvement is the relationship status of the father, such that fathers in less committed and more tenuous relationships are more likely to see their involvement with children decline, particularly after relationships end (Townsend, 2002). In 2013, over 40% of children were born to unmarried parents (Martin, Hamilton, Osterman, Curtin, & Matthews, 2015), the majority (60%) of whom were living together, or cohabiting (Payne, Manning, & Brown, 2012). With fewer institutionalized norms (Nock, 1995), cohabitation is less stable than marriage; nearly 35% of cohabitations will end within the first year after children are born (McClain, 2011). When relationships end, father involvement declines (Tach, Mincy, & Edin, 2010), and this decline is complicated by the tendency for both parents to repartner and have additional children (Carlson & Furstenberg, 2006). Low father involvement leaves children at risk for a host
of unfavorable outcomes, including lower emotional wellbeing (Flouri & Buchanan, 2003) and increased behavioral problems (Carlson, 2006) in adolescence.

Becoming a parent represents a turning point in fathers’ lives (Elder, 1998; Rossi, 1968). Many new fathers disengage from risky behaviors (Palkovitz, 2002) and become more socially connected (Eggebeen & Knoester, 2001), increase time spent in paid employment (Lundberg & Rose, 2002; but see Percheski & Wildeman, 2008), and devote time to child-related care (e.g., Kotila, Schoppe-Sullivan, & Kamp Dush, 2013). Indeed, today’s new fathers are expected to be highly involved caretakers who are competent in a variety of child-related tasks (Pleck & Pleck, 1997). Pleck (2010) described three primary domains of fathers’ involvement that have been consistently linked with children’s well-being: (1) positive engagement - the time fathers spend in direct, developmentally appropriate interactions with children, (2) warmth and responsiveness - the degree of affection or responsivity to children, and (3) control – management-type activities that do not entail direct interaction with children. Although a large literature has been devoted to identifying individual, relationship, and socioeconomic determinants of fathers' sustained involvement with children, no studies to date have tested reciprocal associations between multiple father involvement domains over time.

The primary purpose of this study is to test reciprocal associations between the three primary domains of father involvement (positive engagement, warmth, and control) across children’s early years (ages 1-3). In doing so, this study identifies the three most integral domains that promote frequent and sustained father involvement over time. This study also engages the current national debate on marriage and its diminishing role among young adults in the U.S. (e.g., Cherlin, 2004) by comparing reciprocal
associations across two prominent fathering contexts, marriage and cohabitation. Births to cohabiting parents have increased nearly 300% since the 1980s (Manning, Brown, & Stykes, 2014), underscoring the importance of understanding how parents’ relationship status sets the stage for children’s well-being, both in the short and long term. These efforts are in an attempt to identify strengths and vulnerabilities for married and cohabiting fathers' involvement and to provide practitioners and educators with targeted, translatable evidence to help fathers build strong, sustainable relationships with their children regardless of family context.

Fathering Contexts

Fatherhood has undergone significant changes in recent decades. Marriage, historically the primary context for fathering, has become increasingly optional in the U.S. (Cherlin, 2004). An increase in the social acceptability of non-marital sexual relationships and cohabitation has changed the fathering landscape from a dichotomy of married or nonresident fathers to a more variable setting of married, cohabiting, nonresident, and hybrid (Manning & Brown, 2012) fathers. Cohabiting fathers are a unique comparison group to married fathers. Overall, the majority of unmarried fathers (91%; McLanahan & Beck, 2010) intend on marrying their partner sometime in the future, and many of these new fathers choose to cohabit with their partner because of their strong desire to fulfill an active fathering role (Edin, Nelson, & Reed, 2011). Despite their best intentions, cohabiters’ relationships are often precarious and end quickly in a breakup (Kamp Dush, 2011; McClain, 2011), resulting in reduced father involvement (Tach et al., 2010) and increased risks for cohabiting children (Lamb, 2010).
Scholars have suggested that the demographic composition of cohabiting couples is a major contributor to the frailty of cohabiting relationships. Compared to married fathers, cohabiting fathers are often younger, more socioeconomically disadvantaged, and a greater proportion are racial minorities (Manning & Brown, 2006), key characteristics that are linked with lower and more fragile father involvement (Carlson, McLanahan, & Brooks-Gunn, 2008; Mistry, Vandewater, Huston, & McLoyd, 2002). Cohabiting couples cite limited economic resources as a primary barrier to marriage (Gibson-Davis, Edin, & McLanahan, 2005; Smock, Manning, & Porter, 2005), and few relationships last longer than five years (Kamp Dush, 2011). Despite risk factors for lower involvement, few differences between married and cohabiting fathers’ early involvement have been found (Hofferth & Anderson, 2003; Manning & Brown, 2012).

Despite similarities in involvement with young children, comparing married and cohabiting fathers' involvement connections over time is a useful pursuit. The couple relationship provides a foundation for father involvement (Townsend, 2002), and cohabitation has been described as an incomplete institution, lacking the institutionalized norms and values that guide marriage and parenting behaviors (Nock, 1995). In general, cohabiting couples have lower relationship quality than married couples (Brown & Booth, 1996), and these differences persist even among new cohabiting parents whose relationships remain intact a full two years after their child's birth (Klausli & Owen, 2009). For the most part, the context of cohabitation has been viewed as a barrier to father involvement, suggesting that links between father involvement domains that are present in married but absent in cohabiting families may represent vulnerabilities in cohabiting fathers' involvement that are inherent in family structural features, including
couples’ lower relationship quality. Yet, fewer institutionalized fathering norms in cohabiting families may signify more egalitarian parenting arrangements; cohabiting couples tend to be more flexible in their gender roles (see Smock, 2000), which may serve to diversify the ways in which cohabiting fathers are involved (e.g., Manning & Brown, 2012). Thus, links between involvement domains that are present in cohabiting families but absent in married families may represent inherent strengths in cohabiting families, potentially resulting from greater flexibility in cohabiting fathers' parenting roles. In this way, cohabiting fathers’ diverse involvement may function as a source of support for sustained father involvement, especially if the couple relationship ends. Indeed, Hohmann-Marriott (2011) noted that, compared to parents who married in response to a pregnancy, those who remained unmarried were more child-centric (as opposed to couple-centric) in their relationships, as evidenced by higher father involvement and more cooperative coparenting.

**Father Involvement: Conceptualization and Linkages**

In 2010 Pleck developed a revised model of father involvement that conceives of father involvement as multidimensional, consisting of distinct, yet interrelated domains. This model reflects a general trend toward emphasizing the father's role in the healthy socioemotional development of children. The revised conceptualization consists of three main domains: positive engagement, warmth and responsiveness, and control. Positive engagement refers to direct interaction with children in activities that scaffold children's healthy development. Developmentally appropriate activities such as reading and playing with the child are included in this domain. Warmth and responsiveness represents the qualitative aspect of a father's involvement, such as expressions of love.
and affection and sensitivity. This study examined only the warmth aspect of this domain. Finally, control refers to management-type activities undertaken for children, such as making childcare arrangements, managing schedules, and looking after children.

Direct Associations

Becoming a parent represents a turning point in men’s lives (Rossi, 1968). A family systems perspective, one often used to study father involvement, suggests that early fathering experiences lay the groundwork for future involvement, as interaction patterns are generally stable over time (Minuchin, 1985). Indeed, Hwang and Lamb (1997) documented moderate stability in father involvement, measured as a global construct consisting of engagement, responsibility, and accessibility (available for interaction), from children’s early years until elementary school.

When new fathers establish early patterns of frequent positive engagement, fathers tend to remain engaged over time (Hwang & Lamb, 1997), even increasing time spent in positive engagement as children grow and develop (Lang et al., 2014). Similarly, fathers’ early displays of warmth may foster closer, more positive relationships during toddlerhood. Shanahan, McHale, Crouter, and Osgood (2007) found that parental warmth was relatively stable during children’s early years, suggesting that those fathers who display warmth early on tend to maintain warm interactions with children as they grow. Limited longitudinal research is available specifically on fathers’ control involvement, but it is reasonable to assume that a similar pattern persists, as fathers become more competent and the management of children becomes more important as children age and are increasingly connected with social institutions.
Reciprocal Associations

The multidimensionality of the father involvement construct implies that the involvement domains are interrelated yet distinct (Pleck, 2010). On the one hand, fathers’ involvement in one domain of a child’s care may not translate into changes in another domain of involvement. Rather, domains of father involvement may remain relatively disconnected, although stable, over time. On the other hand, fathers’ early involvement in one domain may foster growth in another involvement domain. This is consistent with the life course perspective that parenthood marks a significant turning point in the lives of men (Rossi, 1968), and Erikson’s (1980) concept of generativity. Generative fathers invest in the care and development of the next generation, typically through involvement with their own children. In this case, fathers who are involved may become increasingly invested in the paternal role and seek out additional opportunities for involvement, resulting in changes in other involvement domains.

Positive Engagement

Frequent positive engagement may foster the growth of warm, responsive, and rewarding father-child relationships, as fathers become more familiar with their children’s personality and needs through direct interaction. Indeed, Eggebeen and Knoester (2001) found that resident fathers who were engaged with their children were more satisfied in their lives and more connected to their families. Children tend to enjoy interactions with fathers (Roggman, 2004), and this enjoyment may spillover to the father, thereby increasing his warmth. Similarly, a father's involvement in developmentally stimulating engagement may arouse his interest in taking an active role in other child-related decisions and management activities, aspects of control. For
instance, engaged fathers feel more competent in their ability to parent (Fagan & Barnett, 2003), and this may encourage fathers to feel comfortable providing input in and negotiating childrearing with mothers, or even making decisions on their own.

Warmth and Responsiveness

A father’s warmth and responsiveness is necessarily linked with his positive engagement. Indeed, paternal responsiveness reduces child negative affect during the toddler years (Davidov & Grusec, 2006), potentially yielding greater paternal engagement by encouraging more manageable child behavior. Thus, warm fathers build strong relationships with their children and promote functional behaviors that may encourage greater engagement over time. Moreover, a father’s lack of warmth may make interactions with children less enjoyable. Infants may become less responsive and elicit interaction less often, making parenting challenging and resulting in less warmth and positive engagement over time. Though they did not directly measure warmth, Bronte-Tinkew, Horowitz, and Carrano (2010) found that greater aggravation and stress in parenting was associated with less frequent positive engagement with one-year old children. Given that parenting stress is linked to many negative parenting practices, including low levels of warmth (Rodgers, 1993), the degree of paternal warmth in father-child interactions may be vital to facilitating more frequent and enjoyable interactions.

Although research regarding paternal control is still in its infancy (Pleck, 2010), one can imagine that a father's warm, responsive parenting during infancy evokes feelings of responsibility for the dependent child, akin to the process of generativity (Erikson, 1980). In a culture that encourages involved fathering and increasingly understands paternal responsibility to extend far beyond the provision of financial
support (Coltrane, 1996; Milkie & Denny, 2014), sensitive fathers who desire to fulfill the new "involved father" role may be encouraged to become more involved in managing their child's care.

**Control**

Empirical support regarding this revised component of father involvement is limited (Pleck, 2010), but it is likely that fathers who take on more indirect roles in their child's life come to recognize their child's dependency and intrinsic need for love and affection and respond by increasing their warmth. Further, fathers who are more involved in the day-to-day management of their child's care may recognize the child's need for developmentally appropriate stimulation and provide it, resulting in greater positive engagement over time.

**Positive Engagement: An Integral Component**

Play is an historically integral aspect of the father role (Pleck & Pleck, 1997) and today’s fathers are encouraged to be highly involved in child-centric, positive engagement activities (Quirke, 2006) that are likely to elicit positive social feedback from others as well as contribute to the psychological maturation of the father (Erikson, 1982). Furthermore, the fathers' participation in these activities with children during their own course of marked physical and psychological development may ignite in fathers the growth of warmth and responsiveness and a desire to share control over his child’s wellbeing. Thus, the domain of positive engagement may be the most integral to promoting father’s diverse involvement, thereby laying foundations for sustained father involvement during early childhood.
The Present Study

This project significantly advances current scholarship on fatherhood by delineating links between three domains of a fathers' involvement over time. Further, this project engages the current sociological debate on the deinstitutionalization of marriage by testing whether associations between fathering domains differ for married and cohabiting fathers. These efforts are in the hopes to expose vulnerabilities and strengths that are inherent in structural features of families and to inform educational and intervention practices that are aimed at strengthening fathers' bonds with children by increasing early involvement. Data from The Fragile Families and Child Wellbeing Study (Reichman, Teitler, Garfinkel, & McLanahan, 2001) were used to investigate reciprocal links between fathers' positive engagement, warmth, and control in married and cohabiting families when children were 1 and 3 years old. First, structural equation modeling (SEM) was used to construct latent indicators of father involvement using primarily fathers' reports. Second, links between each domain of father involvement over time were explored for all fathers. Finally, comparisons across family context (i.e. marriage and cohabitation) were made to expose strengths and vulnerabilities for married and cohabiting fathers' sustained involvement.

Method

The Fragile Families and Child Wellbeing Study (Reichman et al., 2001) is a nationally representative, panel study of births to unmarried \(N = 3712\) and married \(N = 1186\) couples in large U.S. cities in the early 2000s. Parents were interviewed separately in the hospital shortly after their child's birth and re-interviewed when their child was 1, 3, 5, 9, and 15 (data collection currently underway). This study is among the first to collect
large-scale survey data directly from unmarried fathers, obtaining a response rate of nearly 75% for unmarried fathers at the baseline interview. Data from the baseline through Year 3 are used in the current study because consistent measures of fathers’ warmth and control were not available at later Years. Fathers were included in the sample if the mother reported they were either continuously married or continuously cohabiting from the baseline interview through Year 3 (i.e., did not report a relationship transition). These selection criteria resulted in a full sample of 1330 fathers (880 married/450 cohabiting).

Overall, few fathers in the selected sample were missing at each Year; 85 fathers (24 cohabiting, 61 married) were not interviewed at Year 1, 110 fathers (38 cohabiting, 72 married) were not interviewed at Year 2, and 112 fathers (35 cohabiting, 77 married) were not interviewed at year 3. Only 19 fathers were not interviewed at all during the observation period. Small cell sizes precluded logistic regression analyses to determine the demographic characteristics associated with fathers’ absence from the survey during the entire observation period. However, logistic regressions showed that older men were more likely to be missing at Year 2, and older men, and those with less than a high school education, were more likely to be missing at Year 3.

The sample selection criteria required that couples be either continuously married or cohabiting from their child’s birth until the Year 3 interview. Because many cohabiting relationships dissolve relatively quickly (Kamp Dush, 2011; McClain, 2011), the sample of cohabiting fathers may be select. Sensitivity analyses (available from author) were conducted to determine how the sample selection criteria biased the sample. Compared to all married fathers at the baseline interview, a greater proportion of the
selected sample of married fathers were white, a smaller proportion were black, and a
greater proportion were college educated. Compared to all fathers who were cohabiting
at the baseline interview, a smaller proportion of the selected sample of cohabiting fathers
were black, a smaller proportion were college educated, and a greater proportion were
employed at Years 2 and 3. These differences are in line with the notion that
employment is a key facilitator of marriage among cohabiting parents (Gibson-Davis et
al., 2005; Smock et al., 2005).

Measures

Positive engagement. At each Year, fathers reported the number of days per week
(0-7) they were involved in the following developmentally appropriate engagement
activities: 1) playing games, 2) singing, 3) reading, 4) telling stories, and 5) playing
inside. Similar versions of this measure have been used in previous work investigating
fathers' engagement (see Carlson, Pilkauskas, McLanahan, & Brooks-Gunn, 2011; Kotila

Warmth. At Year 1, only 1 item was available to measure fathers' warmth. At
Year 3, two additional items were added. Because reciprocal models require variables to
be measured consistently over time, only the repeated item was used. At Years 1 and 3,
fathers reported the number of days per week (0-7) they hugged or showed physical
affection to their child.

Control. Fathers were not asked questions about control, thus mothers' reports
were used. At each Year, mothers rated how often (1=Rarely - 4=Always) fathers 1)
took the child places like the doctor or daycare, 2) were available to watch the child for a
few hours (rated 2=Sometimes - 4=Always at Year 1), and 3) looked after the child when
mothers were busy. This scale has been used in prior work investigating fathers' control (also labeled responsibility and indirect care) (Kotila & Kamp Dush, 2012; 2013).

Time-invariant controls. Father age, race (White, Black, Hispanic, Other), and education (Less than High School, High School, Some College, College Grad) were included as time-invariant controls, measured from fathers' reports at birth.

Time-variant controls. Father's employment was measured at each Year from fathers' responses (Employed or In school/Unemployed).

Analysis

Latent variables for each father involvement domain were constructed using SEM prior to use in the reciprocal model. Model fit was evaluated using $\chi^2$, root mean square error of approximation (RMSEA; Steiger, 1990), and comparative fit index (CFI; Bentler, 1990). For acceptable model fit, the $\chi^2$ fit statistic should be nonsignificant, RMSEA values should be below .08 (Browne, Cudeck, & Bollen, 1993), and CFI values should be close to 1 (Byrne, 1994). The $\chi^2$ statistic is sensitive to sample size, thus a low RMSEA value was favored over a significant $\chi^2$ when evaluating model fit. Missing data were estimated using Full Information Likelihood Estimation (FIML), a best practice in estimating missing data that does not exceed 50% of the sample (Johnson & Young, 2011). In addition to adequate fit indices, latent variable construction required that standardized coefficients for each item-level indicator be above 0.30 (Kline, 2014).

Reciprocal models require the use of consistent measures over time. Tests of configural (structural) and metric (weak) measurement invariance (Bollen & Hoyle, 1990) using these specific father involvement measures (positive engagement and control) have already been conducted (see Chapter 3). The positive engagement measure
was found to exhibit full structural and partial metric invariance, which is not unexpected due to the increasing developmental capabilities of children between ages 1 and 3 and co-occurring increase in father engagement (Lang et al., 2014). Reading to children seemed to be an activity that was ubiquitous and consistent over time; this is consistent with recent descriptions of young children's daily lives (Laughlin, 2014). Full structural and partial metric invariance was also exhibited for the control domain, although only one item displayed changed over time, suggesting greater stability in fathers’ control involvement over time.

SEM was used to construct a reciprocal model of associations between involvement domains over time. The conceptual model is located in Figure 5. A multiple groups approach tested whether associations between each involvement domain differed across fathering context (i.e., married/cohabiting). A baseline model was fit simultaneously for each group to establish a comparative model from which to test for group differences. Following this, paths between each father involvement domain over time were independently constrained and model fit was reevaluated using the $\chi^2$ difference test. For example, paths between Year 1 positive engagement and Year 3 positive engagement were constrained to be equivalent across groups. Constraints were determined to be invalid and were removed prior to applying additional constraints if the $\chi^2$ value increased significantly, and valid (constraints retained) if the increase in the $\chi^2$ value was nonsignificant. Invalid constraints indicate that associations vary across fathering context.
Results

Sample characteristics. There were significant differences between married and cohabiting fathers on each demographic indicator. On average, cohabiting fathers were younger and less educated than married fathers, and a greater share were racial minorities (Table 1). A greater proportion of married fathers were employed at each Year. Consistent with recent work (Manning & Brown, 2012), there were few item-level differences in married and cohabiting fathers' involvement. Married fathers read to children more frequently than cohabiting fathers at each Year, a result that is likely a function of married fathers' higher education. Mothers reported that cohabiting fathers were more involved in taking children to the doctor or daycare. There were no differences in fathers' warmth by family context.

Measurement models. Latent indicators of fathers’ positive engagement and control were constructed for all fathers at each Year using SEM. The positive engagement indicator was constructed using the five positive engagement items. At Year 1, the baseline model fit the data poorly; $\chi^2 (5) = 125.66; p = 0.00; \text{RMSEA} = 0.14; \text{CFI} = 0.89$. Modification indices suggested correlating the errors between reading and telling stories and playing games and Legos. The modified model fit the data well; $\chi^2 (3) = 1.99; p = 0.57; \text{RMSEA} = 0.00; \text{CFI} = 1.00$ and all factor loadings were significant and above the 0.30 standardized cutoff. At Year 3, the baseline positive engagement model fit the data poorly ($\chi^2 (5) = 68.11; p = 0.00; \text{RMSEA} = 0.10; \text{CFI} = 0.96$) and modifications were suggested. Errors were correlated between reading and telling stories and playing games and Legos. Final model fit was excellent and all standardized loadings were above the standardized threshold; $\chi^2 (3) = 4.39; p = 0.39; \text{RMSEA} = 0.02; \text{CFI} = 0.99$.  

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The control indicator was constructed at each Year using the three mother-reported items. At each Year models were exactly identified ($\chi^2 (0) = 0.00; \text{RMSEA} = 0.00; \text{CFI} = 1.00$) and standardized loadings for each item were above the 0.30 cutoff. No modifications were made to the control models.

**Structural model.** Next, a reciprocal baseline model with no controls was constructed (see Figure 5). Item-level errors for each latent variable were correlated based on modification indices suggested in the measurement models described above (e.g., errors correlated between reading and telling stories). Errors between each involvement domain were also intercorrelated at each Year. This model fit the data well ($\chi^2 (152) = 560.39, p = 0.00, \text{RMSEA} = 0.04; \text{CFI} = 0.92$) and initial findings are reported in Table 2. Next, time-invariant and variant controls were added to the model and fit was reevaluated ($\chi^2 (305) = 991.84, p = 0.00, \text{RMSEA} = 0.04; \text{CFI} = 0.87$).

Findings for the full sample of fathers (Table 2) suggested that each father involvement domain was significantly associated with itself over time. A one day increase in fathers' positive engagement at Year 1 resulted in a 0.62 day increase in his positive engagement at Year 3. Similarly, a one day increase in fathers' early warmth was associated with a 0.10 day increase in his later warmth. A one point increase in mothers' reports of fathers' control at Year 1 was associated with a 0.62 point increase in mother’s perceptions of fathers' control at Year 3. Only one cross-lagged association was present; a one day increase in fathers' positive engagement at Year 1 was associated with a 0.05 day increase in his warmth at Year 3.

**Between groups model.** First, a baseline model including controls was tested to ensure the model fit adequately for both groups of fathers and to establish an initial $\chi^2$
value to test further modifications. This model fit the data well; \( \chi^2 (534) = 1221.37, p = 0.00 \), RMSEA = 0.04; CFI = 0.86. To test whether associations between the involvement domains differed by fathering context, loadings between each involvement domain over time were independently constrained and model fit was retested. For the sake of space, only the final model fit is presented (Table 2). All applied constraints were valid, with the exception of the constraint between fathers' positive engagement at Year 1 to his warmth at Year 3; a one day increase in positive engagement at Year 1 was associated with a 0.08 day increase in warmth at Year 3, but only for married fathers. The association was not significant for cohabiting fathers.

As before, significant associations were present between each fathering domain and itself over time. A one day increase in positive engagement at Year 1 was associated with a 0.62 day increase in positive engagement at Year 3. A one day increase in warmth at Year 1 was associated with a 0.10 day increase in warmth at Year 3. Finally, a one point increase in mothers' reports of control at Year 1 was associated with a 0.63 point increase in her perceptions of fathers' control at Year 3.

**Discussion**

Early fathering foundations are critical to building the strong bonds that promote and sustain high quality father involvement (Doherty et al., 2006). However, contemporary fathering contexts have changed, such that unmarried fatherhood and cohabitation are increasingly common (Martin et al., 2015) and place children at risk for experiencing parental break ups (Kamp Dush, 2011; McClain, 2011), often resulting in low father involvement (Tach et al., 2010) and weaker father-child relationships as children age (e.g., Ahrons, 2007). The primary focus of this study was to describe the
development of early father involvement in married and cohabiting fathering contexts across children's early years in an effort to highlight strengths and vulnerabilities in cohabiting and married fathers' early involvement. Links that are present in cohabiting families, but absent in married, may represent strengths that are inherent in cohabiting families, such as greater flexibility in cohabiting fathers' roles (Manning & Brown, 2012). In contrast, links that are present in married families and absent in cohabiting families may represent vulnerabilities for cohabiting fathers as they establish early involvement patterns.

Direct Associations

It was expected that each domain of early father involvement would be important for establishing sustained involvement in that domain. This hypothesis was supported and was not found to vary across fathering context. This is not surprising given prior research that points to relatively high stability (Doherty et al., 2006; Hwang & Lamb, 1997) and even increases in fathers’ early engagement (e.g., Lang et al., 2014). Fathers who establish involvement patterns with children early on likely gain from these experiences, either in the form of emotional (Kotila & Kamp Dush, 2013) or social (Eggebeen & Knoester, 2001) benefits. Moreover, participating in the care of one’s own children fosters a man’s own generative development (Erikson, 1980), and fathers likely incorporate these activities into their fathering identity.

Stable residential relationships provide married and cohabiting fathers with optimal contexts in which to establish frequent involvement patterns when children are young. In the case of linking early involvement to later involvement in the same domain, marital status may be of little importance. Instead, a father's early involvement may be
more proximally linked to his fatherhood identity, such that fathers will simply become and remain involved in the activities that they deem to be most integral to their notions of what it means to be a "good father". Residential status, rather than marital status, may be a primary mechanism that allows fathers to establish early bonds that are in line with their fathering identities. Indeed, qualitative work on cohabiting fathers suggests that the father-child relationship is a driving force behind men's choices to cohabit (Edin et al., 2011), and few differences between married and cohabiting fathers' early involvement have been noted (Hofferth & Anderson, 2003; Manning & Brown, 2012).

Reciprocal Associations

Reciprocal links between each involvement domain (i.e., early positive engagement increases later warmth) were expected, but few links were found. Only positive engagement appeared important for later warmth in the full sample. Few links across fathering domains supports the notion that father involvement domains are interrelated yet distinct (Pleck, 2010). However, the lack of reciprocal associations poses difficulties for individuals who seek to increase the ways in which fathers are involved. These findings suggest that the most effective way to establish sustained involvement in any one domain is to simply become involved in that area. Given that resident fathers' early involvement may be more proximally linked to fathering identities rather than marital status, this may entail encouraging fathers to shift identities toward those that encourage more diverse fathering activities.

Further analyses revealed that the link between early positive engagement and later warmth was only present for married fathers. The absence of a link between early positive engagement and later warmth for cohabiting fathers is particularly striking.
Fathers' early engagement with children is typically enjoyable, consisting of boisterous play (e.g., Paquette, 2004) and opportunities for watching children acquire new skills through developmentally stimulating activities such as reading. Thus, it is surprising that these interactions did not foster the growth of cohabiting fathers' warmth.

There may be several explanations for this. First, in the absence of a solidified commitment, such as marriage, cohabiting fathers may temper their relationships with children in order to minimize both their own and their child's discomfort in the event that the relationship ends. It is likely that these fathers have been witness to, or even experienced, the emotional distress associated with parental relationship dissolution (Carlson, VanOrman, & Pilkauskas, 2013; Kamp Dush, 2011) and want to protect their own children from this pain. Thus, fathers may remain engaged but keep an emotional distance that precludes the growth of warmth over time.

Second, features inherent to cohabitation, such as worse relationship quality (Brown & Booth, 1996; Klausli & Owen, 2009), may function as vulnerabilities for cohabiting fathers' sustained involvement. In the current sample, both married and cohabiting mothers and fathers reported similar average relationship quality at Year 2 and increases in relationship quality from Years 2 to 3. However, differences emerged at Year 3, with married parents reporting both greater gains and higher quality relationships than their cohabiting counterparts. Though small, these differences may signal relationship difficulties or conflict that deteriorates the quality of fathers' parenting (e.g., Katz & Gottman, 1996), thus impeding the growth of warmth and the sensitive, responsive parenting that is vital for young children's healthy socioemotional development. At minimum, fathers who are preoccupied with maintaining fragile
relationships or who feel pressured to meet their partner's often high standards for marriage (Gibson-Davis et al., 2005) may "go through the motions of parenting" in a detached manner, as their emotional resources have been depleted and they have little left to give.

Positive Engagement: An Integral Component

A secondary goal of this study was to identify an integral component of father involvement that could be leveraged to promote fathers' early and sustained involvement regardless of fathering context. On the surface, it appears that promoting fathers' positive engagement with children is an excellent start. Fathers who take the time to read, sing, and play games with their children likely enjoy this time. Curious toddlers are eager to learn, abundant in energy, and often enjoy the rough and tumble play fathers frequently engage in with them (Paquette, 2004). Fathers' experiences of their children's laughter, joy, and simple innocence undoubtedly evokes fathers' emotions and draws out expressions of warmth. Further, play is an integral component because it uniquely feeds into the father identity that has been shaped by cultural messages and historical patterns that place fathers as children's playmates (e.g., Marsiglio, 1993; Paquette, 2004).

Unfortunately, the picture is not so clear for cohabiting fathers; play only promoted the growth of warmth for married fathers. This "missing link" is striking in that it encompasses primary activities that promote children's healthy socioemotional development (e.g., Eisenberg et al., 2005; Lang et al., 2014), and may represent a vulnerability in cohabiting families that may help to explain why children of cohabiting parents tend to display greater behavioral and emotional problems than children in married homes (Brown, 2004). More importantly, this finding highlights the importance
of considering marital status when implementing interventions to promote fathers' diverse involvement with children. For married fathers, engagement activities may be key to facilitating warmth, whereas cohabiting fathers may need additional supports, such as services that enhance relationship quality or encourage healthy stress management behaviors that may reduce fathers' stress and help him focus on building warm, sensitive, and responsive parenting.

Limitations

There are several limitations that are important to note. First, the sample of cohabiting fathers is select, and findings are only generalizable to those fathers who remain in cohabiting relationships up to three years after the birth of their child. Though select, stable cohabiters are perhaps the most analogous comparison group to stable married fathers, as their residence provides them both the opportunities to become involved and sources of support from their partners. However, the two year lag time between interviews may have been insufficient to observe relatively short breakups that ended in reconciliation.

Second, these models are stringent and represent only cross-lagged associations that go above and beyond the already significant growth in each domain over time. Although reciprocal associations were expected for each involvement domain, such stringent tests underscore the significance of fathers' early positive engagement for later involvement. At the same time, the "missing link" for cohabiting fathers fosters further questions about the conditions (i.e., lower commitment, low relationship quality, pressure to live up to idealized expectations) that may serve as barriers to links between cohabiting
fathers' early engagement and later warmth, as well as the conditions in marriage that may promote them.

It is worthwhile to note that this study only considered the extent to which involvement was stable or precipitated changes in another domain; some fathers may not have been involved in any or all of the domains at either Year. As the findings show, a father's identity may be more important than his previous involvement for diversifying the ways in which dads are involved. Recently, scholars have called for increased attention to identity in the study of father involvement (Pasley, Petren, & Fish, 2014), and these findings underscore the importance of this focus, as shifting fathers' identities may be necessary to promote diverse, high quality involvement that is sustained.

Though this study was the first to address reciprocal associations between multiple dimensions of father involvement according to updated theory (Pleck, 2010), some measures, particularly of warmth and control, were limited. The measure of warmth consisted of one item and did not assess sensitivity and responsiveness, which are also key to promoting healthy child development and fostering strong father-child relationships (Lamb & Lewis, 2004). Similarly, the measure of control did not include aspects of authoritative parenting that were an important impetus to the reconceptualization of father involvement theory (Pleck, 2010) and key facilitators of healthy socioemotional development (Darling, 1999). Further, available involvement measures were inconsistent across survey Years, making it impossible to construct reciprocal models extending through the child's 5th or 9th year. Children experience rapid development across the first 9 years, and the Fragile Families Study did well to incorporate developmentally appropriate measures of father involvement into each
assessment. However, future researchers should consider how to incorporate developmentally appropriate changes while also maintaining measures that are valid for longitudinal designs.

**Conclusion**

Fathers are central contributors to children's development (Lamb, 2010), and understanding what promotes strong, sustained father involvement is important given the current U.S. family context that consists of an increasing number of unmarried and cohabiting parents (Martin et al., 2015) whose relationships are at high risk for dissolution (Kamp Dush, 2011; McClain, 2011). First, these findings highlight the centrality of positive engagement for building strong foundations for sustained father-child relationships. At least for married fathers, encouraging early and frequent positive engagement may be the most effective way to promote strong father-child bonds and healthy child development.

Second, it seems that resident status, rather than marital status, may be more important for simply getting fathers involved. For couples who are on board, providing institutional supports that encourage residential relationships among unmarried parents may be a first step toward building strong father-child ties. Finally, these findings expose vulnerabilities in cohabiting families that may serve to reduce the quality of father-child relationships in the short term, and create difficulties for sustained involvement in the long term, particularly if cohabiting relationships end. Future research should explore the specific mechanisms that serve as barriers or supports between early positive engagement and later warmth for married and cohabiting fathers in an effort to provide all fathers and children with the necessary foundations to build strong, lasting relationships.
Table 7. Descriptive Statistics of Father Involvement Indicators and Sample Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Married ($n = 880$)</th>
<th>Cohabiting ($n = 450$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1 (M(SD))</td>
<td>Year 3 (M(SD))</td>
</tr>
<tr>
<td><strong>Positive Engagement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singing</td>
<td>4.90 (2.48)</td>
<td>3.65 (2.35)</td>
</tr>
<tr>
<td>Playing Games</td>
<td>6.23 (1.54)</td>
<td>4.53 (2.34)*</td>
</tr>
<tr>
<td>Reading</td>
<td>3.65 (2.78)*</td>
<td>4.09 (2.35)*</td>
</tr>
<tr>
<td>Stories</td>
<td>3.59 (2.75)</td>
<td>3.72 (2.48)</td>
</tr>
<tr>
<td>Playing Inside</td>
<td>5.84 (1.89)</td>
<td>4.93 (2.21)</td>
</tr>
<tr>
<td><strong>Warmth and Responsiveness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hug</td>
<td>6.82 (0.89)</td>
<td>6.84 (0.80)</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looks After Child</td>
<td>3.82 (0.43)</td>
<td>3.81 (0.45)</td>
</tr>
<tr>
<td>Available to Watch</td>
<td>3.76 (0.53)</td>
<td>3.73 (0.53)</td>
</tr>
<tr>
<td>Take to Doctor/Daycare</td>
<td>3.10 (1.03)*</td>
<td>3.10 (0.98)</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (17-53)</td>
<td>31.95* (6.21)</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.47*</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.23*</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.23*</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0.07*</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than HS</td>
<td>0.15*</td>
<td></td>
</tr>
<tr>
<td>HS</td>
<td>0.20*</td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td>0.29*</td>
<td></td>
</tr>
<tr>
<td>College</td>
<td>0.35*</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>0.95*</td>
<td>0.94*</td>
</tr>
</tbody>
</table>

*Note.* *Indicates significant differences between married and cohabiting fathers at $p < 0.05$. HS = High School.
Table 8. SEM Reciprocal Model and Between-Groups Analysis for Associations between Father Involvement Domains over Time

<table>
<thead>
<tr>
<th>Positive Engagement Year 3</th>
<th>No Controls&lt;sup&gt;1&lt;/sup&gt;</th>
<th>With Controls&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Between Groups&lt;sup&gt;3&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b(se)</td>
<td>p</td>
<td>b(se)</td>
</tr>
<tr>
<td>Positive Engagement Year 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warmth Year 1</td>
<td>0.04(0.07)</td>
<td>0.530</td>
<td>0.05(0.07)</td>
</tr>
<tr>
<td>Control Year 1</td>
<td>0.04(0.15)</td>
<td>0.774</td>
<td>0.03(0.15)</td>
</tr>
<tr>
<td>Warmth Year 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warmth Year 1</td>
<td>0.10(0.03)</td>
<td>0.002</td>
<td>0.09(0.03)</td>
</tr>
<tr>
<td>Positive Engagement Year 1</td>
<td>0.05(0.02)</td>
<td>0.004</td>
<td>0.05(0.02)</td>
</tr>
<tr>
<td>Control Year 1</td>
<td>0.02(0.07)</td>
<td>0.254</td>
<td>0.09(0.07)</td>
</tr>
<tr>
<td>Control Year 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Year 1</td>
<td>0.62(0.05)</td>
<td>0.000</td>
<td>0.64(0.05)</td>
</tr>
<tr>
<td>Positive Engagement Year 1</td>
<td>0.01(0.01)</td>
<td>0.411</td>
<td>0.01(0.01)</td>
</tr>
<tr>
<td>Warmth Year 1</td>
<td>-0.02(0.02)</td>
<td>0.161</td>
<td>-0.02(0.02)</td>
</tr>
</tbody>
</table>

n = 1330

Note. *p < 0.05; **p < 0.01; p < 0.001. HS = High School. <sup>1</sup> Model Fit: $\chi^2(df) = 560.39(152)$ p < 0.001, RMSEA = 0.04, CFI = 0.92. <sup>2</sup> Model Fit: $\chi^2(df) = 991.84(305)$ p < 0.001, RMSEA = 0.04, CFI = 0.87. <sup>3</sup> Model Fit: $\chi^2(df) = 1224.82(542)$ p < 0.001, RMSEA = 0.04, CFI = 0.87. <sup>a</sup> Associations for Married fathers. <sup>b</sup> Associations for Cohabiting fathers.
Figure 5. Conceptual Model of Associations between Father Involvement Domains over Time

Note. Positive associations were expected between each father involvement domain over time. Squares indicate observed variables, circles indicate latent variables. Father involvement variables were correlated with each other at each Year. Paths between independent time-invariant and variant control variables (Age, Race, Education, Employment) and father involvement at Year 1 (Year 3 for time-varying) were present in models with controls but are not pictured here.
Chapter 5: Final Thoughts

Fatherhood today is in a state of flux. On the one hand, fathers are more involved in their children's lives today than ever before (Bianchi, 2006). The historic image of the distant, figurehead father is rapidly changing to include fathers who change diapers, manage schedules, and prepare meals for children. Yet, on the other hand, images of "deadbeat dads", too young or ill-prepared to support a family, have added political fervor to the subject of fatherhood and shaped research efforts over the last few decades. From this research we know that fathers who are involved have children who have with better socioemotional development, greater social skills, and higher academic performance than children whose fathers are not involved (see Lamb, 2010 for review). Moreover, we know that involved fathers experience benefits themselves, ranging from reduced risk behaviors (Eggebeen & Knoester, 2004) to boosts in mental health (Kotila & Kamp Dush, 2013). In fact, involved fathers set children on pathways to success by building strong attachment relationships through sensitive and responsive care (Grossman et al., 2002), exposing children to the social world and modeling how to navigate it (e.g., Paquette, 2004), and providing children with stability (e.g., Osborne & McLanahan, 2007) in a world that is so frequently changing.
Scholarship on fatherhood has come a long way from early work based on mother-reported involvement and primarily married, heterosexual families. Increased federal funding for fatherhood programs and research in the 1990s made it possible to broaden the scope of research to include non-traditional fathers, such as those who were unmarried, cohabiting, or non-resident. A greater emphasis was also placed on the economic situations of fathers, and low-income fathers have become an increasing focus for fatherhood researchers. With the accumulation of evidence over decades of research, Pleck (2010) revised earlier theory on father involvement (e.g., Lamb et al., 1987) to focus on the domains that seem to be more important for optimal child development. This study provides an intimate look at this theory in two of today's most common family structures, married and cohabiting families, and explores questions of comparison, measurement, and divergent development.

In Chapter 2 I provide an in-depth examination of Pleck's (2010) father involvement theory in first-time, married parent homes by applying a multi-dimensional, multi-method approach - gold standards in research (Schoppe-Sullivan et al., 2004). For the most part, Pleck's revised theory adequately describes early father involvement with infants in first-time, married parent homes. The described domains of involvement, positive engagement, warmth and responsiveness, and control, were identified using multiple measurement methods at both the 3 and 9 month assessments, and almost all of the domains were significantly intercorrelated. Additionally, I found evidence to suggest that father involvement may change over time, differentiating as children age and fathers become more integrated into the parental role. Specifically, indirect care, a "subdomain"
of involvement identified in Pleck's (2010) model, seemed to emerge from the control
domain by the time infants were 9 months old. This finding is important and suggests
that future research should consider how the structure and composition of father
involvement may shift over time to accommodate children's strengths and needs.

Chapter 2 also reveals significant challenges regarding multi-method research.
Ideally, multiple measurement methods should reduce statistical bias and result in more
robust models, but this was not the case. Instead, the observed measures of involvement
only served to complicate the analysis from the outset, with low correlations and
difficulties establishing similar measures across time. These measurement challenges
provide future researchers with an important task of developing multi-method measures
that adequately measure the specific dimensions of involvement that are most central to
Pleck's (2010) model. This also requires researchers to think outside the box when it
comes to questionnaire development - lists of activities and frequency measures simply
are not enough to measure the complexities of the father-child relationship. Greater care
and attention to the qualitative nature of father-child interactions and the dyadic
relationship in general may help to alleviate some of these measurement challenges and
ensure that studies are not data-driven.

In Chapter 3, I apply Pleck's (2010) father involvement theory to married and
cohabiting contexts to engage the current social debate on the deinstitutionalization of
marriage. Although I document significant differences in the socioeconomic contexts of
married and cohabiting families, I show strong support that the structure of a father's
involvement, or the domains of importance (positive engagement, warmth, control) do
not vary across fathering context. Further, I find few differences in mean levels of father involvement. This is suggestive that resident status, rather than marital status, is a key factor in defining men's involvement with children. Some compositional differences within each domain were identified across family context, and this may suggest that the vastly different resources available to married and cohabiting fathers may shape the nature and importance of the activities fathers take part in with children.

This Chapter (3) is also important in establishing measurement recommendations for researchers investigating father involvement using the Fragile Families and Child Wellbeing dataset. Using Cluster Analysis, I validate the constructed latent measures of father involvement by identifying groups of fathers based on the saliency of the involvement domains (e.g., Allen & Hawkins, 1999). "Highly Involved" and "Minimally Involved" fathers were identified at each Year, reminding the fatherhood scholar that average levels of father involvement often mask the great variation in the type of fathering children receive. In the future, it is my hope that father involvement researchers will use these domain-specific measures to investigate questions of interest further. Given that the Fragile Families and Child Wellbeing Dataset is one of the few that has successfully followed a large number of unmarried, cohabiting fathers through the course of children's adolescent development (current Year 15 data collection underway), it is likely that this study has the greatest potential in exploring the nuances of a father's contributions to children's development by considering involvement in multiple domains.

Chapter 4 extends the work of Chapter 3 to describe how the multiple involvement domains are interrelated over time, and to test whether these associations
vary by fathering context. Unexpectedly, there were few associations between father involvement domains over time, although involvement in each domain was associated with an increase in that same type of involvement two years later. Thus, although the question of longitudinal, cross-domain links was in part motivated by the potential to identify ways to aid fathers in diversifying their involvement, it seems that encouraging coresidential relationships with children may be the most effective way to ensure fathers become and remain involved. Future research should explore what contexts and resources are most supportive for involvement in each domain, and explore programs and interventions that can help to ensure fathers receive those supports.

Despite the few cross-domain links, positive engagement did emerge as a central involvement domain for married fathers; early positive engagement was associated with increases in later warmth. This is unsurprising given that fathers have historically been children’s playmates (Marsiglio, 1993; Paquette, 2004), and the boisterous, high energy interactions fathers are likely to be involved with children in (e.g., Paquette, 2004 - rough and tumble) may be optimal settings for fathers to develop warm relationships. However, the most significant finding to emerge from Chapter 4 is the absence of a link between fathers’ early positive engagement and later warmth in cohabiting homes. It is unclear why there was variation in this link by family structure. Given the importance of the couple relationship to father involvement (e.g., Townsend, 2002), the absence of links suggest that there may be barriers for the development of father involvement that are a function of family structure, such as lower relationship quality (Brown & Booth, 1996; Klausli & Owen, 2009) and commitment (Nock, 1995) that limit the growth of cohabiting
fathers' warmth. Additionally, socioeconomic and cultural barriers such as unsafe neighborhoods or hegemonic masculinity may serve to disconnect cohabiting fathers' positive engagement from warmth. Future research should explore the mechanisms that foster the link between married fathers' positive engagement and warmth to inform programs aimed at strengthening unmarried fathers' involvement.

This study benefitted from the use of two longitudinal datasets containing information from fathers themselves. Despite the multiple advantages of using these datasets, there are several limitations. First, I was unable to compare married and cohabiting fathers' involvement using multiple measurement methods. Although the New Parents Project contained a subsample of cohabiting fathers, there were too few \( n = 27 \) to satisfy statistical requirements for robust comparisons. Second, the measures of fathers' involvement in the Fragile Families and Child Wellbeing study were simple and limited. Ideally, studies containing information on father involvement should consciously attempt to incorporate multiple measures to assess different aspects of father involvement. This has been done successfully in large studies such as the Early Childhood Longitudinal Birth Cohort. Given the multi-dimensionality of father involvement (i.e., Pleck, 2010; this study), the limited cross-domain associations over time (this study), and the unique associations with different aspects of children's development (Jia, Kotila, & Schoppe-Sullivan, 2012), it is in the best interest of study designers to spend time on gathering or developing valid and reliable measures for each involvement domain.
Third, though the studies together speak to theory on father involvement, they were each in some way driven by the data available. For instance, the lack of diverse measures of father involvement in the Fragile Families study made it impossible to identify the indirect care subdomain, as was done in the New Parents Project sample. This is an important reminder that we only know as much as our data will tell us; what is not measured may not necessarily be absent, but may rather simply be hidden from view. Finally, it is important to note that these findings are not necessarily generalizeable to the all U.S. fathers. As noted in Chapter 1, the New Parents Project is relatively advantaged, and the Fragile Families study is relatively disadvantaged, compared to the general new parent population. Moreover, the selected sample of cohabiting fathers may also be the most uncommon - high relationship instability plagues cohabiting relationships, particularly after children are born (Kamp Dush, 2011; McClain, 2011). Given that many cohabiting fathers will also experience multipartnered fertility (Guzzo & Furstenberg, 2007), and because fathers tend to be most involved with children they live with (Tach et al., 2010), it may be worthwhile for researchers to consider how a father's multidimensional involvement with one child shapes his involvement with another. This is also an interesting question for fathers in intact, stable homes.

Overall, these findings point to the utility of Pleck's (2010) theory of father involvement, but also identify some areas for further theoretical work, namely based on the cognitive and physical growth and development of children, the identity development of fathers, and the life course timing of major transitions, such as marriage and parenthood. Additionally, this study highlights important similarities and differences
between married and cohabiting fathers, and opens the potential for future research to investigate the family and social processes underlying this variation. Finally, this study's measurement challenges expose the significant need for improved measures of multiple domains of father involvement. The field needs to take seriously the implications of poor measurement, including our ability to synthesize information across studies. Suggestions for correcting this issue include greater reliance upon qualitative and ethnographic work to inform our understanding of fathering activities and paying greater attention to the social and economic contexts of fathers that may shape their involvement opportunities. As with any work, paying attention to the details ensures the quality of the final product, and what could be more worthwhile than ensuring we know the most to help make fathers the best?
Appendix

FATHER-CHILD INTERACTION CODING MANUAL

Ratings on each construct range from 1 - 5 (not at all characteristic - highly characteristic)

1. SENSITIVITY/RESPONSIVENESS

Fathers' sensitivity/responsiveness is a measure of how the father observes and responds to the infant's social gestures, expressions, and signals as well as responds to cries, frets, or other expressions of negative affect by the infant. In order for the interaction to be rated as highly sensitive, the research assistant must view the interaction as child-centered. Characteristics of a child-centered interaction include:

- Awareness of the infant's needs, moods, interests, and capabilities
- Appropriate responses to the infant's gestures
- Re-engaging the child in a manner that demonstrates sensitivity to the child's mood
- Offering the child toys or providing the child with other developmentally appropriate distractions when the child is bored or frustrated
- Allowing the child autonomy and time to independently explore toys
• Introducing only one toy or game at a time during dyadic play, and giving the child sufficient time to become engaged in the play
• Discontinuing play based on the child's response to the play interaction
• Play is guided by the child's enjoyment of the activity
• Play is discontinued when the child expresses discontent
• Contingent vocalizations and an acknowledgement of the child's interest, efforts, affect, and accomplishments
• An active interest in the child's activities
• Comments or embellishments when the child loses interest in an activity
• Fathers are "in sync" with their infant, providing appropriate stimulation that is well timed and paced to the child's responses
• Games or toy presentations are paced to keep the child engaged and interested, with time for the infant to disengage in order to calm down and reorganize his/her behavior

2. INTRUSIVENESS

Intrusiveness is mainly characterized by an adult-centered interaction. Intrusive fathers may display the following behaviors:

• Fathers impose their agenda on the child during play despite signals that a different activity, level, or pace of interaction is needed
• The child averts his/her gaze, turns away, or expresses negative affect and the father continues or escalates his activity
• Intrusive fathers do not allow the child a "turn" or an opportunity to respond at his/her pace

• Intrusive fathers persist in demonstrating toys to the child long after his/her interest has been gained, or when fathers are unable to provide the scaffolding necessary to facilitate the child's exploration or regulation of the activity

• Fathers overwhelm the child with a rapid succession of toys, not allowing the child enough time to react to one before another occurs

3. DETACHMENT

Detachment is characterized by a lack of emotional involvement or disengagement and unawareness of the child's needs for appropriate interaction to facilitate involvement with objects or people. Detachment may be displayed by the following behaviors:

• Fathers do not react contingently to their infant's vocalizations or actions

• Fathers do not provide the scaffolding needed for the child to explore objects

• An unawareness of the child's requests for attention or reaches for toys

• Timing is "out of sync" with the child's affect and responses

• Fathers remain disengaged even when the infant requests attention

• Passivity and a lack of emotional involvement and alertness to the child

• Fathers may appear uninterested in the child, for whatever reason

• A “babysitter-like” quality to the interaction, appearing somewhat attentive to the child, but interacting with the child in an impersonal or perfunctory manner that fails to convey an emotional bond
A performance-oriented quality to the interaction, or an appearance of "putting on a show", in that the interaction is tailored towards performing for the camera rather than reacting to and facilitating child-centered behavior

4. POSITIVE REGARD

Positive affect is rated based on the quality, quantity, uniformity, brightness, and genuineness of affect. Father's positive feelings toward the child are evidenced by the following behaviors:

- Speaking in a warm tone
- Hugging or other expressions of physical affection
- Expressive face
- Smiling
- Laughing with child
- Enthusiasm about child
- Praising child
- General enjoyment of child and playfulness

5. NEGATIVE REGARD

Negative regard is rated based on both the frequency and intensity of non-verbal and verbal indicators. Some markers of negative regard include:

- Disapproval
- Tense body
- Negative voice when correcting
• Abruptness
• Tense facial muscles and strained expression
• Harshness
• Threatening the child or punishing without explanation
• Roughness
• Calling the child unflattering names
• Teasing in a non-playful manner
References


early adolescence. In J. Brooks-Gunn & A. C. Peterson (Eds.), *Girls at puberty*, (pp. 201-228), New York: Springer.


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