

ABSTRACT

Title of Document: LOW-INCOME TEEN FATHERS'
TRAJECTORY OF INVOLVEMENT:
THE INFLUENCE OF INDIVIDUAL,
CONTEXTUAL, AND COPARENTAL
FACTORS

Allison Kay Holmes, Ph.D., 2009

Directed By: Professor Brenda Jones Harden, Ph.D., Human
Development and Child Studies

While teen births are on the rise and marriage rates are on the decline, fathers have become a recent focus. However, there is a dearth of literature on teen fathers' *parenting* behaviors. The current study provided a portrait of Early Head Start teen fathers' involvement throughout early childhood and salient influences on that involvement. This study maximized developmental and life course perspectives by employing a longitudinal analysis (i.e., Latent Growth Curve Model) that emphasized time-effects.

The majority of teen fathers were involved with children initially, but their involvement decreased over time. Consistent with extant literature, teen fathers who were prenatally engaged, resident after the birth, and in romantic coparental relationships at 14- and 24-months were more involved in their children's lives initially. Teen fathers who were in romantic coparental relationships at 36- and 64-

months were less likely to decrease their involvement over the course of early childhood. Surprisingly, age, race, employment, and school status were not significant influences on father involvement.

Although the present study had its limitations, trends were noted and should be considered in future studies. Teen fathers are a unique population facing several challenges to meeting their own developmental needs and enacting their father role. Some conceptual factors shown to be influential for father involvement with adult and married fathers (i.e., age, employment) do not hold the same meaning and impact among teen fathers. The conceptual and ultimately practical meaning of behaviors and characteristics must be contextualized within teen fathers' developmental trajectory and ecological settings.

Similarly, examination of teen fathers within a dynamic, longitudinal framework emphasized the need to address fatherhood in a different way. Previous studies have examined longitudinal data, but not examined the patterns of involvement for individual fathers. This different perspective (i.e., person-centered) revealed unique patterns for teen fathers. Further analyses will allow when and how to best intervene with teen fathers.

Teen fathers may be at-risk, but they are involved with their children and can positively benefit both children and mothers. Head Start and Early Head Start could continue to support teen fatherhood through its mission to serve low-income children *and* parents; availability from pregnancy through 5-years; and mission to adapt to the needs of the community and family. But without support or intervention, the cycle of teen of parenthood is perpetuated.

LOW-INCOME TEEN FATHERS' TRAJECTORY OF INVOLVEMENT:
THE INFLUENCE OF INDIVIDUAL, CONTEXTUAL, AND COPARENTAL
FACTORS

By

Allison Kay Holmes

Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2009

Advisory Committee:
Professor Brenda Jones Harden, Ph.D., Chair
Christy Tirrell Corbin, Ph.D.
Elisa Klein, Ph.D.
Hanno Petras, Ph.D.
Kevin Roy, Ph.D.

© Copyright by
Allison Kay Holmes
2009

Dedication

To my babies.

Acknowledgements

This study was based on the Early Head Start Research and Evaluation Project sponsored by the Administration for Children and Families, Office of Planning, Research, and Evaluation. I am grateful to the Early Head Start Research Consortium, federal staff, and research contractors for their diligent efforts in making this work possible. Most especially, I thank the families across the country for participating in this invaluable study.

I am deeply indebted to my dissertation committee: Drs. Brenda Jones Harden, Christy Tirrell Corbin, Elisa Klein, Hanno Petras, and Kevin Roy. With their guidance and insight, this dissertation exercise became a journey of learning and scholarship. I am particularly grateful to my advisor, Brenda, for seeing me through the entire process and never giving up on me. Her mentorship has taught me far more than academic skills; she is a true mentor. I am lucky to have learned and continue to learn from the best.

I could not have made it this far in my academic and professional career without the support of numerous colleagues, friends, and family. I consider myself fortunate to have been part of an amazing cohort of grad students, including but not limited to T'Pring Westbrook, Niki Denmark, Heather See, Jessica Vick, Ally Meisch, Dale Epstein, Bella Guner, Melissa Menzer, Carolyn Barber, Meghan Parkinson, and Alexis Williams. Super thanks to all!

Table of Contents

Dedication	ii
Acknowledgements	iii
Table of Contents	iv
List of Tables	vii
List of Figures	viii
CHAPTER I: INTRODUCTION.....	1
Terms of the Current Study.....	3
Theoretical and Conceptual Rationale	4
Father Involvement	10
Fathers' Prenatal and Birth Behaviors	12
Influences on Father Involvement	14
<i>Individual Factors: Father Age, Residence after Birth, Father Employment</i> <i>Status, Father School Status, and Child Gender</i>	14
<i>Contextual Factors: Race, Mother Age, and Coparental Relationship.....</i>	17
Limitations	19
Study Rationale and Overview	20
CHAPTER II: LITERATURE REVIEW	27
Theoretical Framework.....	27
Fatherhood	29
Father Involvement	31
Teen Father Involvement	33
<i>Qualitative Evidence</i>	34
<i>Quantitative Evidence</i>	35
Prenatal and Birth Behaviors	38
<i>Adult Fathers</i>	39
<i>Teen Fathers</i>	40
<i>Impacts of Teen Fathers' Prenatal and Birth Activities</i>	42
Father Factors.....	44
<i>Father Age</i>	45
<i>Father Residential Status</i>	46
<i>Father Employment Status.....</i>	49
<i>Father School Status</i>	51
Child Factors	52
Contextual Factors	52
<i>Parent Race.....</i>	53
<i>Mother Age.....</i>	56
Coparental Relationship Factors	57
<i>Coparental Relationship Quality Influence on Father Involvement.....</i>	57
<i>Coparental Relationship Status Influence on Father Involvement</i>	58
Methodological Limitations.....	60
<i>Sample Selection</i>	60
<i>Study Design</i>	63
Future Directions	64

CHAPTER III: DATA AND METHODS	66
Research Aims	66
The Early Head Start Research and Evaluation Project Dataset.....	70
Participant Selection	74
<i>Final Sample Characteristics</i>	78
Variables and Measures	81
<i>Dependent Variable: Father Involvement</i>	82
<i>Predictor Variables: Father Prenatal and Birth Behaviors</i>	83
<i>Teen Father Prenatal Behaviors</i>	84
<i>Teen Father Birth Behaviors</i>	84
Covariates	84
<i>Father Factor: Father Age</i>	85
<i>Father Factor: Father Residence after Birth</i>	87
<i>Father Factor: Father Employment</i>	87
<i>Father Factor: Father School</i>	88
<i>Child Factor: Child Gender</i>	88
<i>Contextual Factor: Race</i>	88
<i>Contextual Factor: Mother Age</i>	89
<i>Coparental Factor: Coparental Relationship Status</i>	90
Summary	90
CHAPTER IV: ANALYSIS AND RESULTS	91
Data Preparation.....	91
Descriptive Statistics.....	94
<i>Dependent Variable: Father Involvement</i>	94
<i>Predictor Variables: Father Prenatal and Birth Behaviors</i>	95
Covariates	96
Correlations	97
<i>Comparison of Younger and Older Teen Fathers</i>	101
Power Analysis	103
Data Analytic Strategy.....	104
<i>Latent Growth Curve Models</i>	107
<i>Latent Modeling with Categorical Indicators</i>	108
Measurement Model	109
Structural Model	118
<i>Father Involvement</i>	125
<i>Prenatal and Birth Behaviors</i>	126
<i>Individual Factors</i>	126
<i>Contextual Factors</i>	127
<i>Coparental Factors</i>	128
<i>How do teen fathers' prenatal and birth behaviors influence teen fathers' involvement trajectory?</i>	129
<i>How do teen father factors influence teen fathers' prenatal and birth behaviors?</i>	130
<i>How do teen father factors influence teen fathers' involvement trajectory?</i>	130
<i>How does the child factor influence teen fathers' involvement trajectory?</i>	131

<i>How do contextual factors influence teen fathers' prenatal and birth behaviors?</i>	131
<i>How do contextual factors influence teen fathers' involvement trajectory?</i>	131
<i>How is the coparental relationship factor concurrently associated with teen father involvement throughout early childhood?.....</i>	132
<i>How are teen father factors concurrently associated with teen father involvement throughout early childhood?.....</i>	132
<i>How do teen fathers' prenatal behaviors mediate the influence of father and contextual factors on teen fathers' involvement trajectory?.....</i>	133
<i>How do teen fathers' birth behaviors mediate the influence of father and contextual factors on teen fathers' involvement trajectory?.....</i>	134
CHAPTER V: DISCUSSION.....	135
Teen Father Involvement	135
<i>Latent Father Involvement Trajectory</i>	136
Explaining Father Involvement Trajectories	139
<i>Father Prenatal and Birth Behaviors</i>	140
<i>Individual Characteristics</i>	143
<i>Time-Invariant Characteristics</i>	143
<i>Time-Varying Characteristics</i>	148
<i>Contextual Characteristics</i>	150
<i>Coparental Relationship</i>	151
Limitations	152
Future Directions	154
Policy Implications	157
Conclusions.....	160
APPENDICES	162
APPENDIX A: HSFIS Application/Enrollment Form	163
APPENDIX B: 14-month Parent Interview	165
APPENDIX C: 24-month Parent Interview	172
APPENDIX D: 24-month Father Interview.....	176
APPENDIX E: 36-month Parent Interview	178
APPENDIX F: 36-month Father Interview	182
APPENDIX G: 64-month Parent Interview.....	184
APPENDIX H: 64-month Father Interview.....	188
APPENDIX I: Correlation Table of All Study Variables.....	191
APPENDIX J: Mplus Syntax for Final Measurement Model.....	193
APPENDIX K: Mplus Syntax for Final LGCM Model.....	195
References.....	199

List of Tables

Table 1	Summary of Research Questions and Hypotheses	23-24
Table 2	Summary of Research Questions and Hypotheses	65-66
Table 3	Summary of EHSRE Project Data Collection	71
Table 4	Participant Characteristics ($N = 416$)	78
Table 5	Variable Summary	79-80
Table 6	Hierarchy of Sources for Biological Father's Age and Number Contributed to Dataset	83
Table 7	Missing Data Patterns and Frequencies	91
Table 8	Mean(SD) Teen Father Involvement Levels from 14-months to 64-months	92
Table 9	Proportion Teen Father Involvement Levels from 14-months to 64-months	93
Table 10	Teen Father Prenatal and Birth Behavior Frequencies	94
Table 11	Father, Child, Contextual and Coparental Factors Means and Frequencies	95
Table 12	Correlations among Teen Father Involvement Levels from 14-months to 64-months	96
Table 13	Correlations between Involvement and Father, Child, and Contextual Factors	97
Table 14	Correlations between Prenatal and Birth Behaviors and Father, Child, and Contextual Factors	98
Table 15	Correlations between Time-varying Covariates and Father Involvement	99
Table 16	Comparison between Younger and Older Teen Fathers on Involvement and Covariates	101
Table 17	Summary of Hypotheses and Analytic Strategies	102-103
Table 18	Summary of Measurement Model Fit Statistics	109
Table 19	Parameter Estimates for Final Single Class Growth Measurement Model	112
Table 20	Summary of R^2 Estimates from Final Measurement Model	113
Table 21	Parameter Estimates for the Final LCGM of Teen Father Involvement	119-120
Table 22	Pathways of Interest in Predicting Father Involvement, Prenatal Behaviors, and Birth Behaviors: Unstandardized Estimates	121
Table 23	Pathways of Interest in Predicting Father Involvement, Prenatal Behaviors, and Birth Behaviors: Standardized Estimates	122
Table 24	Summary of R^2 Estimates from the Final LGCM	122

List of Figures

Figure 1.	Doherty et al. (1998) Conceptual Model of Influences on Responsible Fathering	5
Figure 2.	Current Study Constructs within Doherty et al. (1998) Fathering Framework	9
Figure 3.	Conceptual Model of Teen Fathers' Involvement Trajectory	22
Figure 4.	Conceptual Model of Teen Fathers' Involvement Trajectory	67
Figure 5.	Conceptual Model of Teen Fathers' Latent Trajectory of Involvement	104
Figure 6.	Latent Growth Curve Model	105
Figure 7.	Bollen & Curren (2006) Underlying Continuous Variable (y^*_t) Mapped into Five-Category Ordinal Variable (y_t)	106
Figure 8.	Average Proportions of Involvement	109
Figure 9.	Measurement Model for Teen Father Involvement	111
Figure 10.	Mean Estimated Latent Involvement from Final Measurement Model	114
Figure 11.	Final LGCM for Teen Father Involvement	117

CHAPTER I: INTRODUCTION

Adolescent pregnancy and parenthood has been a topic of social concern for several decades (Hayes, 1987; Sidel, 1996). Although teenage birthrates in the U.S. have declined in recent decades (Martin, Hamilton, Sutton, Ventura, Menacker, et al., 2003), rates have increased in the past few years (Moore, 2009) and births to teens remain much higher in comparison to other industrialized nations (Alan Guttmacher Institute, 1999). After decades of research on teen mothers, the risks posed to their children and hardships faced by the mothers themselves (Coley & Chase-Lansdale, 1998; Furstenberg, 1976; Furstenberg, Brooks-Gunn, & Morgan, 1987), policymakers, practitioners, and researchers have recently given increased attention to teen mothers' partners and teen fathers in efforts to prevent teenage pregnancy and promote positive teen parenting (Fagan, 1999; Fagan & Palm, 2004; Mazza, 2002; Lane & Clay, 2000; Smith, Buzi, & Weinman, 2002; Weinman, Smith, & Buzi, 2002).

The majority of research on teen fathers examines who is likely to become a teen father from a risk factor perspective. As such, studies have focused on delinquency and contextual factors related to social disadvantages. For instance, teens who became young fathers were also more likely to engage in high risk sexual activity, belong to gangs, chronically use drugs, alcohol, and tobacco, and be involved in serious delinquency when compared to their peers who did not become fathers (Fagot, Pears, Capaldi, Crosby, & Leve, 1998; Stouthamer-Loeber & Wei, 1998; Thornberry, Smith, & Howard, 1997). Additionally, compared to nonfather teens, teen fathers were more likely to be from disadvantaged homes, have poor

academic performance, experience abuse, live in violent neighborhoods, have low family incomes, and have younger, uneducated parents who had low educational expectations of them (Fagot et al., 1998; Goodyear, Newcomb, & Allison, 2000; Stouthamer-Loeber & Wei, 1998; Thornberry et al., 1997). Thus, research focused on risk factors provides a description of which teens become fathers. However, a risk factor perspective limits our understanding of teen fathers in their roles as parents. The present study addresses this gap by focusing on teen fathering.

Examining teen fathers as parents is important because findings suggest that teen fathers can provide support to mother and child (Gee & Rhodes, 1999; 2003). Positive father involvement may help reduce the increased risk of adverse long-term outcomes that children of teen mothers face due to a poor family environment (Jaffee, Caspi, Moffitt, Belsky, & Silva, 2001). Additionally, a body of research supports the positive influence of nonresident fathers' parenting on children's development, although this research is based largely on adult fathers (Amato, 1998; Amato & Gilbreth, 1999). Thus, in contrast to the negative image constructed by literature on the risk factors of teen fatherhood, teen fathers serve an integral role in the family system for their partners and children. However, many young fathers become less involved with their children over time (Lerman, 1993; Marsiglio, Amato, Day, & Lamb, 2000). Research is needed to determine the factors that promote *and* maintain teen fathers' positive involvement with their children.

At the same time, parenting must be evaluated within its context. A low-income family background is a strong risk factor for becoming a teen parent (Alan Guttmacher Institute, 1999; Thompson, Osteen, & Younger, 2001; Xie, Cairns, &

Cairns, 2001). Moreover, teen parents are at an increased risk of living in poverty later compared to other parents due to their age, lack of schooling, and competition in the job market (Marsiglio & Cohan, 1997). Specifically sampling low-income teen fathers provides an opportunity to investigate the parenting mechanisms operating within a culture of poverty (Super & Harkness, 2002). Findings from studies examining how low-income teen fathers enact their father role have important implications for policies directed towards low-income families and teen parents. Additionally, programs and services can be better designed to target the needs of low-income teen fathers and their families given the specific individual and contextual influences on low-income teen fathers' involvement.

Despite the social relevance and benefit to the family system, there is a paucity of research with teen fathers. Given the disproportionate number of teen fathers living in poverty and the public policies that influence low-income parents (Kowaleski-Jones & Wolfinger, 2006), the lives and behaviors of low-income teen fathers have particular implications for researchers, practitioners, and policymakers. Therefore, the goals of the current study are to:

- 1) Examine low-income teen fathers' involvement with their children throughout early childhood.
- 2) Examine the influence of individual and contextual characteristics on teen fathers' involvement.

Terms of the Current Study

Teen father refers to biological fathers aged 19 years and younger.

Accessibility is a form of father involvement wherein the father is present and available to the child for a potential interaction, though direct interaction with the child is not necessary.

The *coparental relationship* refers to the relationship between the biological father and biological mother of a child.

Theoretical and Conceptual Rationale

Despite several decades of investigating the importance of fathers and the development of numerous father involvement models, the field still lacks a guiding theory (Cabrera, 2004). Parenting literature and accompanying theory (e.g., attachment theory) typically use mothers as the gold standard and template to which father behaviors are compared (Doherty, Kouneski, & Erickson, 1998; Parke, 2002; Roggman, Fitzgerald, Bradley, & Raikes, 2002). Moreover, both fathers' and mothers' parenting behaviors are impacted by a set of overlapping factors, but each has additional factors that uniquely influence their parenting due to the societal gender context (Lupton & Barclay, 1997). Because fatherhood is postulated to be more socially constructed than motherhood (Marsiglio et al., 2000; Lupton & Barclay, 1997; Palkovitz, 2002), the processes that influence fathers' parenting behaviors may be more specific to fathers than general parenting models indicate. Thus, the current study utilizes a framework specific to father involvement.

The Doherty et al. (1998) conceptual model of the influences on responsible fathering is broadly a systemic, ecological model, which emphasizes individual, relationship, and contextual factors that influence the father-child relationship (see Figure 1). All factor domains draw from previous father models (e.g., Lamb, Pleck,

Charnov, & Levine, 1987) and fathering research to allow generalizability to all fathers, regardless of residential or marital status. Thus, the fathering behaviors of adolescent fathers could be captured in the Doherty framework.

Doherty et al. (1998) drew concepts from bioecological (Bronfenbrenner, 2005; 1979), systemic (e.g., Sameroff, 1994), and parenting models (e.g., Belsky, 1984) to create their fathering model. The current study could also be informed by these models. In each alternative model, individual characteristics, interaction with contextual systems, and dynamic relationships influence how parents behave. Research across several fields, including psychology, sociology, family therapy, and social work, continually support the conclusion that all aforementioned factors are important for optimal development and relationship maintenance. However, Doherty's model is not all-encompassing. There is no mechanism for the development of father-child relationships over time, nor changes in the factors impacting the relationship over time. The issue of time and age is of particular interest when examining teen fathers who are described as entering fatherhood "early" and "off-time". For instance, a life-course perspective (Elder, 1998) grounds development and change within time, but does not provide the contextual explanations for fathering behaviors. In sum, the field lacks a developmental, dynamic theory of fathering behaviors to explain the emergence and changes in the father-child relationship over time. Subsequently, I use the Doherty et al. (1998) model as a rough conceptual framework, but do not seek to empirically test the model.

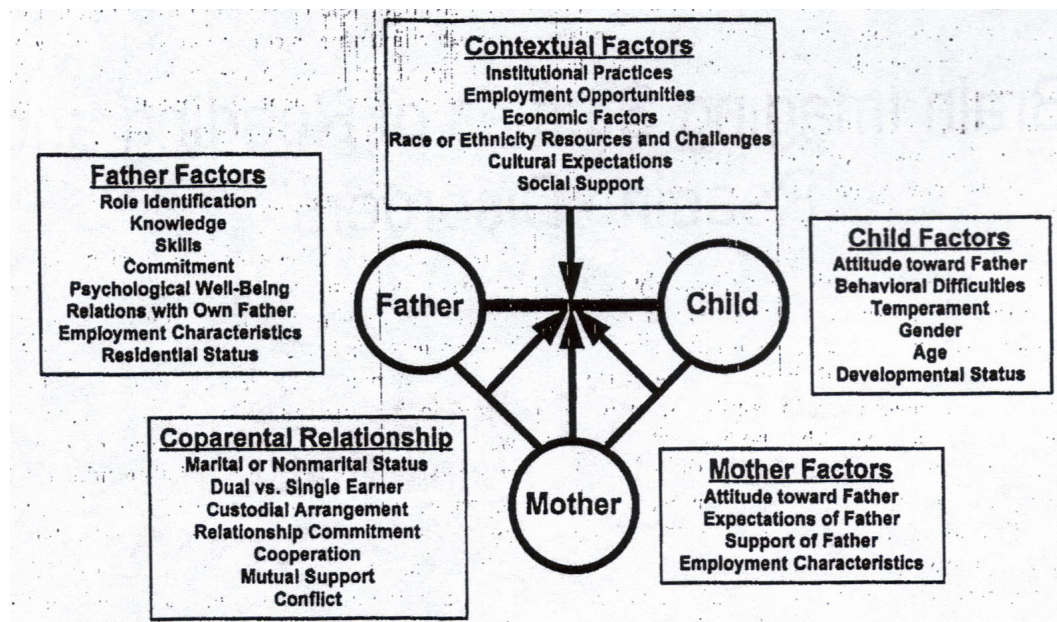


Figure 1. Doherty et al. (1998) Conceptual Model of Influences on Responsible Fathering

For the current study, the *father-child relationship* aspect of interest is father involvement. According to Lamb et al. (1985; 1987), father involvement can be broadly characterized as accessibility, engagement, or responsibility. Accessibility is defined as the father being present and available to the child for a potential interaction, though direct interaction with the child is not necessary. In contrast, engagement is defined as the father directly interacting with the child (e.g., caregiving, play). Responsibility is defined as the father participating in such tasks as arranging care for the child, making appointments, and providing financial support.

For example, if the father is making dinner while the child is in the house, the father is accessible to the child. He may or may not talk or interact (i.e., engage) with the child while making dinner, but his presence affords him the opportunity to engage with the child. Thus, accessibility is a very broad form of involvement, but is necessary for higher levels of interaction with children. Moreover, accessibility is not

limited to certain types of fathers by residence or coparental relationship status. Both resident and nonresident fathers can be accessible to their children in multiple settings and mediums (e.g., home, playground, school, phone, email). The current study is limited to accessibility in order to include all fathers, regardless of residency and relationship status. This approach still allows the assessment of variability in fathers' behaviors.

For the current study, the *individual father factors* of interest are age, residential status after the birth, employment status, and school status. These factors are salient characteristics that the father brings to the father-child relationship and impact how he constructs and enacts his father role (Parke, 2002). Heterogeneity among teen fathers is specifically examined through father's age, residence, employment, and engagement in school; teen fathers situated in various circumstances (i.e., younger, resident, employed, and in-school) impact involvement and other relationships differently.

The *coparental relationship factor* of interest is coparental relationship status. Particularly for young fathers, the relationship with the mother of their child strongly influences how they view themselves as fathers and how they are involved with their children (Florsheim, Moore, & Edgington, 2003; Paschal, 2006). The *individual child factor* of interest is gender. Although many child characteristics contribute to the father-child relationship, child gender is often included in large-scale data analyses wherein differences in father involvement are found by child gender (Lamb, 2004).

The *contextual factors* of interest are race/ethnicity and maternal age due to their indirect impact on father involvement. Racial contexts influence involvement for

all fathers (Marsiglio et al., 2000), however, these contexts may be especially influential for teen fathers because of the disproportionate number of minority teen fathers (Manlove, Terry-Humen, & Ikramullah, 2006), and social expectations of teen fathers (Nesmith, Klerman, Oh, & Feinstein, 1997). Moreover, maternal age may indirectly impact father involvement through living arrangements due to policy constraints (Kowaleski-Jones & Wolfinger, 2006), or through maternal grandparent facilitation or impediment (Cervera, 1991; Dallas, 2004; Dallas & Chen, 1998; Gavin et al., 2002; Krishnakumar & Black, 2003; Rhein et al., 1997). Nonetheless, contextual factors shape when and how teen fathers and their children interact and the meanings of these behaviors.

Additionally, the current study assesses fathers' prenatal and birth behaviors. The Doherty et al. (1998) model for responsible fathering is centered on men who are already fathers, or more specifically, is temporally situated after the child is born. However, the responsible father definition for the model was based on that of Levine & Pitt (1997) which includes factors that occur prior to pregnancy: waiting to have a baby until he is emotionally and financially prepared; and establishing legal paternity when he has a baby. Further, active fathering begins during pregnancy for responsible fathers "He actively shares with child's mother in continuing emotional and physical care of their child, *from pregnancy onwards* [italics added]" and "He shares with the child's mother in the continuing financial support of their child, *from pregnancy onwards* [italics added]" (Levine & Pitt, 1997, pp. 36). Thus, how a father supports the child's mother during the pregnancy is one of his first behaviors in his father role and a logical extension of the Doherty model.

Fathers' behaviors during the pregnancy and birth have also been examined from sociobiology or behavioral ecology perspectives (Lamb et al., 1987). Protecting and providing for the mother also fulfills the father's social contract to ensure his child is raised to maturity in good health. A healthy, low-stressed, protected, and provided for mother increases the odds that the baby will be born healthy, especially for teen mothers (East & Felice, 1996). Thus, fathers' prenatal and birth behaviors may reflect a father's commitment to child and mother (Hoyer, 1998) and how important fathers feel they are for children's development (Brown & Eisenberg, 1995; Nicholson, Gist, & Klein, 1983). Early responsibility in the father role or commitment to the child and mother could best then be described as an *individual father factor* within Doherty's fathering conceptual model.

In sum, the present study considers how father (i.e., age, residence after the birth, employment status, school status, prenatal behaviors, birth behaviors), child (i.e., gender), contextual (i.e., race, mother age), and coparental (i.e., relationship status) factors influence father involvement. The study constructs are summarized within the Doherty conceptual model in Figure 2.

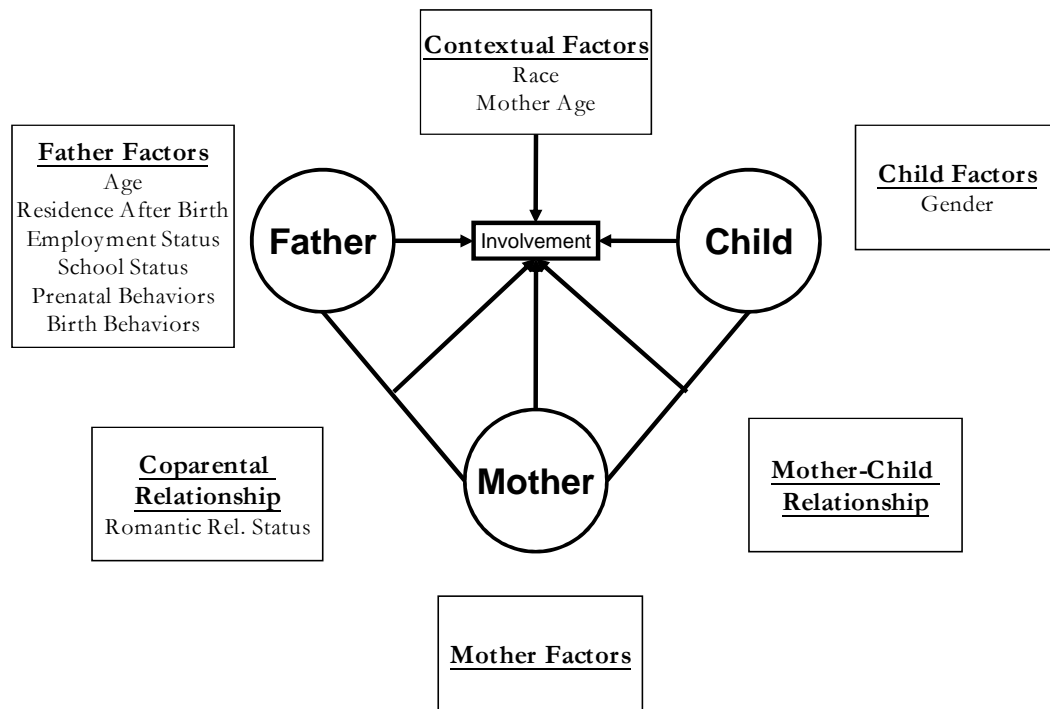


Figure 2. Current Study Constructs within Doherty et al. (1998) Fathering Framework

Father Involvement

Researchers have studied fathers' involvement with their children for several decades, concluding that *positive* father involvement is beneficial for children's development (Marsiglio et al., 2000; Lewis & Lamb, 2003; Parke, 2002). In general, fathers are involved in the day to day care of their children though this involvement is less frequent than mothers' involvement and decreases with children's age (Lamb, 1997; 2004; Pleck, 1997). Recent research is showing that fathers, particularly minority and low-income fathers, are more accessible to their children than previously believed (Cabrera, Ryan, Shannon, Brooks-Gunn, Vogel, et al., 2004; Mincy & Oliver, 2003), despite encountering multiple barriers to their involvement (Nelson, Clampet-Ludquist, & Edin, 2002). Fewer studies have examined how teen

fathers are involved with their children (Bunting & McAuley, 2004; Coley & Chase-Lansdale, 1998).

Contrary to the negative risk factor perception of teen fathers, findings suggest that most teen fathers embrace their father role and take initiative to enact the role in their children's lives (Lerman & Ooms, 1993; Paschal, 2006). During qualitative interviews, low-income African American teen fathers emphasized the importance of establishing and maintaining bonds with their children and wanting to spend more time with their children, while at the same time contributing financially to the family and providing child-care alternatives for the mother (Allen & Doherty, 1996; Dallas & Chen, 1998; Paschal, 2006). Similarly, the majority of African American teen fathers reported being actively engaged (e.g., feeding, playing, dressing) with their children at least monthly (Rhein, Ginsburg, Schwarz, Pinto-Martin, Zhao, Morgan, et al., 1997).

In contrast, other findings highlight the dissonance between the teens' well-intentioned words and behaviors. Approximately half of teen fathers saw their children at least once per week (Stouthamer-Loeber & Wei, 1998), whereas 40% of teen fathers had no contact with children in a sample of low-income white teen fathers when children were 18- to 24-months-old (Fagot et al., 1998). Thus, extant findings from qualitative and quantitative studies drawing on small-scale samples provide an inconsistent and incomplete picture of teen fatherhood. Inconsistent findings may also reflect the prematurity of teen fathers' transition into fatherhood who are continuing to develop physically, cognitively, emotionally, and socially (Elder, 1998; Hoyer, 1998; Marsiglio & Cohan, 1997). Moreover, studies conducted

with teen fathers are predominantly focused on children during infancy and toddlerhood, assess father involvement at only one point in time, do not control for children's ages, and/or do not distinguish between teen fathers and the partners of teen mothers (i.e., including both adult and teen biological fathers and social fathers). I address these methodological concerns by examining biological teen fathers' involvement with their children longitudinally.

Fathers' Prenatal and Birth Behaviors

Fathers' involvement with their children may be increased when fathers are involved during the pregnancy and at the birth. Prenatal and birth behaviors may include visiting the doctor with their partners during the pregnancy, attending childbirth classes, providing financial support during the pregnancy, and being present at the child's birth (Bronte-Tinkew, Horowitz, Kennedy, & Perper, 2007). The extant literature provides an inconsistent picture of teen fathers' prenatal and birth behaviors. On one hand, the majority of teen fathers are uninvolved during the pregnancy and birth, fulfilling the "irresponsible, absent father" stereotype. Compared to nearly all of teen mothers (96%) who expected their partners to attend the birth, approximately half of teen fathers (57%) expected that they should attend the child's birth. In fact only 56% of teen fathers reported attending the child's birth (Rhein et al., 1997). Dallas and Chen (1998) found that teen fathers did not attend prenatal classes and some were too embarrassed to attend the birth. Again, the fatherhood role is being constructed within an individual and contextual setting in which the adolescent is still maturing despite the transition into a typically adult role (i.e., parenthood; Neville & Parke, 1997).

On the other hand, teen fathers express the desire to fulfill their role as fathers. Allen and Doherty (1996) found one aspect of active fathering, “being there”, meant being present at the birth of their child. These teen fathers felt a responsibility to the child rather than to the child’s mother. The authors suggested that teen fathers’ desire to “be there” and ensure the child’s well-being may translate into positive prenatal behaviors and support.

Although mostly documented with adult samples, fathers’ participation in prenatal and birth behaviors increases the likelihood of later involvement with children, supporting the notion that involvement before the birth indicates fathers’ interest and commitment to their children (Brown & Eisenberg, 1995; Nicholson et al., 1983). For instance, fathers who attended birth preparation classes were more likely to be present at the birth, be involved with caretaking of 3 to 5-month-old infants, and report they could accurately interpret their infants’ cues (Beitel & Parke, 1998; Grossman & Volker, 1984). Similarly, among resident fathers in a national sample, participating in prenatal activities increased the likelihood of attending the birth and engaging with the infant at 9-months, however, teen fathers were less likely than older fathers to participate in prenatal and birth activities (Bronte-Tinkew et al., 2007). Among low-income fathers, prenatal and birth behaviors were associated with later paternal presence for both adult (Shannon, Cabrera, Tamis-LeMonda & Lamb, 2005) and teen fathers (Tarkow, Cabrera, & Shannon, 2005). Prenatal behaviors were associated with fathers’ accessibility when children were 24- and 36-months-old extending previous findings past infancy. Extant data reveal that prenatal and birth behaviors may be a particularly important early means of promoting father

involvement over time at a variable level. No studies track whether prenatal participation increases an individual father's likelihood of later involvement, a person-centered approach. Additionally, there is a dearth of research that examines the prenatal and birth behaviors of adolescent fathers. I examine the influence of prenatal and birth behaviors on teen father involvement from infancy through early childhood from a person-centered perspective.

Influences on Father Involvement

In addition to prenatal and birth behaviors, father involvement is consistently influenced by a range of individual and contextual factors (Lamb, 2004; Tamis-LeMonda & Cabrera, 2002), directly and indirectly (Parke, 2002). More appropriately, it should be stated that individual and contextual factors transactionally relate to father involvement over time, such that any factor is influencing and being influenced by father involvement at a given time. This transactional process in turn impacts how individual and contextual factors influence and are influenced by father involvement at another time (Sameroff & Mackenzie, 2003). For simplicity, the literature refers to directionality in the association between these factors and father involvement even though few studies can claim such. To follow existing patterns, individual and contextual factors are discussed as influencing father involvement.

Individual Factors: Father Age, Residence after Birth, Father Employment Status, Father School Status, and Child Gender

Individual parent characteristics are an important indicator for father involvement. Age is a demographic characteristic typically included because of its

approximation for life status (Elder, 1998). Overall, older fathers are more involved with their children because they are more established in terms of careers and relationships (Lamb, 2000; 2004; Parke, 2002). However, the opposite holds true when examining age effects among teen fathers. Although being older was a predictor of pregnancy and teen fatherhood (Goodyear et al., 2000; Spingarn & DuRant, 1996; Stouthamer-Loeber & Wei, 1998), teen fathers who were younger and employed were more likely to be involved than their counterparts (Danziger & Radin, 1990; Gavin, Black, Minor, Abel, Papas, & Bentley, 2002; Rhein et al., 1997). The pattern in teen samples may be related to the limited age range (e.g., 16 to 24 years) rather than a wider range in other parenting studies (e.g., 18 to 40 years).

Highlighting the importance of the social context in determining fathers' involvement, other findings support that the determinants of father involvement are different for resident and nonresident fathers (e.g., Shannon, Tamis-LeMonda, London, & Cabrera, 2002). Despite the positive influence of nonresident fathers on children's development (Amato & Gilbreth, 1999), nonresident fathers are at risk of low involvement with their children (Marsiglio et al., 2000; Stewart, 1999).

Public policies may discourage low-income fathers from living with their children so that mothers continue to receive state or federal benefits (Cabrera, Brooks-Gunn, Moore, West, Boller, et al., 2002; Cabrera & Peters, 2000; Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000). Similarly, teen parents' families may also discourage fathers from living with their children or create an unwelcome environment (Cervera, 1991). Among low-income nonresident fathers, recent findings have revealed heterogeneity in fathers' involvement patterns. For instance,

some fathers remain consistently available to their toddlers over time whereas others are not available (Cabrera et al., 2004). Other fathers tend to move in and out of their children's lives (Eggebeen, 2002), perhaps reflecting the complex personal and social lives that low-income fathers lead (Roy, 2006). Although residing with children increases the opportunity for father involvement, the influence of residency for teen fathers remains unclear. Fewer studies have examined residency influences with teen fathers. Father residency is included to examine influences on teen father involvement.

Although both work and school take time away from directly engaging and caregiving for children, fathers' employment status and education has consistently shown associations with father involvement (Parke, 2002). Being employed has been positively associated with various aspects of father involvement (e.g., accessibility, nurturance, childcare, financial support) for young fathers with low-income teen mothers (Danziger & Radin, 1990; Gavin et al., 2002). Moreover, attaining employment is important for fathers for actualizing an aspect of the father role (i.e., provider) and in turn facilitating coparental interactions (e.g., Chambers, Schmidt, & Wilson, 2006). Education is related to that process by enabling the procurement of secure jobs and the establishment of a career path. However, teen fathers completed less education than nonfathers (Pirog-Good, 1995). At the same time, teen fathers expressed the desire and expectation to complete more schooling (Pirog-Good, 1996), but school participation has not been examined in association with father involvement. Both employment and school status are included as influences on teen fathers' involvement.

The contribution of the child to the father-child relationship is not to be neglected (Bell, 1971; 1976). Child age is important for eliciting interaction with the father, thus this interaction varies with developmental and maturational ability. Simultaneously, children of different ages require varying levels of parental monitoring, direct care, and management. The current study includes child age in the longitudinal study design. Additionally, child gender can elicit differential responses from parents (Leaper, 2002). Reviews support that fathers spend more time and are more likely to be involved with boys than girls (Pleck, 1997), however, this finding is not consistently documented. At the same time, low-income fathers who were married at the time of the child's birth were more likely to continue living with their child one year later if they had a son than if they had a daughter (Lundberg, McLanahan, & Rose, 2007). Thus, a child's gender may influence fathers' behaviors in several ways. No studies with teen fathers have found an effect of child gender. I include child gender to explore potential gender effects.

Contextual Factors: Race, Mother Age, and Coparental Relationship

Recent data (Taylor, Funk, & Clark, 2007) and ethnographic research (Edin & Kefalas, 2005) have suggested that attitudes and norms about nonmarital and teen pregnancy may vary by age, socioeconomic status, race, ethnicity, and religious attendance. Subgroups hold varying social norms of transitioning to parenthood, which in turn influences how social institutions, communities, families, and individuals behave, which in turn impacts father involvement. The contextual factors, race and mother age, shape when and how teen fathers interact with their children and the meanings of these behaviors. They provide a physical space or social script for the

relationship to occur and a lens through which the relationship is perceived and interpreted. To be clear, the measured contextual factors of the current study indirectly influence fathering through other constructs, which were not measured.

Racial/ethnic backgrounds create varying contexts of familial, community, and societal expectations and norms for men and fathers. These differences are heightened for teens. First, there are racial differences in becoming pregnant and a teen parent. The prevalence of teen pregnancy was higher among African American (9.1%) and Hispanic high school students (6.4%) compared to White students (2.3%) in 2003 (Centers for Disease Control and Prevention, 2004). Second, after becoming teen parents, families hold different values depending on race. In Hispanic communities, teen fathers were respected as men, encouraged to fulfill their duty, and regarded as virile (Sullivan, 1993). Contrastingly, in African American communities, teen fathers were expected to stay in school, both families helped with the baby, and the teen father was regarded more as a child than as a man (Sullivan, 1993). I include race to account for such influences on fathers' involvement.

Age of children's mothers is also included as a contextual factor. Who fathers partner with have important influences on father involvement above coparental and mother factors. Mother age indirectly impacts father involvement through other factors. For example, as age increases the probabilities of having other children and multiple partners increase, which decrease the probability of father involvement (e.g., Johnson, 2001). Mother age could also impact living arrangements (e.g., younger teen mothers may be more likely to reside at home with maternal grandparents whereas older mothers may be living on their own), which in turn would influence father

involvement. If the mother is living at home, maternal grandparents can facilitate coparental relationships (e.g., Dallas, 2004) or become a barrier to fathers' accessibility (e.g., Cervera, 1991). Although race and mother age are conceptualized at the contextual level, each were assessed at the individual level due to a lack of neighborhood or other environmental level data.

The father-child relationship is best assessed within a network of social relationships (Lamb, 2000). The coparental relationship is paramount to fully examining father involvement, in part because of mothers' gatekeeping and gateopening powers (Fagan & Barnett, 2003). Numerous studies have asserted that higher quality coparental relationships are associated with higher levels of father involvement for adult fathers (e.g. McBride & Rane, 1998; McKenry, Price, Fine, & Serovich, 1992) and teen fathers (Allen & Doherty, 1996; Gavin et al., 2002). For biological fathers of low-income toddlers, higher rates of availability were more likely over time when fathers maintained closer coparental relationship statuses, particularly if they remained at least friends with children's mothers (Cabrera et al., 2004). Thus, coparental relationship patterns appear to be dynamic and significant for father involvement. I include coparental relationship status as a concurrent determinant of father involvement over time.

Limitations

Other factors could influence teen fathers' involvement, but are beyond the scope of the current study. Individual father factors Although there is not direct evidence regarding how risky or delinquent behaviors influence teen fathers' involvement with their children, substantial literature supports that these behaviors

increase the likelihood of becoming a teen father (e.g., Lesser et al., 2001; Thornberry et al., 1997) and decrease the likelihood of mothers allowing access to children among adult fathers (e.g., Roggman et al., 2002). Other individual child factors. Individual mother factors. Mother-child relationship factors. Other contextual factors Household structure, particularly the influences of maternal and paternal grandparents, have shown significant influence on how and when teen fathers engage with their children (e.g. Dallas, 2004). Multi-partner fertility and Other coparental relationship factors. Further research in all these areas is needed with teen fathers and their families.

Study Rationale and Overview

This study examines teen fathers' involvement with their children and the influences of individual and contextual factors over time. Although Doherty and colleagues' (1998) model of influences on responsible fathering is not longitudinal, they proposed the mechanisms to be dynamic. There is a dearth of literature investigating the patterns of involvement for low-income teen fathers from pregnancy through 5 years, the heterogeneity within teen fathers' involvement patterns, and what influences teen fathers' involvement over time, particularly from a person-centered approach. The current study is exploratory addressing a unique sample with a solid set of constructs from an innovative analytic approach, however, it is grounded within the fathering literature.

First, I assess the involvement patterns that low-income teen fathers have with their children. There is not an overall picture from the literature using large scale, longitudinal data of teen fathers- both resident and nonresident- that describe how

they are involved with their children. Second, I assess how individual and contextual factors influence teen fathers' involvement. Conceptual factors reflect a time sequence to further distinguish influences on father involvement during children's first 5 years of life. Specifically, teen fathers' prenatal and birth behaviors are examined separately from other father factors to establish a timeline of fathers' active involvement from pregnancy through 64-months. Placing involvement on a development sequence is an extrapolation from the conceptual model and further expands research on teen father involvement. The influence of teen fathers' prenatal and birth behaviors on their patterns of involvement is assessed.

I examine how other father factors (e.g., age, residence after birth, employment, school) and contextual factors (e.g., race, mother age) influence teen fathers' initial behaviors during pregnancy and birth and later involvement patterns with their children. Additionally, I assess how prenatal and birth behaviors mediate the impact of father and contextual factors on father involvement patterns.

Lastly, I assess the concurrent influence of the coparental relationship on teen father involvement over time. This allows for the estimation of the time-specific influences of the coparental relationship and the determination of sensitive periods in teen fathers' involvement trajectories.

These study goals are accomplished through the analysis of the Early Head Start Research and Evaluation (EHSRE) Project. The EHSRE Project is a longitudinal, multi-site study of low-income families with infants and toddlers at the time of the study inception (Mathematica Policy Research, 2001; 2002). The EHSRE Project began in 1996 in response to the Administration for Children, Youth, and

Family's (ACYF) need for an evaluation of Early Head Start programs to meet 1994 and 1998 Head Start reauthorization goals. The EHSRE Project presents a prime opportunity to examine the above processes because it contains a sample of low-income families, as well as in-depth information from mothers' interviews on family characteristics, both mothers' and fathers', and father involvement from infancy to kindergarten. Other large-scale studies (e.g., Early Childhood Longitudinal Study-Birth Cohort, Fragile Families and Child Well-Being Study) sample children or families, have populations of low-income families, and multiple assessment waves beginning in infancy and extend through early childhood. However, the EHSRE Project is currently the only study to have data available for at least four assessment waves. Other longitudinal studies (e.g., National Longitudinal Study of Adolescent Health, National Survey of Adolescent Males, National Longitudinal Survey of Youth) specifically sample adolescents; subsamples of parents with same-age children could be constructed. However, these surveys were not designed to specifically study parenting, hence, are limited in providing information about the parenting dynamics of teen fathers. Thus, the current study utilized the EHSRE Project for data analyses.

In sum, I determine the involvement trajectory of low-income teen fathers from 14- to 64-months and the impact of teen fathers' prenatal and birth behaviors on involvement trajectories. Additionally, the influence of father (i.e., age, residence, employment, school), child (i.e., gender), contextual (i.e., race, mother age), and coparental (i.e., relationship status) factors on teen fathers' early behaviors and involvement trajectories are examined and mediation effects are tested. Figure 3

provides a conceptual model illustrating the associations among the variables for the current study. Stemming from the provided review and rationale, the specific research questions and accompanying hypotheses are summarized in Table 1.

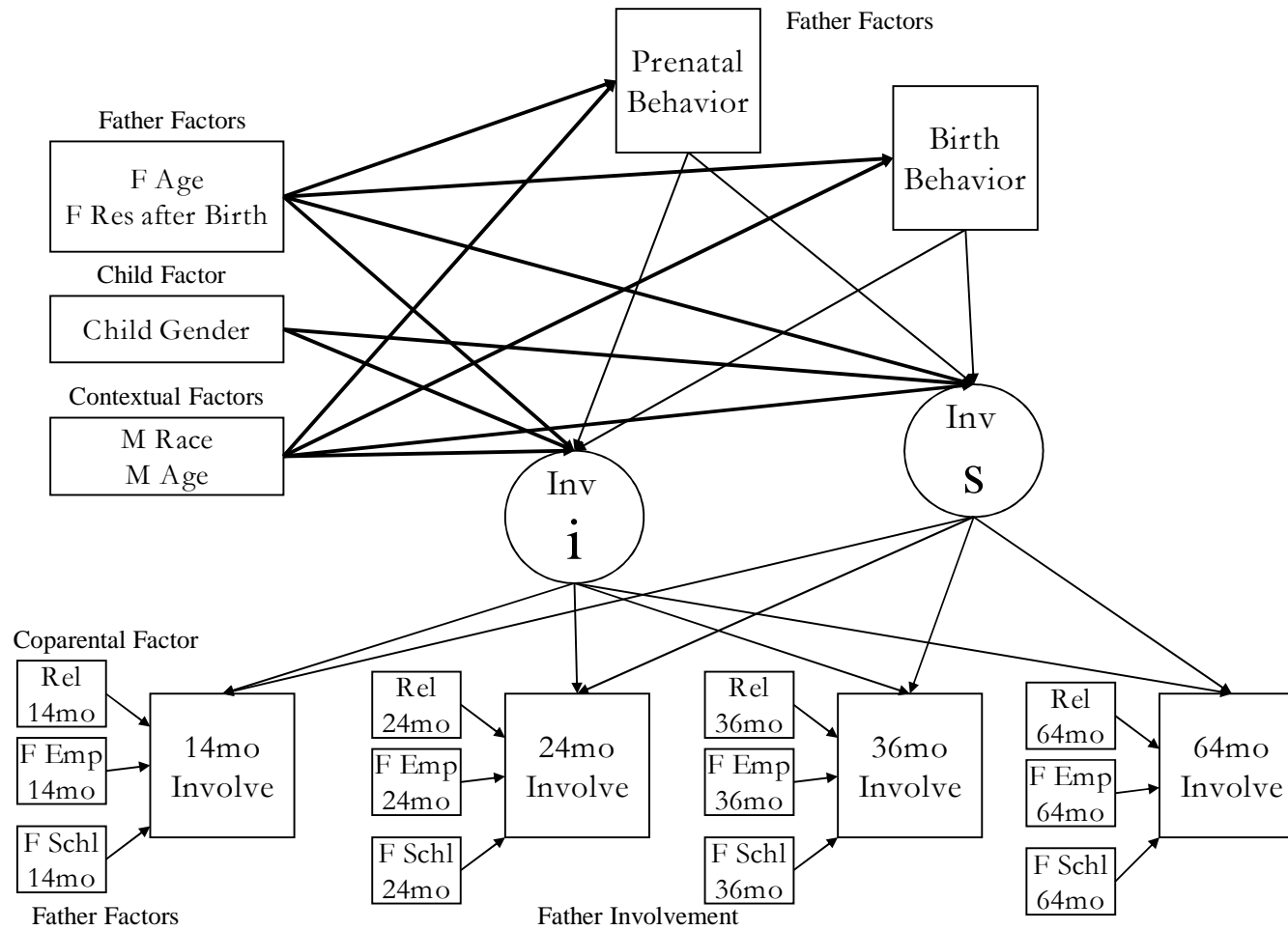


Figure 3. Conceptual Model of Teen Fathers' Involvement Trajectory

Table 1

Summary of Research Questions and Hypotheses

Research Question	Hypothesis
1) What is the trajectory of teen fathers' involvement through early childhood?	1) Teen father involvement will start relatively high, increase initially, but then decrease over time.
2) How do teen fathers' prenatal and birth behaviors influence teen fathers' involvement trajectory?	2) Higher levels of prenatal behaviors and birth behaviors will be positively associated with teen fathers' involvement trajectory.
3a) How do teen father factors influence teen fathers' prenatal and birth behaviors?	3a) Younger teen fathers will have higher levels of prenatal and birth behaviors than counterparts.
3b) How do teen father factors influence teen fathers' involvement trajectory?	3b) Younger and resident teen fathers will have higher initial levels and trajectories of involvement than counterparts.
4) How does the child factor influence teen fathers' involvement trajectory?	4) Male children will have higher initial levels and trajectories of involvement than female children.
5a) How do contextual factors influence teen fathers' prenatal and birth behaviors?	5a) Extant literature on the influence of parent race on teen fathers' involvement is conflicting; current analysis is exploratory. Older mothers will have higher levels of teen fathers' prenatal and birth behaviors.
5b) How do contextual factors influence teen fathers' involvement trajectory?	5b) Extant literature on the influence of parent race on teen fathers' involvement is conflicting; current analysis is exploratory. Older mothers will have higher initial levels and trajectories of involvement than counterparts.
6) How is the coparental relationship factor concurrently associated with teen father involvement throughout early childhood?	6) Teen fathers in romantic coparental relationships will have higher levels of concurrent involvement than fathers in nonromantic relationships.
7) How are teen father factors concurrently associated with teen father involvement throughout early childhood?	7) Employed and teen fathers in school will have higher levels of concurrent involvement than unemployed and fathers not in-school.
8a) How do teen fathers' prenatal behaviors mediate the influence of father and contextual factors on teen fathers' involvement trajectory?	8a) Prenatal behaviors will mediate the association between father age, mother age and involvement patterns.

Research Question	Hypothesis
8b) How do teen fathers' birth behaviors mediate the influence of father and contextual factors on teen fathers' involvement trajectory?	8b) Birth behaviors will mediate the association between father age, mother age and involvement patterns.

CHAPTER II: LITERATURE REVIEW

Although much is known about teen mothers (Furstenberg et al., 1987), less research has examined the lives and needs of teen fathers (Coley & Chase-Lansdale, 1998; Fagan & Palm, 2004; McAdoo, 1990). The majority of research on teen fathers examines who is likely to become a teen father from a risk factor perspective, providing a description of which teens become fathers (e.g., Thornberry et al., 1998). However, a risk factor perspective limits our understanding of teen fathers in their roles as parents. The present study addresses this gap by focusing on teen fathering.

This chapter provides the framework of the current study and brief overview of the father involvement literature. The involvement of teen fathers with children is examined highlighting the dearth of studies and methodological limitations. Select influences of father involvement are then reviewed beginning with fathers' prenatal and birth behaviors. Next how father (i.e., age, residence after birth, employment, school), child (i.e., gender), contextual (i.e., race, mother age), and coparental (i.e., relationship status) factors influence father involvement are reviewed. Lastly, the methodological limitations of the extant literature are given, and future research directions are explored.

Theoretical Framework

Despite several decades of investigating the importance of fathers, numerous models describing father involvement exist, but the field lacks a guiding theory (Cabrera, Fitzgerald, Bradley, & Roggman, 2007; Cabrera, 2004). Father involvement models generally serve to define and measure father involvement (e.g., McBride,

1990; Radin, 1994), identify determinants of father involvement (e.g., Lamb et al., 1987), or both (e.g., Palkovitz, 1997). Several overarching theories have been used to study father involvement including parenting (e.g., Belsky, 1984), resource, attachment, systems, ecological, life course, and identity theories. Parenting literature and accompanying theory typically use mothers as the gold standard and template by which father behaviors are compared (Doherty et al., 1998; Parke, 2002; Roggman et al., 2002).

Moreover, both fathers' and mothers' parenting behaviors are impacted by a set of overlapping factors, but each has additional factors that uniquely influence their parenting due to the societal gender context (Lupton & Barclay, 1997). Because fatherhood is postulated to be more socially constructed than motherhood (Marsiglio et al., 2000; Lupton & Barclay, 1997; Palkovitz, 2002), the processes that influence fathers' parenting behaviors may be more specific to fathers than general parenting models indicate. Thus, the current study utilizes a framework specific to father involvement.

The Doherty et al. (1998) conceptual model of the influences on responsible fathering is broadly a systemic, ecological model, which emphasizes individual, relationship, and contextual factors that influence the father-child relationship. All factor domains draw from previous father models (e.g., Lamb et al., 1987) and extant research to allow generalizability to all fathers, regardless of residential or marital status.

Although Doherty acknowledges that the father-child relationship is dynamic, the heuristic model describes a single time point. Research suggests that fatherhood is

a continually changing, dynamic state (Lupton & Barclay, 1997; Roy, 2006). Because fatherhood is a multidimensional construct, different social and ecological structures support various family structures and expectations of fathers (Geary & Flynn, 2001). Even on the individual level, changes in context (de Kanter, 1987) or daily life (Hearn, 1996) can shift the meaning of fatherhood. Longitudinal research examining the father-child relationship or father involvement in parallel with changes in context (e.g., contextual or coparental relationship factors) is needed to determine more precisely how to promote and maintain positive father-child relations.

Fatherhood

Because fatherhood is socially constructed, there remains debate regarding definition, measurement, mechanisms of influence, and importance of fathers' roles (Day & Lamb, 2004; Day, Lewis, O'Brien, & Lamb, 2005). At a global level, Lamb (2000) defines four basic features of fatherhood: 1) economic provisioning, 2) psychosocial and emotional support of mother (female partner/caretaker), 3) provision of nurturance and care to children and, 4) moral and ethical guidance. These features may vary among individuals and sociocultural groups because fatherhood is a socially constructed and situated role. Despite debate and ambiguity in defining fatherhood, research continues because it is clear that fathers impact children's well-being (e.g., Cabrera et al., 2000). Which "fathers," under what conditions, when, how, and what aspects of development they impact in children is less certain. Lamb (2000) offers three central means by which fathers influence their children: 1) indirectly through economic provision, 2) indirectly through emotional support to people who care for the child (i.e., enhances mother-child relationship, or,

if unsupportive or conflictive, can adversely affect children; Cummings & Davies, 2002), and 3) directly through interaction with the child.

Historical analyses have identified four dominant phases of American fatherhood since the colonial era through modern day: father as 1) authoritarian moral and religious teacher, 2) distant bread winner, 3) gender role model, and 4) the new father, or involved nurturer, coparent, and provider (Pleck & Pleck, 1997; Pleck, 1987). As societal structure changed, fathers shifted in the role they played for their children. The historical phases of fatherhood parallel the general phases of American motherhood (i.e., stay-at-home mother and dual career mother; Lupton & Barclay, 1997) further reflecting the balance in constructing how fathers behave according to the current social and family context.

LaRossa (1988) contends that current American middle class men have the greatest ambivalence, guilt, and confusion about fatherhood because they are trying to be true coparents, both financially providing as well as nurturing and directly caring for children. Despite the expectations of coparents, being a coparent is a social means of separating middle-class fathers from lower-class fathers (LaRossa, 1988). The social construction creates a dichotomy of good father (i.e., coparent) and bad father (i.e., absent father, deadbeat dad). Bad fathers are portrayed as poor, working class, and of a minority race, while good fathers are pictured as middle class and White (Pleck, 2004).

Yet, these images do not represent the reality of fatherhood for American men. These images could be what Marsiglio (1993) terms the “cultural images of fatherhood”, or symbolic representations, ideologies, cultural images, stereotypes,

beliefs, norms, and values socially constructed about fatherhood. Further, the categories of fathers give little recognition of differences between men from different social classes, education levels, or ethnic/cultural backgrounds (Lupton & Barclay, 1997). An important addition to that list is age. Fatherhood is a qualitatively different experience for teens versus “on-time” fathers versus older fathers (Lamb & Elster, 1986; Parke, 2002). Men at different stages of development, education, and career transition into fatherhood and subsequently enact fathering roles in various ways (Belsky & Miller, 1986; Elster & Hendricks, 1986; Marsiglio & Cohan, 1997; Parke, 2002). Thus, based on sociological and historical research findings for fatherhood, individual and contextual factors are crucial for defining, predicting, and assessing influences of father involvement.

Father Involvement

Father involvement has been broadly conceptualized and measured in the literature to include aspects of father accessibility and engagement (Lamb et al., 1987), such as the frequency and quality (e.g., sensitivity, directiveness, emotionality, father-infant attachment security; Lamb, 2004; Parke, 2002). Studies have used several different methodologies to assess aspects of father involvement including self-report, mother-report, observation of dyadic interactions, and, with older children, children’s report (Roggman et al., 2002). Therefore, this review includes studies that have used various methodologies, measures, and conceptualizations of father involvement.

From fathering research during the 1970s and early 1980s comparing fathers’ and mothers’ behaviors with children, fathers were determined to be capable parents

providing care to infants and toddlers, but performed some tasks differently than mothers (e.g., Gleason, 1975; Lamb, 1977; Yogman, 1981). Importantly, fathers can provide a unique parenting experience for young children, which fosters cognitive, language, social, and emotional development (Fagan, 2000; Kelley, Smith, Green, Berndt, & Rogers, 1998; Lamb, & Lewis, 2004; Shannon et al., 2002; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). At the same time, mothers consistently spend more time with children and perform various parenting tasks more often compared to fathers (e.g., Lamb, 2000; Pedersen & Robson, 1969; Pleck, 1997; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). Recent reviews indicate that fathers are more involved now than in past decades (Horn, 2000), but are still less involved than mothers, even when both parents are employed outside the home (Horn, 2000; Lamb, 2000).

However, the majority of research has been conducted with White, middle-class, married, biological fathers resulting in limited understanding of the fathering processes for several groups of fathers. For example, there are fewer studies of fathers who are racial minorities, unwed, low-income, military, nonresident, or homosexual (Garfinkel, McLanahan, & Hanson, 1999). Additionally, there is little evidence on teen fathers and the partners of teen mothers. Recently, specific work has been undertaken to examine this more diverse set of fathers (e.g., “missing men”), further elucidating the importance of individual, contextual, and coparental relationship factors in men’s experience of fatherhood (e.g. Coley, 2001). The remaining review focuses on teen fathers, referring specifically to adult fathers where limited research on teen fathers exists.

Teen Father Involvement

Research on adult couples making the transition to parenting may not apply to teen parents due to the specific circumstances of teen pregnancy and childbirth. Teen parents often face an unexpected pregnancy; the responsibilities and challenges of parenthood and coparenting, the coordination of coparenting in separate households; and the risk that they will become disengaged from their coparenting partners (Florsheim et al., 2003). Moreover, the teen parents' stresses are compounded because they are typically limited in emotional development and interpersonal skills (Brooks-Gunn & Chase-Lansdale, 1995; Marsiglio & Cohan, 1997). Thus the challenges of teen parenthood should be considered from a developmental as well as sociocultural perspective.

Teen fathers may face additional challenges making attempts to "settle down," disengaging from their delinquent and risky behaviors to engage in a stable fathering role. Ethnographic data suggests that adolescent fathers want to change their risky lifestyle to become more responsible for the sake of their child (e.g., Paschal, 2006). In a sample of young Latino fathers, respondents said that fatherhood changed their lives for the better (Lesser, Tello, Koniak-Griffin, Kappos, & Rhys, 2001). After becoming fathers they left the gang, gained empathy for others, changed their view on male-female relationships, and became more responsible. Thus, the parenting context for teen fathers is distinct; teen fathering should be examined within its situated context as aspects of the context limit and facilitate how fathers construct and perform their fathering roles (Marsiglio, Roy, & Fox, 2006).

Qualitative Evidence

The ethnographic literature addressing the teen fathering experience is based on small, non-representative samples. Overall, findings from these studies highlight the responsibility teen fathers take when it comes to their children. For instance, young unwed African American fathers reported feeling ready for parenthood after conception or birth and were concerned about their children's futures, in contrast to theoretical expectations (Hendricks & Montgomery, 1983). When asked about their role as fathers, African-American teen fathers reported that they provided for, cared for, and worried about proper discipline for their children (Dallas & Chen, 1998). They emphasized the importance of establishing and maintaining bonds with their children, not necessarily the frequency or amount of time. However, these fathers also described being involved with their children as preventing other men from taking their place. This could reflect the centrality of their father role, such that fathers work to form bonds with their children and do not want anything to disrupt the bond, or reflect the complexities of coparenting where mothers can "replace" fathers and prevent fathers from seeing their children, or perhaps both. If current involvement is performed in part to prevent later gatekeeping, future research is needed to disentangle the meaning of the father-child bond for teen fathers.

Similarly, Allen and Doherty (1996) found that African-American teen fathers articulated three dominant themes: being there, responsibility, and the importance of fathers. For these teen fathers, "being there" meant being present at the birth and being actively involved in children's lives. They also felt that fathers were uniquely important to families and saw their role as the economic and emotional

provider/supporter and disciplinarian of the family. They financially contributed, provided child-care alternatives for the mother, and wanted to spend more time with their child.

A consistent theme in qualitative interview findings was the desire of teen fathers to engage with their children. Yet they encountered many barriers, especially in regard to the coparental relationship (Paschal, 2006). For instance, both teen mothers and their partners expected and wanted fathers to be involved physically and emotionally in the child's life (Dallas, Wilson, & Salgado, 2000). However, lack of trust between the couple and perceived interference of maternal and paternal grandparents made these connections difficult to establish and maintain. Young unwed African American fathers also reported communication problems in their coparental relationships and disagreements with their child's mother about money and spending enough time with the child (Hendricks & Montgomery, 1983). The ethnographic findings suggest that teen fathers are interested in their children and involved in their children's lives despite facing many barriers and deterrents, which is consistent with other findings on low-income adult fathers (e.g., Summers, Raikes, Butler, Spicer, Pan, Shaw, et al., 1999).

Quantitative Evidence

In contrast to the story from qualitative interviews, findings from quantitative surveys highlight the dissonance between teen fathers' well-intentioned words and behaviors. On the one hand, the majority of African American teen fathers reported being involved (e.g., feeding, playing, dressing) with their children at least monthly (Rhein et al., 1997) and approximately half of urban teen fathers saw their children at

least once per week (Stouthamer-Loeber & Wei, 1998). Similarly, 60% of low-income White teen fathers had at least some contact with their 18- to 24-month-old children (Fagot et al., 1998). In a sample of low-income White rural teen mothers, 45% of mothers reported that biological fathers were consistently involved from pregnancy to 18 months, even though only 15% of fathers were resident from pregnancy to 18 months (Cutrona, Hessling, Bacon, & Russell, 1998). Overall, approximately half of teen and young fathers were involved with their children during infancy and toddlerhood.

On the other hand, teen fathers are not consistently able to positively enact their fathering role as desired (Paschal, 2006). For example, compared to mothers, teen fathers showed fewer positive verbalizations and more behavioral directives, negative verbalizations, and cognitive assistance with their children during father-child interactions (Fagot et al., 1998). There is also evidence that teen fathers' individual psychological characteristics are related to their ability to parent and influence the coparental relationship. Teen fathers' observed hostility toward the mother during the pregnancy was associated with lower self-reports of paternal nurturance toward the children at 12- to 18-months (Florsheim, Moore, Zollinger, MacDonald, & Sumdia, 1999) and hostile, controlling parenting at 24-months (Florsheim & Smith, 2005). Additionally, higher ratings of teen fathers' antisocial characteristics during the pregnancy were associated with lower coparental relationship quality for both White and African American teen fathers and higher parental stress for African American teen fathers (Florsheim et al., 1999). These

findings illustrate the dissonance between teen fathers' good intentions and subsequent actions.

A recent study of low-income fathers specifically compared the behaviors of teen fathers (19 years or less) with adult fathers (20 years or more) when children were 36-months-old (Fitzgerald & McKelvey, 2005). For resident biological fathers, teen fathers were more depressed, reported more family conflict, had more unrealistic expectations of children's behaviors, and rated children as more aggressive than adult fathers. At the same time, resident teen fathers were also more likely to help in caregiving activities than resident adult fathers. For nonresident biological fathers, teen fathers were rated as more detached and less supportive during a play interaction with their child, more likely to choose punitive discipline methods, and less empathic than adult fathers. At the same time, nonresident teen fathers were more likely to help in caregiving activities than nonresident adult fathers.

Although teen fathers are committed to being involved with their children, they appear to lack the parenting skills to positively engage with their children and face several negative individual and contextual barriers, perhaps similar to teen mothers (Brooks-Gunn & Chase-Lansdale, 1995). Findings with low-income fathers suggest that teen fathers are invested in their children, regardless of residence (Fitzgerald & McKelvey, 2005). However, fathers who agree to participate in longitudinal studies likely have positive relationships with the children's mothers (i.e., so as to allow access to child for father-child interactions) and are highly invested in the father-child relationship.

Teen fathers value fatherhood and want to be involved with their children, but face several barriers (i.e., healthcare providers, coparent, parents, peers) to enacting their father role. However, these findings are based largely on qualitative studies and do not generalize to the larger population of teen fathers. The linkage between teen fathers' feelings and their actions is unclear. Despite challenges, many young fathers are accessible to their children and engage in several childcare activities. These fathers are parenting in a context of risk; some evidence suggests that young fathers' mental health problems negatively influence parenting and coparental relationships. Extant research has largely focused on minority teen fathers and has been the product of cross-sectional research, limiting knowledge of diverse groups of teen fathers' involvement over time, particularly when children are older than 3-years-old. Overall, research with teen fathers has increased in the past decade, but the pattern of how they are involved with their children has not been ascertained.

Prenatal and Birth Behaviors

Though largely limited to adult fathers, there is literature examining the behaviors of men while their partners are still pregnant that links it to later fathering behaviors. An initial mode for fathers to support their partners is in pregnancy resolution. Adult fathers who took part in this pivotal decision-making process were highly involved in parenting (Miller, 1994; Shostak, 1993). The pregnancy and birth are the first opportunities for fathers to enact their role, potentially starting a trajectory for the father-child relationship.

Adult Fathers

Evidence supports a link between fathers' prenatal and birth activities later involvement. During the pregnancy, fathers may support mothers by attending classes or doctors' visits. Beitel and Parke (1998) found adult fathers who attended birth preparation classes were more likely to be involved with their 3- to 5-month-old infants while the mother was away from the house. Further, adult fathers who participated in an infant development or childbirth course were most likely to want to participate in the birth and were present at the birth (Grossman & Volker, 1984). Fathers who wanted to participate in the birth were more likely to read to the baby during the pregnancy and after the birth, report that they could accurately interpret and respond to their infants' cues, and be engaged with their infants. These behaviors imply fathers' desire to spend quality time with their infants and a willingness to invest themselves as parents from the pregnancy into the first few months of life. In contrast, fathers who were reluctant to participate prior to the birth, continued after the birth to hold beliefs that impeded and restricted fathering behaviors (Grossman & Volker, 1984). Similarly, among resident fathers in a national sample, participating in prenatal activities increased the likelihood of attending the birth and engaging with their infant at 9-months, however, teen fathers were less likely than older fathers to participate in prenatal and birth activities (Bronte-Tinkew et al., 2007). However, among low-income fathers, prenatal participation was not associated with fathers' engagement with children from 12- to 36-months (Cabrera, Fagan, Farrie, 2008).

Even though living separately from a partner may not be the most conducive context for promoting father involvement, nonresidential and unwed fathers

participate during the pregnancy and later with their children. In a national sample, among unwed, nonresident fathers, 55% of adult fathers contributed money or other items during pregnancy, contributed in other ways during the pregnancy, and visited the hospital after the baby's birth (Johnson, 2001). Similarly, at the birth of the baby, there was no difference in involvement (i.e., attending the delivery and visiting the baby in the hospital) between nonresidential and residential fathers in a sample of urban, African American fathers (Coley & Chase-Lansdale, 1999). Further, reports from the Early Head Start Father studies related prenatal involvement to father's presence post-birth. Shannon and colleagues (2005) found from survival analysis that 40% of fathers who had no prenatal or birth involvement were also not present one month after the birth of the infant, whereas fathers who were involved during the pregnancy were more likely to be present when children were 3-years-old. In summary, fathers' participation prenatal and birth behaviors increase fathers' involvement with infants and toddlers for middle-class and low-income adult fathers.

Teen Fathers

Far less is known about teen fathers' behaviors, however, their prenatal and birth behaviors may be particularly important because teen fathers are seen as a form of social support for pregnant mothers (Sachs, Poland, & Giblin, 1990). There is evidence that positive support from teen fathers helps mothers positively adjust to motherhood (Cutrona et al., 1998; East & Felice, 1996; Gee & Rhodes, 2003; 1999). For instance, fathers' support prenatally was associated with teen mothers' life satisfaction when children were 8-months-old (Unger & Wandersman, 1988). Thus, teen fathers' prenatal and birth behaviors promote healthy pregnancies for mothers

and positive coparental relationships, but teen fathers face barriers to being involved during the pregnancy and birth from their families, the healthcare system, and service providers (Hoyer, 1998).

Teen fathers have varying perspectives regarding the pregnancy. In a sample of incarcerated adolescent males, nearly all agreed that the male is as responsible for pregnancy as female is, that they would have to give money to the mother, and that they would take care of the baby sometimes (Nesmith et al., 1997). Thus, teens have intentions and concepts of fulfilling a fathering role before the pregnancy and continuing their efforts after the birth. However, consistent with life course perspectives (Elder, 1998), a small sample of African American teen fathers perceived themselves to be premature fathers, wished they had postponed fatherhood, but balanced their assessments by a sense of connection with their children (Allen & Doherty, 1996).

Ambivalence and uncertainty regarding fatherhood translated into teen fathers' expectations and later behaviors during pregnancy and birth. Approximately half of teen fathers (57%) expected that they should attend the child's birth compared to nearly all of teen mothers (96%; Rhein et al., 1997). During interviews while their partners were pregnant, African American teen fathers who did not want to become fathers were least likely to provide prenatal support, expect to care for and interact with their infants, or expect postnatal interaction with mothers (Westney, Cole, & Munford, 1986). However, programs and services for teen fathers can alter teen fathers' beliefs and behaviors. For example, teen fathers were more supportive of

expectant mothers after receiving a prenatal education program than teen fathers who did not (Westney, Cole, & Munford, 1988).

Without intervention, teen fathers continue on a steady trajectory of uninvolved behavior. Dallas and Chen (1998) found that teen fathers did not attend prenatal classes, perhaps because teen fathers expressed that fatherhood started at birth, not before (Allen & Doherty, 1996). Moreover, teen fathers felt responsibility to their child rather than to the child's mother. A teen father may not be involved during the pregnancy if he does not feel he is a father yet or does not feel connected with his child. For instance, during interviews while their partners were pregnant, White married teen fathers described directly supporting financially, as well as supporting indirectly by preparing for parenthood (e.g., gathering childrearing information) and making responsible changes in lifestyle (e.g., "settling down"; Panzarine & Elster, 1983). These teen fathers began a transition to fatherhood and provided support for their partners during the pregnancy. In contrast, only 56% of teen fathers reported attending the child's birth (Rhein et al., 1997), even though being present at the birth was a salient aspect of embracing the father role (Allen & Doherty, 1996). Thus, the extant literature provides a disjointed and inconsistent view of how teen fathers behave during their partners' pregnancy and at their children's birth.

Impacts of Teen Fathers' Prenatal and Birth Activities

Fewer studies have examined the later associations of teen fathers' prenatal and birth behaviors. As mentioned, resident teen fathers in a national sample who participated in prenatal activities were more likely to attend the birth and engage with

their infant at 9-months, although at lower rates than adult fathers (Bronte-Tinkew et al., 2007). Similarly, in a sample of African American and Hispanic young fathers partnered with teen mothers, fathers' prenatal involvement was positively associated with fathers' caregiving activities at 3 months; fathers' individual characteristics and residence were not associated with involvement (Fagan, Bernd, & Whiteman, 2007). Extending past infancy, for low-income teen fathers, higher levels of prenatal and birth activities were associated with higher levels of accessibility at 24-months; again, there were no differences between resident and nonresident teen fathers (Tarkow et al., 2005). Thus, there is emerging evidence that teen fathers' prenatal and birth behaviors are linked to later involvement with their children.

Teen father prenatal involvement has also been associated with individual paternal characteristics (e.g., employment, empathy) and contextual factors (e.g., children born out of wedlock to friends) factors (Fagan et al., 2003), however, this sample was limited to unmarried fathers of teen mothers' children (i.e., fathers included those older than 20 years). Differences in race have been found such that White teen mothers were more likely to have their partner present at the birth than African American teen mothers from a national sample of teen mothers with 6-year-old children (Unger & Cooley, 1992). Preliminary findings lend support to associations between individual characteristics and prenatal behaviors. Moreover, as discussed earlier, individual and contextual characteristics are also associated with father involvement. Thus, prenatal behaviors may mediate the association between individual and contextual characteristics and father involvement.

Additionally, teen prenatal behavior has important indications and consequences for the coparental relationship. High involvement during the pregnancy may be a signal of future “good parenting” and indicative of the father as a suitable marriage partner. Support during pregnancy was associated with young fathers’ own positive attitudes towards marriage with the mothers, thus illustrating their commitment to the coparental and parental relationships (Fagan, Schmitz, & Lloyd, 2007).

In sum, there is limited research linking prenatal and birth behaviors to later involvement with children. Emerging evidence documents that participation in prenatal and birth behaviors is associated with later involvement with children for both adult and teen fathers. However, these findings were derived from a variable-centered perspective emphasizing the association between variables for the overall sample rather than an individual’s pattern of behaviors. Early paternal behaviors may foster positive father-child relationships setting young fathers on a trajectory of positive involvement with their families.

Father Factors

Evidence from numerous studies emphasizes that not all fathers are the same (Coley, 1998), however, the heterogeneity among teen fathers has not been examined. For the current study, the *individual father factors* of interest are age, employment status, and residential status. These factors are salient characteristics that the father brings to the father-child relationship and impact how he constructs and enacts his father role (Parke, 2002). The heterogeneity within the teen father population can be specifically examined through father’s age and residence; teen fathers situated in

various circumstances (i.e., younger, resident, employed, and in-school) will impact involvement and other relationships differently. Moreover, the role that different demographic and contextual factors play in fathers' trajectory of involvement in their children's lives illustrates the importance of examining these differences.

Father Age

Individual parent characteristics are an important indicator of father involvement. Age is a demographic characteristic typically included because of its approximation for life status (Elder, 1998). Overall, older fathers are more involved with their children because they are more established in terms of careers and relationships (Lamb, 2000; 2004; Parke, 2002). With few exceptions (e.g., Johnson, 2001), most research supports findings that older fathers are more involved, responsive, stimulating, and affectionate than are younger fathers (Lerman & Sorenson, 2000; Parke, 2002; Volling & Belsky, 1991), even across residency status (Manning, Stewart, & Smock, 2003). Older fathers also engage less frequently in physical play, but more frequently in cognitively stimulating activities (MacDonald & Parke, 1986) and hold their children more often than younger fathers (Neville & Parke, 1997). Lamb and Elster (1985) compared teen fathers (19 years and younger), young fathers (20 to 24 years), and "on-time" adult fathers (25 years and older) and found that "on-time" adult fathers were more responsive and stimulating to infants than teen and young fathers. However, they found few other differences, perhaps because the majority of the sample was residential and half of the fathers were married.

An inconsistent pattern emerges when examining age in relation to father involvement among teen fathers. Being an older teen was a salient predictor of pregnancy and teen fatherhood (Goodyear et al., 2000; Spingarn & DuRant, 1996; Stouthamer-Loeber & Wei, 1998; Xie et al., 2001). Younger teen fathers who were still in school were more likely to be involved during the pregnancy and encourage the pregnant mother to attend prenatal appointments (Chen, Telleen, & Chen, 1995). Younger teen fathers were also more likely to be involved with their toddlers than their counterparts (Danziger & Radin, 1990; Gavin et al., 2002; Rhein et al., 1997). But when examining the rate of teen fathers' involvement with their school-age children, the pattern changes again. In a national sample following children from 5 to 9 years, older teen fathers (18- to 19-years-old) had higher rates of presence than younger teen fathers based on mother report (Mott, 1993). Thus, teen fathers' age is an influential factor for their involvement with their children. Moreover, evidence suggests that longitudinal examination is necessary to fully determine variation among teen fathers as children age.

Father Residential Status

Fathers' residence with their children provides increased opportunity and accessibility to children for possible interactions. Moreover, the support available within the family system (e.g., mother, grandmother) and contextual system (e.g., neighborhood quality, social and cultural expectations) are not necessarily the same for nonresident fathers as they are for resident fathers (e.g., Coley, 2001). Subsequently, father residence has important associations with father involvement. Many study samples select only residential or nonresidential fathers and emphasize

different measures for each group, making direct comparisons difficult. Residential father measures focus on aspects of the father-child interaction; nonresidential father measures focus on financial support, accessibility, and barriers to involvement. Additionally, fathers' residential status should be distinguished from his coparental relationship status as these have differential effects on interactions with his children (Cabrera et al., 2004) and the subsequent influence on children's development. The distinction in marital status for residential fathers is also important in light of recent increases in public policy for low-income families promoting healthy marriage (U.S. Department of Health and Human Services, 2006).

With adult fathers, father residence is positively associated with father involvement (Lamb, 2004). Residence also has benefits for interactions with children: low-income biological fathers who lived with their infants scored significantly higher on sensitivity to infant cues than nonresident fathers (Brophy-Herb, Gibbons, Omar, & Schiffman, 1999). Nonresidential fathers, however, are not "absent" or uninvolved. In one study, over half of nonresident fathers had contact with school-age children in the past year, although contact rates were lower for separated and never married fathers (versus divorced) and for minority fathers (versus White; Argys & Peters, 1999). Moreover, nonresident fathers appear to be more involved than previously believed (Cabrera et al., 2004). Public policies may discourage low-income fathers from living with their children so that mothers continue to receive state or federal benefits (Cabrera et al., 2000; 2002).

Among low-income nonresident fathers, recent findings have revealed heterogeneity in fathers' involvement patterns. For instance, some fathers remain

consistently available to their toddlers over time whereas others are not available (Cabrera et al., 2004). Some fathers tend to move in and out of their children's lives (Eggebeen, 2002), perhaps reflecting the complex personal and social lives that low-income fathers lead (Roy, 2006). The findings relative to low-income, nonresidential minority fathers' influence on children's development are mixed (Coley, 2001). The studies examining nonresident fathers' influence on children's development have included predominantly older children (e.g., school age, adolescents; Coley, 2001). Fathers' positive interactions have been associated with children's positive social and emotional development (e.g., increased self-esteem, lowered depression, prosocial behaviors; Coley, 2001). Increased frequency of fathers' interactions, particularly for low-income African American fathers, has also been associated with negative outcomes for children (e.g., increased depressive symptomology, behavior problems; Coley, 2001). Additionally, if the father-child relationship became less close and more conflictual, adolescents had more depressive symptomology than if they had a positive relationship or no relationship at all with their father (Furstenburg & Harris, 1993).

There is a dearth of literature examining teen fathers' residence status and its influence on teen father involvement. In part, less is known because samples are selected for residential or nonresidential teen fathers only. Evidence suggests that men are more likely to become teen and early fathers if they did not live with their fathers growing up or have a stable father-figure present (Furstenberg & Weiss, 2000). The intergenerational effect repeats again, such that young fathers are less likely to live with their own children if their own fathers did not live with them while

growing up. On the other hand, cohabitation during pregnancy increased the odds that a young couple planned to marry and they were more likely to agree to marry than noncohabiting couples (Fagan, Schmitz, et al., 2007). Examining younger and older teen fathers may be very important regarding the influence of teen fathers' residence on involvement because of the public policies concerning paternity establishment, child support, and public support of low-income families (Federal Interagency Forum on Child and Family Statistics, 1998). Similarly, teen parents' families may also discourage fathers from living with their children or create an unwelcome environment (Cervera, 1991). Although residing with children increases opportunity for father involvement, the influence of residency for teen fathers remains unclear due to the paucity of literature.

Father Employment Status

Fathers' employment status has consistently shown associations with fathers' involvement (Parke, 2002). Similar to adult fathers, employment was positively associated with young fathers' involvement (e.g., accessibility, nurturance, childcare, financial support) with low-income teen mothers (Danziger & Radin, 1990; Gavin et al., 2002). Father employment is important for actualizing an aspect of the father role (i.e., provider) and in turn facilitating coparental interactions. Employment can be viewed as a proxy for income, particularly in low income samples; employment and income have been positively correlated in numerous studies (Fagan, 1998). Many mothers expect fathers to financially provide for them and their children and will deny visitation access until payment is received (Aronson, Whitehead, & Baber, 2003). This form of gatekeeping applies only to nonresidential fathers, however,

mothers expect residential fathers to provide for their families and can pressure them as well. The result for a cohabiting couple could be increased interparental conflict and fathers' decreased sense of fulfilling his paternal or masculine role. Some adult fathers choose not to visit their children until they are employed and able to financially support their children, because they feel ashamed and inadequate as fathers and do not want to set that example for their children (Jarrett, Roy, & Burton, 2002).

Despite limited resources, teen fathers desire to fulfill the provider role for their families whether it be financially or offering in-kind support (e.g., items for baby, food; Allen & Doherty, 1996; Paschal, 2006). Teens also did not respect their peers who were not "taking care of their responsibilities" by providing for their children (Sullivan, 1993). The majority of African American teen fathers with pregnant partners (86%) reported that they planned to work to support their infants (Westney et al., 1986). Assessing employment for teen fathers has ambiguous construct dilemmas because not all teens are normatively employed (Mortimer & Staff, 2004). After becoming fathers, teens and their families balance employment and school in various ways (Sullivan, 1993). In one study, African American teen fathers were mostly employed and high school graduates (Hendricks, 1980). Another study found racial differences between fathers' employment statuses. Of the young fathers with teen mothers, Mexican-American fathers were more likely to be employed and more likely to be married than other young fathers (Felice, Shragg, James, & Hollingsworth, 1987). This pattern likely reflects the differential

expectations families have when young men become fathers, which will be discussed in further detail in the *Contextual Factor* section.

Lastly, from a national sample of teens, teen fathers earned more income than nonfathers during their teen years, approximately the same income during their early 20s, but less income during their late 20s (Pirog-Good, 1996). These findings highlight the value of examining teen fathers longitudinally, particularly as high paying employment and long-term career opportunities may be limited due to the unfinished education for these fathers (Marsiglio & Cohan, 1997).

To summarize, there is some evidence that teen fathers who are employed are more involved with their children. However, previous research has not examined employment impacts over time for a diverse group of fathers. This may lead to different findings regarding the influence of teen fathers' employment on involvement, thus targeted emphases in service programs for teen fathers.

Father School Status

Education is a social and economic characteristic that enables the procurement of secure jobs and the establishment of a career path. With few exceptions (e.g., Johnson, 2001), generally, more educated fathers are more involved with their children (King, Harris, & Heard, 2004; Landale & Oropesa, 2001; Rangarajan & Gleason, 1998; Roggman, Boyce, Cook, & Cook, 2002; Stier & Tienda, 1993; Sullivan, 1993), particularly for African American families (Ahmeduzzaman & Roopnarine, 1992; Fagan, 1996; Hossain & Roopnarine, 1993) than their counterparts. Most of the research on the effects of fathers' education on father involvement has been conducted with middle-class men or non-resident fathers. For

example, father-child visitations are more frequent for parents with higher education than those with lower levels of education (Argys & Peters, 1999). However, teen fathers completed less education than nonfathers (Pirog-Good, 1995). At the same time, teen fathers expressed the desire and expectation to complete more schooling (Pirog-Good, 1996), but school participation has not been examined in association with father involvement, particularly for teen fathers.

Child Factors

The contribution of the child to the father-child relationship is not to be neglected (Bell, 1976). Child age is important for eliciting interaction with the father, thus this interaction varies with developmental and maturational ability. Simultaneously, children require varying levels of parental monitoring, direct care, and management. Indeed, parents spend more time with children when younger (Lamb, 2000).

Additionally, child gender can elicit differential responses from parents (Leaper, 2002). Reviews of the fathering literature assert that fathers spend more time and are more likely to be involved with boys than girls (Lamb, 1981; 1997), regardless of child age (Pleck, 1997). This finding is not consistently found among adult fathers (Parke, 2002). Moreover, no studies with teen fathers have found an effect of child gender. With limited understanding of teen fathers' experiences, particularly over time, gender effects require continued research.

Contextual Factors

Contextual factors play an important role in paternal involvement with children. The contextual factors (i.e., race and mother age) shape when and how teen

fathers interact with their children and the meanings of these behaviors. They provide a physical space or social script for the relationship to occur and a lens through which the relationship is perceived and interpreted. To be clear, the measured contextual factors of the current study indirectly influence fathering through other constructs, which were not measured.

Racial contexts influence involvement for all fathers (Marsiglio et al., 2000). However, these contexts may be especially influential for teen fathers because of the disproportionate number of minority teen fathers (Manlove et al., 2006). Moreover, the social expectations of teen fathers also vary by economic and racial contexts (Nesmith et al., 1997). The immediate familial context and expectations created by fathers' partner is tantamount. Because this is a youth population, special contexts and social scripts emerge such as teens required to live at home, impacts of policy, and role of grandparents.

Parent Race

Racial background creates a context of differing norms, family, and societal expectations for fathers (Paschal, 2006). These differences are heightened for teens (McAdoo, 1990). First, there are racial differences in becoming pregnant and a teen parent. The prevalence of teen pregnancy was higher among African Americans (9.1%) and Hispanics (6.4%) compared to Whites (2.3%) in 2003 (Centers for Disease Control and Prevention, 2004). For females and males, the odds of a teen birth increased by being Hispanic or African American (Alan Guttmacher Institute, 1999; Manlove et al., 2006; Thornberry et al., 1997). Thus, the population of teen

parents is composed of racially diverse families with a higher percentage of minority families than in the larger national population.

During previous times and social contexts, teen pregnancy carried a significant social stigma (Parke, 2002). However, adolescents today hold different values regarding becoming parents. In a sample of incarcerated teens, teen fathers and African American teens were more likely to report that they, their parents, and their friends would be pleased “if they got a girl pregnant” than nonfathers and White teens reported (Nesmith et al., 1997). Similarly, the majority of teens felt that they could fulfill their father role, but African American teens were more likely to say they could financially provide, get a good job, and be a good role model. These different expectations and fatherhood scripts vary by racial context in part because teen parenthood is more normative among family and friends within minority communities. For instance, many African American teen fathers had sisters (40%) and brothers (35%) who were unwed parents (Hendricks, 1980). Similarly, African American teen mothers more frequently had a family history of infants born out of wedlock than their peers (Felice et al., 1987).

Moreover, after becoming teen parents, families hold different values depending on race. In low-income Puerto Rican communities, teen fathers were respected as men, encouraged to fulfill their duty, and regarded as virile (Sullivan, 1993). These teen fathers had little respect for fathers who did not take care of their children. This increased responsibility came at a price; teen fathers were more likely to stop their education and enter the work force, but receive low-paying, unskilled employment. At the same time, teen fathers were more likely to see marriage and

cohabitation as an option. The couple often lived with the teen fathers' parents due to the cultural beliefs of male virility and sacred female virginity (Sullivan, 1993).

Contrastingly, in low-income African American communities, teen fathers were expected to stay in school, both families helped with the baby, and the teen father was regarded more as a child than as a man (Sullivan, 1993). Adolescents knew of friends and neighbors who were teen parents. They had social expectations that the teen father would fulfill his paternal responsibilities and lost respect for those boys who did not take care of their children. The community and social consequences served as enforcement of paternity establishment and support rather than formal, legal processes. Many teen fathers were present at the birth and signed the birth certificate. Both sets of parents were involved in negotiating the teen fathers' responsibilities. It was not unusual for the teen father to be expected to acquire employment, provide financial and in-kind support, and assist in child care with the support of his own family. However, marriage and cohabitation were not typically possible or encouraged by either family. Thus, how teen fathers defined fatherhood and were subsequently involved during the pregnancy and after the child was born varied by the racial context.

There is evidence that young fathers' involvement varies by race. Examining a national sample of teen mothers' partners, African American fathers were more likely than White fathers to be absent from birth through 9-years (Mott, 1993). However, older teen fathers (18- to 19-year-olds) had higher rates of presence than younger teen fathers regardless of race, highlighting the importance of teen fathers' individual factors. Further comparing African American and White teen fathers, both had similar

visitation patterns (e.g., 25% visited children weekly), although African American teen fathers were more likely to visit their children daily than White teen fathers. Additionally, African American teen fathers were more likely to be the boyfriend or a friend of the mother compared to White teen fathers. In contrast, examining another national sample of teen mothers with 6-year-old children, White mothers were more likely to live with their partner after birth, report more frequent contact with the child's father, and report more frequent contact with their partner than African American teen mothers (Unger & Cooley, 1992). Although race appears to play a significant role for teen fathers in shaping the involvement with their children, it is unclear from the extant literature what differences to expect.

Mother Age

Age of children's mothers is also included as a contextual factor because it shapes when and how teen fathers and their children interact and the meanings of these behaviors. Mother age indirectly impacts father involvement through other factors. For example, as age increases the probabilities of having other children and multiple partners increase, which decrease the probability of father involvement (e.g., Johnson, 2001). Mother age could also impact living arrangements (e.g., younger teen mothers may be more likely to reside at home with maternal grandparents whereas older mothers may be living on their own), which in turn would influence father involvement. If the mother is living at home, maternal grandparents can facilitate coparental relationships (e.g., Dallas, 2004) or become a barrier to fathers' accessibility (e.g., Cervera, 1991).

Coparental Relationship Factors

Although not directly part of the father-child relationship, mothers play a crucial role in how fathers are involved with their children through the coparental relationship. Some have termed this aspect of the coparental relationship “maternal gatekeeping” because mothers can prevent fathers from participating in children’s lives or can facilitate their involvement. The gatekeeping-gateopening phenomenon may be best reconceptualized as a “combination of fathers’ reluctance to get or stay engaged as much as mothers’ willingness to take over or pick up the slack in caregiving responsibility that determines how engaged either partner is with the infant.” (Goldberg, Clark-Stewart, Rice, & Dellis, 2002, p. 403). The influence is bidirectional between mothers and fathers. Given that relationships are dynamic and fathers are adjusting to the context over time, it is best to capture changes with time.

Coparental Relationship Quality Influence on Father Involvement

There is evidence that how teen mothers’ feel about their relationships with their children’s fathers is positively associated with the quantity of fathers’ involvement with the children (Cutrona et al, 1998; Kalil, Ziol-Guest, & Coley, 2005). A study of the partners of low-income African American teen mothers found that higher quality relationships with mothers and maternal grandmothers were associated with higher levels of father involvement (Gavin et al., 2002). Consistent with these findings, qualitative data showed that teen fathers were more involved when fathers had better coparental relationships (Allen & Doherty, 1996). Thus, positive and higher quality coparental relationships are associated with higher levels of young fathers’ involvement with their children.

There is evidence that, in addition to higher levels of young fathers' involvement, the quality of the coparental relationship is associated with the quality of the father-child relationship (Lamb & Elster, 1985). Others have found that young expectant fathers who expressed more hostile behavior toward their partners were also more likely to engage in low rates of nurturing behavior with their 12- to 18-month-old children (Florsheim et al., 1999; Moore & Florsheim, 2001). Similarly, teen mothers' hostile and controlling behavior toward teen fathers during the pregnancy was associated with teen fathers' hostile and controlling parenting at 2 years (Florsheim & Smith, 2005). In contrast, teen mothers' partners who reported positive relations with teen mothers during the pregnancy had more positive adjustments to fatherhood at 2 years (e.g., less stress, child abuse potential, physical discipline; Florsheim, Sumida, McCann, Winstanley, Fukui, et al., 2003). Additionally, the quality of the coparental relationship buffered the impact of a coparental breakup on father adjustment, such that fathers in higher quality coparental relationships fared better after the relationship dissolved compared to fathers in lower quality relationships (Florsheim, Sumida, et al., 2003). Since teen parents' relationships are highly unstable (Florsheim, Moore, et al., 2003), factors that protect parenting ability are critical to examine and facilitate.

Coparental Relationship Status Influence on Father Involvement

The quality of the coparental relationship is without a question important for parenting behavior, particularly fathering. The coparental relationship status (i.e., married, cohabiting, romantic, friends) has also been associated with father behaviors. Among adult fathers, fathers in acquaintance relationships were less involved in

caregiving at 12-months than other fathers (Fagan & Palkovitz, 2007). Low-income biological fathers of toddlers were more likely to stay available to their children over time when they maintained closer coparental relationship statuses, particularly remaining at least friends (Cabrera et al., 2004; McLanahan & Carlson, 2004). Similar patterns have been found with teen fathers. Young fathers in romantic relationships with teen mothers had higher levels of caregiving and nurturing behaviors with infants (Futris & Schoppe-Sullivan, 2007) and more frequent contact with children and coparental interaction (Herzog, Umana-Taylor, Madden-Derdich, Leonard, 2007) than young fathers in nonromantic relationships. Among young fathers in romantic coparental relationships facing strong barriers to engagement, those with strong parenting alliances exhibited more frequent nurturing behaviors with their children than young fathers with weak parenting alliances (Futris & Schoppe-Sullivan, 2007). In contrast, among young fathers in nonromantic coparental relationships facing weak barriers to engagement, those with strong parenting alliances exhibited more frequent nurturing behaviors with their children than young fathers with weak parenting alliances. Thus, young fathers' positive involvement was facilitated through the coparental relationship (i.e., parenting alliance).

Changes in relationship status may also reflect an aspect of relationship quality such that increasing closeness relates to higher quality and decreasing closeness relates to lower quality. Young fathers who were satisfied with their coparental relationships during the pregnancy were likely to remain romantically involved during the first year and report lower levels of parenting stress than fathers low in coparental relationship satisfaction (Florsheim, Moore, et al., 2003).

Conversely, young fathers who reported low satisfaction with their coparental relationships during the pregnancy were likely to disengage from the coparental relationship during the first year. It is often assumed that unengaged fathers, or those not present in their children's lives, choose to disengage from their children. It is equally possible that mothers restrict fathers' access to children and cut ties from fathers when romantic relations end (Brooks-Gunn & Chase-Lansdale, 1995; Florsheim, Moore, et al., 2003). Given the limited longitudinal data and limited sampling designs of the extant literature, drawing a conclusion in either direction is premature.

Methodological Limitations

Despite the advances in studying teen fatherhood, several methodological limitations impede the extant literature. Most notably, sample selection and study design have a salient impact for what is known and for whom conclusions can be drawn.

Sample Selection

Similar to other methodologies for studying fathers (Day & Lamb, 2004; Roggman et al., 2002), fathers in the studies of this review were either 1) recruited through mothers, or 2) directly recruited. The means of recruitment and selection for participation have important implications for the resulting study sample, measures collected, and, in turn, external validity. Studies that recruited fathers through mothers typically first selected teen mothers (e.g., ages 19 years and younger) and then included biological fathers (and/or social fathers) through 24-years-old. Thus,

these are studies of the young partners of teen mothers. In contrast, studies that directly recruited teen fathers typically included biological fathers through 19-years-old. Thus, these are studies of teen fathers. Because some studies of the young partners of teen mothers did not distinguish between biological and social fathers, it is difficult to tease out biological father versus social father versus teen versus young father effects across the literature. Moreover, teen fathers were more likely to be directly recruited in qualitative studies whereas quantitative measure studies tended to recruit through mothers further blurring the extant findings.

Mother and child age, in addition to father age, are key to understanding the family. However, the various recruitment methods lead to differences here as well. For instance, recruiting fathers through mothers typically was dependent on mother's age in studies of teen mothers. In contrast, directly recruiting teen fathers typically did not have a criterion for mothers' age. Moreover, many studies did not report mothers' ages, again making the synthesis of literature difficult because the samples were unknown. Empirical investigation is required to determine whether biological relationship and age effects are influential in young parents' relationships and subsequent parenting behaviors.

The same dilemma applies to the age of their children. When recruiting fathers through mothers, studies typically required a specific child age or range of ages. In contrast, studies directly recruiting teen fathers had a wide range of child ages (e.g., 3 weeks to 4 years) or did not report children's ages. Because parenting and father involvement change as children age, child age is an important factor to consider. Furthermore, the extant literature covers a limited developmental age range

of children of teen and young fathers focusing on infancy and toddlerhood. Few studies extend beyond age 3 years, even though the children of teen mothers face later challenges in academic settings both with school success and social adjustment (Brooks-Gunn & Chase-Lansdale, 1995). Thus, it is difficult to interpret how teen are involved as fathers when the literature does not consistently provide the context (i.e., family demographics) and essential sample characteristics (i.e., father demographics) to explain the findings.

Beyond the type of recruitment method, the extant literature on teen fathers is also limited by other sample selection criteria. First, the extant literature has an overrepresentation of minority teen fathers, particularly African American teen fathers, compared to the overall teen father population. Although African American male teens become teen fathers at a higher rate, 32.5 per 1000 in 2002 (Martin et al., 2003), than the overall teen father population, 16.9 per 1000 in 2002 (Martin et al., 2003), their experience of fatherhood may not generalize to other teen fathers. The work of Sullivan (1993) and Anderson (1990) suggests that this is the case, illustrating the unique experiences of African American and Puerto Rican teen fathers. However, without diverse samples of teen fathers, the differences and similarities among various communities cannot be discerned.

Second, studies select teen and/or young fathers based on resident or coparental relationship status. Many studies wishing to include both fathers and mothers restrict the sample to resident fathers or those with a romantic coparental relationship. This strategy may be successful for ensuring higher rates of father participation and completion of father, mother, and child measures: mothers are more

likely to act as a research confederate and to allow the father to see the child in order to complete the research protocol (Day & Lamb, 2004). However, these samples are biased to include better functioning fathers and couples in more positive coparental relationships. Thus, findings from such studies do not inherently generalize to nonresident fathers, fathers in nonromantic relationships, resident fathers who have mental health problems, or fathers with poor coparental relationships.

At the same time, other studies do not have any sample selection criteria, but do not analyze for the effects of residence or coparental relationship status or quality. Because these relationships for fathers, both adults and teens, are very influential on father involvement and coparental relationships, they are not to be ignored, particularly in a high risk parenting context. Thus, the residence and coparental relationship effects on teen fathers are unclear without distinct design and analysis.

Study Design

In addition to sample selection, the extant literature is largely limited by the study design. Namely, the majority of studies utilize cross-sectional designs. Thus, findings provide little insight into the complex family lives of teen fathers whose relationships are unstable and whose personal situations very dynamic. Coparental relationship statuses and quality for teen fathers change from pregnancy to birth and as children age. Teen fathers' residential status, education level, and employment status vary over time as fathers and their children mature or other life circumstances change. However, there are few longitudinal studies with teen fathers.

Lastly, as with all father research, the source of data on teen fathers bears mentioning. Studies for this review included father, mother, and both father and

mother report. Reliance on mother-report and perceptions of teen fathers and partners may be valuable (Futris & Schoppe-Sullivan, 2007) because mothers can act as “gatekeepers” to restrict father involvement, especially for nonresident fathers (Fagan & Barnett, 2003; Laakso, 2004). Whereas some research has suggested that fathers are not as reliable reporters of father involvement as mothers because fathers tend to overestimate their involvement with their children (Wical & Doherty, 2005), recent findings with low-income parents have indicated that mother and father reports of father involvement were moderately correlated, suggesting that both mothers and fathers are reliable reporters of father behaviors (Hernandez & Coley, 2007).

Future Directions

Although research has increased in studying teen fathers, future research is needed to address the methodological limitations and allow better understanding of teen fathers’ experiences. Studies should select samples specifically of teen fathers with mothers and children within specified ages to examine the effects of age, residence, and coparental relationship on father involvement and family relationships. Also, research should include diverse samples or multiple studies to examine specific groups in-depth. Importantly, future studies must examine teen fathers over time to capture the dynamic relationships they have with their families. As summarized by Futris and Schoppe-Sullivan (2007), “Longitudinal research utilizing more representative samples of adolescent parents could provide definitive insight into processes linking costs, rewards, and engagement by adolescent nonresident fathers” (p.267).

As illustrated, the extant literature on teen fathers has been somewhat divided on methodological approaches and analyses aligning with qualitative or quantitative procedures. To capture the most information about young families when little is known, a longitudinal mixed-method design would allow the best of both worlds. Although more time and resource intensive, a longitudinal mixed-method design provides the depth and richness valued in qualitative studies; the breadth and generalizability valued in quantitative studies; and repeated measures to examine the change over time. Future studies will help to better develop programs and services for teen fathers, especially low-income adolescents who face multiple risks and are overrepresented among the teen parent population.

CHAPTER III: DATA AND METHODS

In this chapter, I describe the design and measures used in this study to examine the developmental patterns of teen father involvement through early childhood. Specifically, I provide an overview of the Early Head Start Research and Evaluation (EHSRE) Project and the subsample of participants selected for the current study. Then, I discuss measurement selection and construct definitions.

Research Aims

The research questions are summarized in Table 2. Overall, the focus of the research questions is the pattern of teen fathers' involvement with their children through early childhood and how individual, contextual, and coparental factors influence fathers' involvement. The overarching research question is depicted in the conceptual model in Figure 4.

Repeated measures of father involvement from 14-months through 64-months comprised the information necessary to discriminate patterns of behavior (i.e., involvement) into a latent growth trajectory. The coparental relationship, employment, and school status were also measured repeatedly from 14-months through 64-months and were considered as time-varying covariates. As a time-varying covariate, the coparental relationship directly impacted father involvement concurrently measured; the same applied for employment and school status. On the right hand side of Figure 4 are earlier father behaviors (i.e., prenatal and birth behaviors) believed to predict the levels and patterns of father involvement. On the left hand side of Figure 4 are theoretically and empirically selected covariates (i.e.,

father factors, child factors, contextual factors) believed to influence the pattern of father involvement and prenatal and birth behaviors.

Table 2
Summary of Research Questions and Hypotheses

Research Question	Hypothesis
1) What is the trajectory of teen fathers' involvement through early childhood?	1) Teen father involvement will start relatively high, increase initially, but then decrease over time.
2) How do teen fathers' prenatal and birth behaviors influence teen fathers' involvement trajectory?	2) Higher levels of prenatal behaviors and birth behaviors will be positively associated with teen fathers' involvement trajectory.
3a) How do teen father factors influence teen fathers' prenatal and birth behaviors?	3a) Younger teen fathers will have higher levels of prenatal and birth behaviors than counterparts.
3b) How do teen father factors influence teen fathers' involvement trajectory?	3b) Younger and resident teen fathers will have higher initial levels and trajectories of involvement than counterparts.
4) How does the child factor influence teen fathers' involvement trajectory?	4) Male children will have higher initial levels and trajectories of involvement than female children.
5a) How do contextual factors influence teen fathers' prenatal and birth behaviors?	5a) Extant literature on the influence of parent race on teen fathers' involvement is conflicting; current analysis is exploratory. Older mothers will have higher levels of teen fathers' prenatal and birth behaviors.
5b) How do contextual factors influence teen fathers' involvement trajectory?	5b) Extant literature on the influence of parent race on teen fathers' involvement is conflicting; current analysis is exploratory. Older mothers will have higher initial levels and trajectories of involvement than counterparts.
6) How is the coparental relationship factor concurrently associated with teen father involvement throughout early childhood?	6) Teen fathers in romantic coparental relationships will have higher levels of concurrent involvement than fathers in nonromantic relationships.
7) How are teen father factors concurrently associated with teen father involvement throughout early childhood?	7) Employed and teen fathers in school will have higher levels of concurrent involvement than unemployed and fathers not in-school.
8a) How do teen fathers' prenatal	8a) Prenatal behaviors will mediate the

Research Question	Hypothesis
behaviors mediate the influence of father and contextual factors on teen fathers' involvement trajectory?	association between father age, mother age and involvement patterns.
8b) How do teen fathers' birth behaviors mediate the influence of father and contextual factors on teen fathers' involvement trajectory?	8b) Birth behaviors will mediate the association between father age, mother age and involvement patterns.

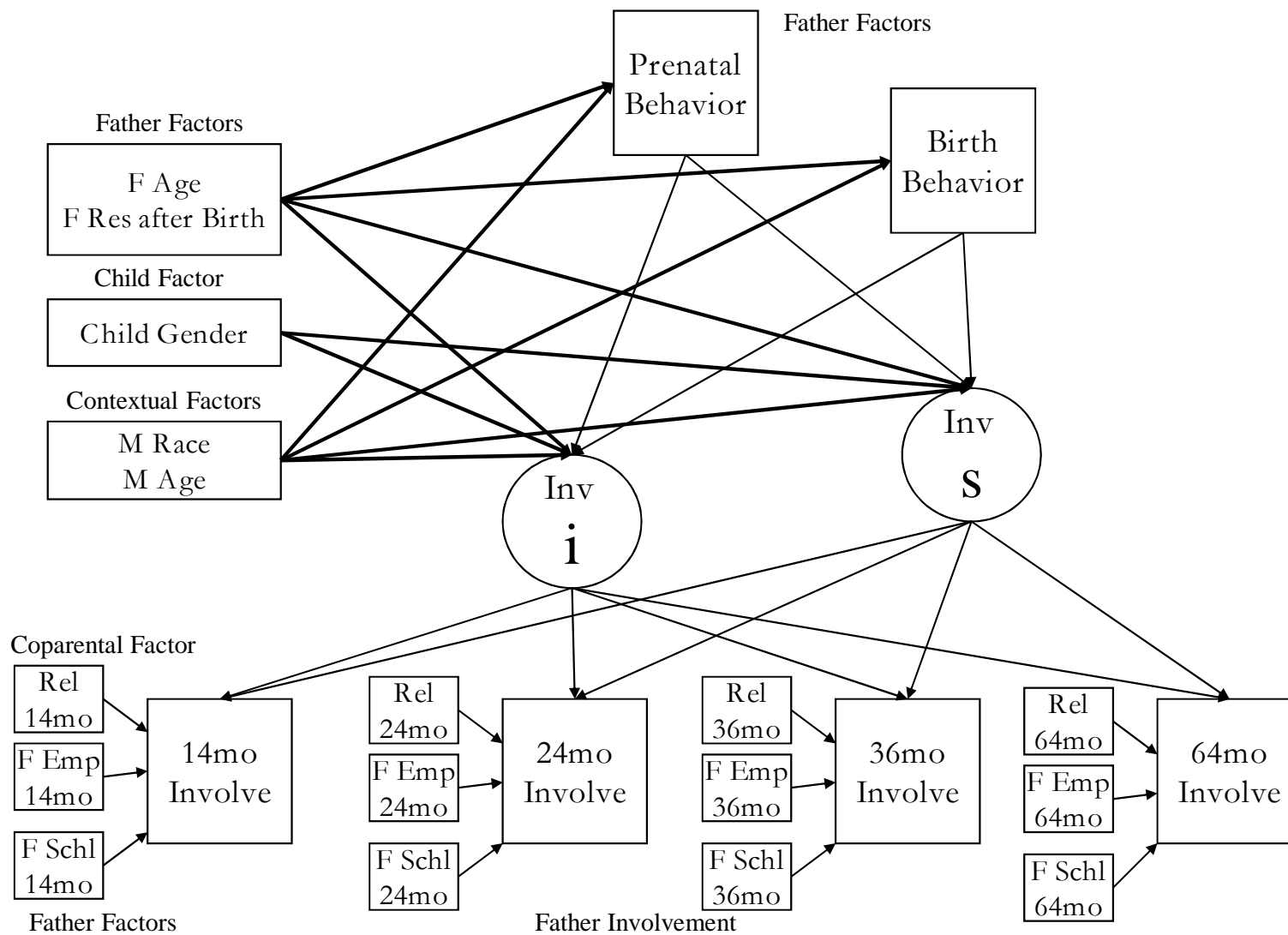


Figure 4. Conceptual Model of Teen Fathers' Involvement Trajectory

The Early Head Start Research and Evaluation Project Dataset

The dynamic influence of individual and coparental factors on father involvement, particularly teen fathers, within a context of environmental risk (i.e., low-income), has not been examined longitudinally. The EHSRE Project presents a prime opportunity to examine these processes because it contains a sample of low-income families, as well as in-depth information on family characteristics, both mothers' and fathers', and father involvement from infancy to kindergarten.

The EHSRE Project is a longitudinal, multi-site study of low-income families with infants and toddlers at the time of the study inception (Mathematica Policy Research, 2001; 2002). The EHSRE Project began in 1996 in response to the Administration for Children, Youth, and Family's (ACYF) need for an evaluation of Early Head Start programs to meet 1994 and 1998 Head Start reauthorization goals. In order to include a diverse sample of families, various program orientations, urban and rural locales, and multiple geographic regions, ACYF purposively selected 17 national EHS research sites for the EHSRE Project.

Each EHS program recruited families according to typical procedures. Families were eligible for participation in the EHSRE Project if they met general EHS criteria, their children were less than 12-months-old at enrollment, or the family included a pregnant woman, and they had not participated in other child development programs (e.g., Comprehensive Child Development Program) for more than 3 months in the past year. Once recruited, families were randomly assigned to participate in the EHS program or in the control group. The control group was eligible to access any services available in the community other than EHS.

Data were collected from families at several time points and are summarized in Table 3. First, at enrollment, parents completed the Head Start Family Information System Form (HSFIS), which entailed questions regarding family demographics, health information, and other contact information. The parent completed the HSFIS as typically required for enrollment in EHS. All HSFIS data were transferred from the EHS system to that of Mathematica Policy Research (MPR), the contractor organizing data collection and analysis, once families enrolled for participation in the EHSRE Project.

Second, parents completed parent service interviews 6-, 15-, and 26-months after random assignment regarding family use of program services, progress towards self-sufficiency, and family health. Parents also completed a similar exit interview when children were 36-months-old. Parent service interviews were usually conducted by telephone using Computer-Assisted Personal Interviewing by MPR field staff.

Third, parents completed parent interviews when children were 14-, 24-, 36-, and 64-months-old. Interviews covered a broad range of topics, such as parent demographics, parent-child relationship, child well-being, parent stressors and supports, family environment, family relationships, and father involvement. Interviews took place in-person, typically in the parent's home, and when convenient for the family. They were conducted in the parent's native language. MPR field staff conducted the interviews using hard-copy questionnaires and, in some cases, Self-Administered Questionnaires. Additionally, parents were videotaped playing with their children in semi-structured tasks at 14-, 24-, 36-, and 64-months. Parents were compensated after completing the home visit.

Fourth, at 15 of the 17 sites, mothers or other guardians identified the biological fathers and father-figures for field staff to contact. These men were separately recruited and participated in interviews at 24-, 36-, and 64-months. Interviews took place in-person, typically in the parent's home, and when convenient for the family. They were conducted in the parent's native language. Field staff conducted the interviews using hard-copy questionnaires and, in some cases, Self-Administered Questionnaires. Fathers also participated in videotaped play interactions when children were 24-, 36-, and 64-months-old. Fathers were compensated after completing the home visit.

Table 3
Summary of EHSRE Project Data Collection

Child Age				
Baseline	14-months	24-months	36-months	64-months
HSFIS*	Parent Interview*	Parent Interview*	Parent Interview*	Parent Interview*
		Parent Video	Parent Video	Parent Video
		Exit Interview		
		Father Interview*	Father Interview*	Father Interview*
		Father Video	Father Video	Father Video
Time after Random Assignment				
Baseline	6-months	15-months	26-months	
	Service Interview	Service Interview	Service Interview	

In the current study, I focused on the association of paternal and family characteristics (e.g., coparental relationship status, age, race, father employment) with fathers' prenatal behaviors, birth behaviors, and later father involvement exclusively in the teen father sample. Interviews denoted with asterisks in Table 3 were included in the current study. The study included enrollment interview demographics and parent interviews conducted at 14-, 24-, 36-, and 64-months; data is largely based on mother interviews.

Applicants at enrollment and respondents for the parent interviews were typically biological mothers, but also included other primary female caregivers (e.g., grandmother, foster mother) and biological fathers. In order to maintain a consistent perspective of father involvement and correspond to extant literature with teen fathers, only biological mothers' reports were included in the current study. At each interview wave, data from respondents other than biological mothers were set to "system missing". In most cases, items were already missing. However, at the 64-month interview wave, 74 cases of 83 non-mother respondents were excluded. In the end, all data reflected the perceptions of biological mothers.

There is some evidence that low-income mothers underreport father involvement, particularly when parents have high levels of conflict and relationship instability (Coley & Morris, 2002). At the same time, others have suggested that fathers are not as reliable reporters of father involvement as mothers because fathers tend to overestimate their involvement with their children (Wical & Doherty, 2005). However, recent findings with low-income parents indicated that mother and father reports of father involvement were moderately correlated suggesting that mothers are

reliable reporters of father behaviors (Hernandez & Coley, 2007). Additionally, reliable composites of father involvement were similar across resident versus nonresident and African American versus Latino fathers. It should be noted though that father reports of father involvement have shown more consistent predictive validity with children's cognitive assessments than mother reports of father involvement (Hernandez & Coley, 2007). Thus, a sample with a wide range of biological father involvement can be attained and reliably reported through mother interviews in the current study. Future studies, that include distal outcomes to examine the impact of teen fathers' involvement, should consider utilizing both mother and father reports of father involvement to increase predictive validity estimates.

Participant Selection

Participants for the current study included 416 families enrolled in the EHSRE Project, which included biological teen fathers at the 14-month parent interview. Biological fathers were selected rather than father-figures because the study aimed to discern the influence of prenatal and birth behaviors on fathers' later patterns of involvement. Biological fathers are tied to the pregnancy by definition; moreover, active and responsible fathering begins during the pregnancy (Levine & Pitt, 1997). Biological fathers are the primary targets of community outreach, service programs, and public policy promoting responsible fatherhood (e.g., payment of child support, positive father involvement; Cabrera & Peters, 1999; Fagan & Stevenson, 1995). It is possible that a father-figure is participating in the mother's life during the pregnancy and continues to be involved with the child. Those men may be systematically

different from other fathers and require further empirical investigation, which is outside the scope of the current study. The EHSRE Project does not have information regarding father-figure prenatal or birth behaviors; thus, only biological fathers were selected at 14-months.

“Teen” was defined as 19 years and younger at the time of the child’s birth. This cut-off was selected to assess fathers’ developmental risk upon experiencing early parenthood, in congruence with developmental literature. Further, following teen fathers for five years tracks fathers during young adulthood, an important transitional phase for continued maturation and growth (Arnett, 2007). In order to select families into the study, fathers’ ages were derived from multiple sources of fathers’ ages.

After determining father and mother ages (see *Variables and Measures* section), the subsample for the current study was selected based on father and mother age at the child’s birth. At 14-months, there were $N = 2344$ completed parent interviews. Of these interviews, there were $N = 2239$ with completed biological father ages; thus, $N = 105$ cases were missing biological father ages. For biological mothers, there were $N = 2336$ cases with known biological mother ages; thus, $N = 8$ cases were missing biological mother ages.

Cases without father age were excluded from the universe ($N = 105$) because it was unknown if fathers were 19 years or younger at child birth. Of the remaining 2239 cases, cases without mother age were also excluded from the universe ($N = 3$). To evaluate for selection bias in the remaining universe ($N = 2236$), excluded cases were compared to the universe to test for statistically significant differences in

fathers' and mothers' race, child gender, fathers' education, employment, residence, coparental relationship status at 14-months, prenatal behavior, birth behavior, and later involvement. Analyses indicated that a little over half (60%) of fathers in the universe were in romantic relationships while 65% of fathers excluded had no relationships with their coparents [$\chi^2(6, N = 2222) = 63.371, p < .001$]. The sample universe was more likely to include residential fathers [$t(1, 2246) = -5.488, p < .001$], fathers who discussed the pregnancy [$t(1, 2234) = -5.677, p < .001$], fathers who went to the doctor during the pregnancy [$t(1, 2229) = -5.273, p < .001$], fathers who were present at the birth [$t(1, 2239) = -7.783, p < .001$], fathers who visited the hospital after the birth [$t(1, 2234) = -9.223, p < .001$], fathers who had contact with child since the birth [$t(1, 2173) = -9.550, p < .001$], fathers who had seen the child in the past 3 months more frequently [$t(1, 2170) = -6.875, p < .001$], and fathers who had taken care of the child in the past month more frequently [$t(1, 2158) = -5.777, p < .001$]. There were no statistically significant differences between excluded fathers and included fathers on mothers' race, fathers' race, child gender, employment status, or education level. However, it is important to note that bias analyses were based on a reduced sample as many excluded cases were missing demographic and involvement information. Thus, for the excluded cases, mothers did not provide much information about fathers, perhaps supporting the conclusion that these cases were more likely to include fathers with fewer resources who were less accessible to mothers and children.

Using the universe of $N = 2236$ at 14-months, the current sample was selected based on fathers' age at the child's birth and mothers' age at the child's birth. First,

families were selected if biological fathers were 19-years-old or younger at the birth of the focal child. Of completed parent interviews, 429 (19.2%) fathers were biological teen fathers (i.e., 19-years-old or less at child's birth). Biological teen fathers ranged in age from 14 years to 19 years ($M = 17.77$, $SD = 1.16$). Teen fathers' coparents (i.e., children's biological mothers) ranged in age from 14 years to 32 years ($M = 17.40$, $SD = 2.24$). Because of the extensive age range and lack of comparability in sample characteristics to extant literature, the current study included teen fathers 19 years and younger and mothers 24 years and younger. The cut-off of 24-years-old was chosen to match the age cut-off for samples with teen mothers and their partners typically selected up to 24 years (e.g., Fagan et al., 2007; Florsheim et al., 2003).

The selection of families, in which biological fathers were 19-years-old and younger and biological mothers were 24-years-old and younger at the birth of the focal child, resulted in a sample of 422 families. However, six fathers died throughout the course of the study from the 14-month interview to the 64-month interview. These six families were removed from the sample. The final sample for the current study was $N = 416$.

The developmental and contextual expectations of younger teen fathers could lead to a different fathering and coparenting experience than that of older teen fathers. Thus, teen fathers were compared by age. Younger teen fathers were defined as 14-year-olds to 17-year-olds ($N = 158$); older teen fathers were defined as 18-year-olds to 19-year-olds ($N = 258$). Similarly, mothers were compared by age: younger teens (14-year-olds to 17-year-olds; $N = 240$); older teens (18-year-olds to 19-year-olds; $N = 137$); and young adults (20-year-olds to 24-year-olds; $N = 39$). This age split is

congruent with other teen father comparisons and age-dependent social expectations (Mott, 1993).

Final Sample Characteristics

Final sample characteristics are reported for 416 families with biological teen fathers and young mothers at 14-months (see Table 4 for descriptive statistics). At the birth of their children, biological teen fathers ranged in age from 14 to 19 years ($M = 17.76$, $SD = 1.16$) and mothers ranged in age from 14 to 24 years ($M = 17.24$, $SD = 1.86$). Approximately 90% of mothers were teens at the time of the child's birth. Parents were of diverse racial background: 23% of fathers and 46% of mothers were African American; 32% of fathers and 18% of mothers were Hispanic; and 37% of fathers and 30% of mothers were White. The majority of fathers (i.e., 54%) had less than a high school education at 14-months. Approximately two-thirds (i.e., 64%) of fathers were employed at 14-months, while few fathers were enrolled in school or job training (i.e., 17%) or currently in jail (i.e., 7%). Also, the majority of fathers, $N = 292$ (71%), were nonresident at 14-months. At the same time, parents had a range of closeness in their relationships. Mothers described their relationships with the child's father as married (i.e., 14%), live-in partner (i.e., 12%), boyfriend (i.e., 26%), friend (i.e., 24%), and no relationship (i.e., 24%).

Over half of this sample's children were males (i.e., 53%). Approximately 12% of mothers ($N = 50$) enrolled in the ESHRE study while they were pregnant (full EHS sample, $N = 235$). Lastly, 53% of families were enrolled in EHS programs. To be clear, the current study includes families who received EHS services (i.e., program

families) and those families who did not (i.e., control families). Program effects are not reported herein, because they are beyond the scope of the current study.

Table 4
Participant Characteristics (N = 416)

Characteristic	Mean/Percentage	SD
Father Age at Child Birth	17.76	1.16
Younger Teen	37.9	
Older Teen	62.0	
Father Race		
White	36.6	
African American	23.2	
Hispanic	32.3	
Other	7.9	
Father Employed at 14-months	64.4	
Father in School at 14-months	16.7	
Father in Jail at 14-months	6.7	
Father Education at 14-months		
< High School Degree	53.8	
High School Degree	41.5	
> High School Degree	4.6	
Father Resident at 14-months	29.0	
Mother Age at Child Birth	17.24	1.86
Younger Teen	57.7	
Older Teen	32.9	
Young Adult	9.4	
Mother Race		
White	30.1	
African American	46.2	
Hispanic	17.6	
Other	6.1	
Coparental Relationship at 14-months		
Husband	13.5	
Live-In Partner	11.5	
Boyfriend	25.5	
Friend	24.3	
No Relationship	24.3	
Separated/Divorced	1.0	
Child Male	53.0	

Note: Percent varies of total N.

Variables and Measures

The following section describes the measures included in the current study.

The variables constructed and operational definitions are summarized in Table 5.

Table 5
Variable Summary

Construct	Operationalization	Source
<i>Dependent Variables</i>		
Father Involvement	How often father looked after child in past month; ordinal scale from Never to Every day	Mother report at 14-, 24-, 36- and 64-months
<i>Predictor Variables</i>		
Father Prenatal Behavior	Count of 2 behaviors (i.e., discuss pregnancy, go to doctor visits)	Mother retrospective report at 14-months
Father Birth Behavior	Count of 2 behaviors (i.e., present at birth, visit hospital)	Mother retrospective report at 14-months
<i>Father Factors</i>		
Father Age at Birth	Father's age at the birth of the focus child; dichotomized into Younger Teens and Older Teens	Enrollment data, fathers' interviews, and mothers' interviews
Father Residence after Birth	Father resident after birth and at 14-months; reduced to 4 categories (i.e., Always Nonresident, Sometimes Resident/Nonresident, Sometimes Resident/Resident, Always Resident)	Mother report at 14-months
Father Employment Status	Father employed; dichotomized into Employed and Not Employed	Mother report at 14-, 24-, 36- and 64-months
Father School Status	Father in school; dichotomized into In-School and Not in-School	Mother report at 14-, 24-, 36- and 64-months

Construct	Operationalization	Source
<i>Child Factor</i>		
Child Gender	Child gender; dichotomized into Male and Female	Enrollment data
<i>Contextual Factors</i>		
Race	Mother's race; reduced to 4 categories (i.e., White, African American, Hispanic, and Other)	Enrollment data
Mother Age at Birth	Mother's age at the birth of the focus child; reduced to 3 categories (i.e., Younger Teens, Older Teens, and Young Adults)	Enrollment data and mothers' interviews
<i>Coparental Factor</i>		
Coparental Relationship Status	Relationship status; dichotomized into Romantic and Non-Romantic	Mother report at 14-, 24-, 36- and 64-months

Dependent Variable: Father Involvement

The majority of the field of father research now includes father report of his involvement (Cabrera et al., 2000; Lamb, 2004; Parke, 2002), however, this is at the expense of a more select sample. Fathers who participate in a study are more involved with their children, are higher functioning, and have more human and social capital than those fathers who do not participate in a study. Thus, fathers give a unique and valuable perspective of their relationships with their children, but researchers are only able to capture half the universe of fathers. Because the current study aimed to examine a group of fathers for which little is known about how they function as parents over time, mother report was valued to gain the widest range of fathers and father behaviors. Mothers are able to report if the father has not seen the child in the past year, and to report that the father sees the child every day. However, maintaining

fathers in a study has shown to be very difficult. Collecting data of this magnitude for five years generates more specific ideas to develop future studies and interventions for teen fathers.

In the current study, mothers reported on fathers' involvement at all 4 interview waves (14, 24, 36, and 64 months). Involvement is operationalized with one item that was asked for both resident and nonresident fathers. (Two additional items were asked for only nonresident fathers: contact with their children during the past year and seeing their children in the past three months.) Specifically, the question "How often has father looked after child on his own in the past month" was asked to assess fathers' availability for interaction with child. Involvement was rated on an ordinal 5-point scale (5 = Never to 1 = Every day/Almost Every day), but was reverse scored such that higher ratings reflect more accessibility. If nonresident fathers had not had contact with their children or seen their children in the past three months, the involvement item was not asked (i.e., missing) due to an interview logical skip pattern. In order to maintain complete data, the involvement item was then coded *Never*. Mothers with either resident or nonresident fathers were asked about fathers' involvement during the past month, thus providing involvement levels for all fathers.

Predictor Variables: Father Prenatal and Birth Behaviors

Empirical evidence indicates that fathers' earlier investment and involvement with mothers during the pregnancy and at birth increase their later involvement with their children. Thus, variables relevant to prenatal and birth behaviors were included in the current study.

Teen Father Prenatal Behaviors

Teen fathers' involvement during the pregnancy was assessed retrospectively during the 14-month interview. Mothers were asked if fathers participated (1 = Yes, 0 = No) in the following activities: discuss the pregnancy; and go to the doctor with mother. Prenatal behaviors items were summed creating the frequency of prenatal activities in which father participated (range 0 – 2).

Teen Father Birth Behaviors

Teen fathers' involvement at the birth of child was assessed retrospectively during the 14-month interview. Mothers were asked if fathers participated (1 = Yes, 0 = No) in the following activities: present at birth; and visit child in hospital after birth. If the baby was not born in a hospital ($N = 15$), the question of "Did father visit child in the hospital" was skipped. Because attending the birth was highly associated with visiting the child in the hospital (90% participated in both), for cases in which the father was present at the birth and the baby was not born in the hospital, visiting in the hospital were recoded as 1 = Yes. Birth behaviors items were summed creating the frequency of birth behaviors in which father participated (range 0 – 2).

Covariates

Theoretically (Doherty et al., 1998) and empirically supported individual and contextual factors were selected that influence the level and trajectory of father involvement and earlier prenatal and birth behaviors. These were father age, father residence after birth, father employment, father school, child gender, parent race, mother age, and coparental relationship.

Father Factor: Father Age

Due to the challenging nature of father research and the longitudinal design of the current study, deriving the biological father's age at the time of the child's birth required multiple sources for complete and accurate data. The five possible sources of the biological father's age are summarized in Table 6. With each variable, information was reported for biological father and/or father-figure. Thus, if a biological father's information was not obtained from one source (e.g., HSFIS), it was potentially obtained from another source (e.g., 14-month Parent Interview). The current study is concerned only with biological fathers' information.

Table 6
Hierarchy of Sources for Biological Father's Age and Number Contributed to Dataset

Variable	Source	Full Sample	Teen Sample
Father Date of Birth (DOB)	1) 36-month Father Interview	519	63
Father DOB	2) 64-month Father Interview	179	29
Father DOB	3) HSFIS	433	59
Father current age	4) 24-month Father Interview	90	30
Father age at child birth	5) 14-month Parent Interview	1018	235

Father's age at child's birth in years (carried out to two decimal places) was calculated with the father's date of birth (DOB) by subtracting his DOB from the child's DOB. The father provided his DOB during the 36- and 64-month Father Interviews; the mother provided father DOB on the HSFIS at enrollment. To maintain precision, father's age in months at child's birth was calculated by subtracting the child's age in months at the 24-month Father Interview from the father's current age in months at the 24-month Father Interview. Then, father's age in months was

converted into years. Lastly during the 14-month Parent Interview, mothers reported father's age in years at the time of the child's birth.

From all sources, father's age in years was rounded *within* the year, such that 17.85 was rounded to 17 and 17.10 was rounded to 17. The rationale for this data reduction was to match the precision of father's age calculated from father's DOB and child's DOB with the whole year ages reported by parents. It was assumed that when parents reported the age it was the current age before the next birthday. For instance, a father is still 16-years-old, or more precisely, 16.92-years-old, when his child is born if his birthday is next month. Parents may reflect the convention giving the current age (i.e., before the birthday) or introduce respondent error by giving the nearest age (i.e., as if the birthday had already occurred). In sum, the derived father's age variable incorporated both precision calculation and reported age.

From the sources in Table 6, any one source had substantial missing data when limited to biological fathers. Additionally, not all sources corresponded to the derived father's age at child's birth. For example, mother may have reported father DOB on the HSFIS, but the date did not match the DOB father reported on the 36-month Father Interview. Hence, the hierarchy summarized in Table 6 was followed to achieve the most complete and accurate derivation of father's age at child's birth possible. Father DOB was valued over reported ages to increase precision in calculation. Similarly, father report was valued over mother report. If source one (i.e., father DOB 36-month interview) was available, source one was utilized to calculate father's age. If source one was not available, the next source available was used (i.e., source 3). Table 6 summarizes the total number of cases included from each data

source. Lastly, father age was dummy coded: 0 = Younger Teen (14- to 17-years); 1 = Older Teen (18- to 19-years).

Father Factor: Father Residence after Birth

Mothers reported teen fathers' residential patterns after the birth on the 14-month interview. The mother was asked whether the teen father currently lived with her and the focal child at 14-months. Residence was coded 1 = Yes for teen fathers who currently lived with mothers all of the time. Residence was coded 0 = No for teen fathers who currently lived with mothers some of the time or did not live with mothers. Additionally, the mother reported for resident fathers whether father lived with her continuously since birth. The mother reported for nonresident fathers whether father lived with her some of time since birth. Based on residence after birth and at 14-months, four residential patterns were created: 0 = Always Nonresident; 1 = Sometimes Resident/Nonresident; 2 = Sometimes Resident/Resident; 3 = Always Resident.

Father Factor: Father Employment

Father employment status was measured concurrently with father involvement at 14-, 24-, 36-, and 64-months. Repeated measurement of the time-varying covariate captured the changes in teen fathers' lives. Mothers provided information on teen fathers' current status (e.g., employed, in school) at each interview wave. Employment status was coded as 1 = Yes for all teen fathers who were reported as working or in the military (i.e., currently receiving pay for services). All other teen fathers for whom mothers provided status information were coded as 0 = No for employment.

Father Factor: Father School

Father school status was measured concurrently with father involvement at 14-, 24-, 36-, and 64-months. Repeated measurement of the time-varying covariate captured the changes in teen fathers' lives. Mothers provided information on teen fathers' current status (e.g., employed, in school) at each interview wave. School status was coded as 1 = Yes for all teen fathers who were reported as in-school. All other teen fathers for whom mothers provided status information were coded as 0 = No for school status.

Child Factor: Child Gender

Mothers provided information about focal child (i.e., gender, date of birth) on the HSFIS. Gender was dummy coded: 0 = Female; 1 = Male. Child gender was included because there is some, although inconsistent, evidence that fathers are more involved with boys than girls (Parke, 2002).

Contextual Factor: Race

The race variable consisted of mutually exclusive, non-ordinal categories: 1 = White; 2 = African American; 3 = Hispanic; 4 = Other. The "White" category represented those not of Hispanic origin and identified as White or Caucasian. Similarly, the "African American" category included those not of Hispanic origin and identified as African American. Parents who felt they were both African American and Hispanic had the option to select biracial. The "Hispanic" category included those parents from all Latino, South American, Caribbean, and Spanish family backgrounds. The "Other" category included biracial/multiracial, Asian, Asian

American, Pacific Islander, American Indian, American Inuit/Eskimo, or other racial backgrounds not included on the interview form.

Despite attempts to construct teen father race most accurately and completely, teen father race was missing in 60% ($N = 253$) of 416 cases. Teen father race was constructed from the 24-month Father Interview (95 cases), 64-month Father Interview (31 cases), and the HSFIS (38 cases), hierarchically. In contrast, mother race was missing in 2% ($N = 8$) of 416 cases. Mother race was reported on the HSFIS. Mother and teen father race corresponded highly (66% - 91%) among White, African American, and Hispanic parents for known cases ($N = 160$), although correspondence between mother and teen father race for Other race was 27%. Given the existing correspondence between mother and father race in the current sample and postulated correspondence in the missing pairs based on assortative mating theories, mother race provided a good proxy for father race to represent the social and contextual influences of race on father involvement patterns. Thus, mother race was used in further analyses.

Contextual Factor: Mother Age

Biological mother's age at the child's birth was calculated from biological mothers' DOB reported on the HSFIS and age at random assignment. Mother's age in years was calculated by subtracting her DOB from child's DOB. A total of 2330 cases were derived from the HSFIS DOB report. Additionally, biological mother's age at the time of random assignment into treatment or control condition provided 6 cases for mother's age. The number of years (carried out to two decimal places) between the random assignment date and the child's DOB was subtracted from

mother's age in years at random assignment. Mother's age in years at child's birth was rounded *within* the year, such that 17.85 was rounded to 17 and 17.10 was rounded to 17. Lastly, mother age was recoded: 0 = Younger Teen (14- to 17-years); 1 = Older Teen (18- to 19-years); and 2 = Young Adult (20- to 24-years).

Coparental Factor: Coparental Relationship Status

The coparental factor of coparental relationship status was measured concurrently with father involvement at 14-, 24-, 36-, and 64-months. Repeated measurement of the time-varying covariate captured the changes in teen fathers' lives. Mothers indicated the status of the coparental relationship during each interview wave. Relationship status consisted of mutually exclusive, non-ordinal categories: Husband = 1; Live-in Partner = 2; Boyfriend = 3; Friend = 4; Divorced/Separated = 5; No Relationship = 6; or Something Else = 7. Relationship status was then dummy coded into Romantic Relationships = 1 (i.e., Husband, Live-In Partner, Boyfriend) and Non-Romantic Relationships = 0 (i.e., Friend, Divorced/Separated, No Relationship, Something Else) to allow adequate cell size in subsequent analyses.

Summary

Utilizing the EHSRE Project, the current study was designed to determine the involvement trajectory of low-income teen fathers from 14- to 64-months and the impact of teen fathers' prenatal and birth behaviors on their involvement. Additionally, the influence of father (i.e., age, residence, employment, school), child (i.e., gender), contextual (i.e., race, mother age), and coparental (i.e., relationship status) factors on teen fathers' early behaviors and later involvement are examined.

CHAPTER IV: ANALYSIS AND RESULTS

In this chapter I provide a description of the analyses conducted and subsequent findings. First, data preparation and descriptive statistics are presented. Next, the estimation of latent growth curve models to describe the developmental trajectory of teen father involvement is presented. Finally, the associations among antecedent covariates and father involvement for the best fitting model are presented.

Data Preparation

Once the sample of biological teen fathers was selected, data were screened and simple descriptive statistical analysis was conducted. Due to the large-scale longitudinal design of the EHSRE Project, missing data across waves was considerable. The current study had missing data in the dependent (i.e., father involvement), predictor (i.e., father prenatal and birth behaviors), control (i.e., father age, father residence, child gender, race, mother age), and time-varying covariate (i.e., coparental relationship, father employment, father school) variables. A data imputation technique was chosen to maintain data integrity as suggested by longitudinal researchers (McCartney, Burchinal, & Bub, 2006) and the Early Head Start Research Consortium (Faldowski, 2003).

Missing data were imputed for the predictor, control, and time-varying covariate variables using multiple imputation procedures with the statistical software package *R* under recommendations by Schafer (1997) for analysis of incomplete multivariate data. *R* is a freeware package distributed by CRAN (Comprehensive R Archive Network) which is essentially a free version of S-Plus. Multiple imputation procedures have been successfully utilized for the estimation of longitudinal models

with missing data at multiple waves and with time-varying data (Davey, Shanahan, & Schafer, 2001). When data are missing at random (MAR; i.e., missing values can be explained by observed variables), iterative imputation procedures (e.g., multiple imputation) produce less biased (e.g., less distorted standard errors) estimates than listwise deletion or traditional replacement techniques (e.g., mean-value replacement; Lohr, 1999; Schafer, 1997; Schafer & Graham, 2002).

Compared to Full Information Maximum Likelihood (FIML), a model-based iterative procedure, which makes use of all available data, for multiple imputation reduces uncertainty in the imputation process because parameter estimates do not vary from analysis to analysis (Davey et al., 2001). Multiple imputation procedures replace each missing value with two or more acceptable values in the datasets representing a distribution of possible values while retaining the population variability (Little & Rubin, 1987; 2002; Schafer & Graham, 2002). Multiple imputation is a three step process. First, multiple, complete datasets are created, such that missing values are randomly replaced in each dataset based on associations among existing data, missing data, and causes of missingness. Second, each complete dataset is analyzed separately to attain model estimates. Third, analysis results from each dataset are combined to obtain a single set of parameter estimates and standard errors.

The program *R* sufficiently handles categorical and continuous data while maintaining the interpretability of categorical variables (Horton & Lipsitz, 2001). The five multiply imputed, complete datasets generated by *R* were imported into Mplus for all further analyses. The Mplus software combines steps 2 and 3 of the multiple

imputation process averaging parameter estimates and standard errors for the set of analyses (Muthén & Muthén, 2007). The final patterns of missing data are presented in Table 7.

Table 7
Missing Data Patterns and Frequencies

Variable	Missing Data Pattern															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Inv 14mo	X	X	X	X	X	X	X	X								
Inv 24mo	X	X	X	X					X	X	X	X				
Inv 36mo	X	X			X	X			X	X			X	X		
Inv 64mo	X		X		X		X		X		X		X		X	
Prenatal	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Birth	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
F Younger	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sme Res/Nres	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sme Res/Res	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
All Res	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Gender	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
M Older	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
M Adult	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Black	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hispanic	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Other	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rmntic 14mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rmntic 24mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rmntic 36mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rmntic 64mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emphy 14mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emphy 24mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emphy 36mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emphy 64mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Schl 14mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Schl 24mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Schl 36mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Schl 64mo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Frequency	207	55	25	24	24	11	14	33	6	4	1	1	4	1	1	5

Note: X = data present

Descriptive Statistics

Prior to conducting any inferential statistical analysis, descriptive statistics were computed. Unimputed and imputed statistics are provided to illustrate the similarities.

Dependent Variable: Father Involvement

As seen in Table 8, the majority of teen fathers were accessible and involved with their children. However, fathers' mean involvement decreases from 14- to 64-months on all items.

Table 8
Mean(SD) Teen Father Involvement Levels from 14-months to 64-months

	14-month		24-month		36-month		64-month	
Variable	Unimp ¹	Imp ²	Unimp	Imp	Unimp	Imp	Unimp	Imp
Contact in past year	92.6%	90.4% ^a	89.5%	82.2% ^a	87.5%	74.3% ^a	85.8%	68% ^a
Seen child in past 3 mo.	4.35 (1.94)	4.33 ^b	4.42 (1.85)	4.32 ^b	4.11 (1.97)	4.03 ^b	3.78 (1.99)	3.70 ^b
Look after child in past mo.	2.80 (1.66)	2.80 ^b	2.82 (1.58)	2.76 ^b	2.64 (1.64)	2.60 ^b	2.39 (1.63)	2.35 ^b
N =	393	416	323	416	313	416	281	416

¹ Unimputed descriptive statistics

² Imputed descriptive statistics

^a Sample statistics from multiply imputed datasets

^b Sample statistics from Full Information Maximum Likelihood estimation

In-depth examination of teen father involvement (i.e., “How often in the past month father looked after child while [mother] did other things”) revealed that the involvement pattern at 14-months was fairly evenly distributed among the levels (Table 9). It is important to note that involvement was analyzed as an ordinal variable. For example, 26% of teen fathers were involved with their children every day. Involvement patterns for 24-months were similar. However, more fathers were never involved with their children at 36-months (42%) whereas 21% saw their

children every day. The decline in involvement continued at 64-months with 50% of fathers never involved and 19% involved every day. Thus, there was variability in teen fathers' level of involvement within *and* across time waves. Various covariates were used to explain this variability.

Table 9

Proportion Teen Father Involvement Levels from 14-months to 64-months

	14-month	24-month	36-month	64-month
Never	0.369	0.344	0.423	0.500
Once or twice	0.115	0.115	0.103	0.106
Few times/mo	0.127	0.133	0.103	0.092
Few times/wk	0.125	0.198	0.157	0.103
Every day	0.265	0.211	0.215	0.199

Predictor Variables: Father Prenatal and Birth Behaviors

As seen in Table 10, the majority of teen fathers participated in prenatal behaviors; only 20% of teen fathers did not participate in either prenatal activity. Similarly, the majority of teen fathers participated in birth activities; only 20% of teen fathers did not participate in either birth activity.

Table 10
Teen Father Prenatal and Birth Behavior Frequencies

Behavior	Mean(SD)/Percentage	
	Unimp ¹	Imp ²
Prenatal Behavior	1.39 (.81)	1.39
0 behaviors	20.5	20.4
1 behavior	20.2	20.7
2 behaviors	59.3	58.9
Birth Behavior	1.44 (.80)	1.44
0 behaviors	20.0	19.5
1 behavior	16.3	17.3
2 behaviors	63.7	63.2
	<i>N</i> = 405	416

¹ Unimputed descriptive statistics

² Imputed descriptive statistics

Covariates

The means and frequencies for the six characteristics selected from the literature as covariates are described in Table 11. Half of fathers were never resident after birth (52.4%) and approximately half of teen fathers were employed (60.6%). Approximately, half of the sample was boys. Although half of teen fathers were in romantic coparental relationships at 14-months, rates decreased over time: only 26% of teen fathers were in romantic coparental relationships at 64-months.

Table 11

Father, Child, Contextual and Coparental Factors Means and Frequencies

Characteristic	<i>Mean/Percentage</i>							
	14-months		24-months		36-months		64-months	
	Unimp ¹	Imp ²	Unimp	Imp	Unimp	Imp	Unimp	Imp
F Age at Birth	17.76	17.76	--	--	--	--	--	--
N=	416	416	--	--	--	--	--	--
Older Teen	62.0	62.0						
F Res after Birth			--	--	--	--	--	--
N=	393	416	--	--	--	--	--	--
Never Res	52.4	52.4	--	--	--	--	--	--
Res Birth/Nres	17.8	18.3	--	--	--	--	--	--
Res Birth/Res	4.8	4.6	--	--	--	--	--	--
Always Res	24.9	24.8	--	--	--	--	--	--
F Employed	64.4	60.6	69.3	69.5	67.2	70.9	61.5	65.1
N=	360	416	290	416	271	416	234	416
F In School	16.7	16.3	12.4	25.7	7.4	7.7	7.3	9.6
N=	359	416	290	416	271	416	234	416
Child Male	53.1	53.1	--	--	--	--	--	--
N=	416	416	--	--	--	--	--	--
M Race								
N=	408	416	--	--	--	--	--	--
White	30.1	29.8	--	--	--	--	--	--
Afr Amer	46.2	46.2	--	--	--	--	--	--
Hispanic	17.6	17.5	--	--	--	--	--	--
Other	6.1	6.5	--	--	--	--	--	--
M Age at Birth	17.24	17.24	--	--	--	--	--	--
N=	416	416	--	--	--	--	--	--
Younger T	57.7	57.7	--	--	--	--	--	--
Older T	32.9	32.9	--	--	--	--	--	--
Y Adult	9.4	9.4	--	--	--	--	--	--
Romantic Rel	50.5	48.6	40.9	44.1	36.2	41.6	27.4	26.7
N =	400	416	339	416	321	416	303	416

¹ Unimputed descriptive statistics² Imputed descriptive statistics*Correlations*

Following descriptive statistics, correlations among study variables were conducted. (A full correlation table is found in Appendix G.) First, teen fathers' involvement over time was correlated (Table 12). The positive and moderate to high correlations suggest that involvement over time was interrelated, providing support for examining involvement within a latent growth model.

Table 12

Correlations among Teen Father Involvement Levels from 14-months to 64-months

	14-month	24-month	36-month	64-month
14-month	--	--	--	--
24-month	0.670	--	--	--
36-month	0.511	0.553	--	--
64-month	0.400	0.542	0.655	--

Second, correlations among involvement, predictor variables, and covariates were conducted (Table 13). As anticipated, involvement was positively and highly correlated with prenatal and birth behaviors and residence, justifying their inclusion in the latent growth model. Although father age and race were not strongly associated with involvement, they were included in the model due to support from literature. Mother age was only associated with father age, thus was only included in further analyses as a covariate with father age. This modification supports the theoretical conceptualization of mother age as a contextual factor in the study. It is the combined age coupling of parents that creates the context for teen fathering and subsequent influence on father involvement. The current data support an indirect effect of mother age. Child gender was not associated with father involvement or any other variable, hence was excluded from further analyses.

Table 13

Correlations between Involvement and Father, Child, and Contextual Factors

Characteristic	Involvement			
	14mo	24mo	36mo	64mo
Prenatal	0.403	0.426	0.369	0.285
Birth	0.463	0.455	0.432	0.312
F Older Teen	0.126	0.043	0.009	0.227
F Res after Birth				
Never Res	-0.632	-0.453	-0.453	-0.401
Res Birth/Nres	-0.175	-0.190	-0.181	-0.121
Res Birth/Res	0.459	0.341	0.417	0.126
Always Res	0.764	0.569	0.506	0.533
Child Male	-0.049	-0.062	-0.036	-0.154
M Race				
White	-0.011	0.064	0.009	0.120
Afr Amer	-0.206	-0.314	-0.229	-0.331
Hispanic	0.232	0.322	0.187	0.312
Other	0.218	0.146	0.285	0.102
M Age at Birth				
Younger T	-0.079	-0.013	-0.002	-0.068
Older T	0.122	0.089	0.070	0.061
Y Adult	-0.077	-0.155	-0.120	0.029

Next, correlations among prenatal and birth behaviors and covariates were conducted (Table 14). Although father and mother age, race, and child gender were not strongly associated with prenatal or birth behaviors, they were included in the model due to support from literature.

Table 14

Correlations between Prenatal and Birth Behaviors and Father, Child, and Contextual Factors

Characteristic	Prenatal	Birth
F Older Teen	-0.089	-0.007
Child Male	-0.008	-0.074
M Race		
White	-0.032	0.050
Afr Amer	-0.089	-0.135
Hispanic	0.109	0.096
Other	0.171	0.107
M Age at Birth		
Younger T	0.066	0.008
Older T	-0.039	0.051
Y Adult	-0.069	-0.120

Lastly, father involvement was correlated with time-varying covariates (Table 15). Concurrent father employment and romantic coparental relationships statuses were positively and moderately to strongly associated with father involvement, justifying their inclusion in the latent growth model. However, involvement and school status were lacking congruence; thus, school status was excluded from further analyses.

Table 15
Correlations between Time-varying Covariates and Father Involvement

	Involvement			
Characteristic	14mo	24mo	36mo	64mo
F Employed				
14 mo	0.294	0.268	0.382	0.256
24mo	0.031	0.185	0.254	0.282
36mo	0.098	0.033	0.411	0.255
64mo	0.055	-0.040	0.130	0.313
F In School				
14mo	0.025	0.118	-0.099	-0.103
24mo	-0.165	-0.097	-0.193	-0.229
36mo	-0.101	-0.077	-0.127	-0.083
64mo	0.060	0.041	0.174	-0.038
Romantic				
14mo	0.784	0.667	0.565	0.424
24mo	0.524	0.731	0.519	0.543
36mo	0.417	0.546	0.768	0.553
64mo	0.404	0.458	0.637	0.849

Comparison of Younger and Older Teen Fathers

The developmental and life course variability among teen fathers was of central interest in the current study. Although all fathers were teens at the birth of their children, it is important to keep in mind while evaluating their trajectories over time that these men were developing through adolescence into young adulthood while their children were developing through infancy into young childhood. Additionally, potential similarities between younger and older teens due to the longitudinal design were considered. For example, younger teens at 36-months were the same age as older teens at 14-months (18-19 years). Older fathers were 23-24 years at 64-months.

Thus, younger and older teen fathers were compared on involvement and covariates (see Table 16).

For involvement, older teen fathers were more likely involved than younger teen fathers at 14- ($\beta = 0.096, p < .10$) and 64-months ($\beta = 0.160, p < .001$). There were no differences in involvement levels between older and younger teen fathers at 24- and 36-months. Similarly, there were no differences in the level of engagement in prenatal or birth activities between older and younger teen fathers. However, when comparing fathers' residence after birth, older teen fathers were more likely to always be resident compared to younger teen fathers ($\beta = 0.149, p < .001$).

There were no differences between older and younger teen fathers on race. However, older teen fathers were more likely partnered with older teen mothers ($\beta = 0.222, p < .001$) and young adult mothers ($\beta = 0.150, p < .001$) than younger teen fathers were. Younger and older teen fathers had similar likelihoods of romantic coparental relationships.

Differences emerged comparing employment and school status. Older teen fathers were more likely than younger teen fathers to be employed at 14- ($\beta = 0.132, p < .05$), 36- ($\beta = 0.106, p < .10$), and 64-months ($\beta = 0.095, p < .10$). In contrast, younger teens were more likely than older teens to be in-school at 14- ($\beta = -0.171, p < .001$), 24- ($\beta = -0.118, p < .05$), and 36-months ($\beta = -0.116, p < .10$).

Table 16

Comparison between Younger and Older Teen Fathers on Involvement and Covariates

Characteristic	β	SE
14mo	0.096 ⁺	0.050
24mo	0.020	0.056
36mo	0.010	0.056
64mo	0.160**	0.058
Prenatal	-0.073	0.050
Birth	-0.012	0.050
F Res after Birth		
Res Birth/Nres	0.018	0.049
Res Birth/Res	-0.018	0.049
Always Res	0.149**	0.048
M Race		
Afr Amer	-0.048	0.048
Hispanic	-0.071	0.063
Other	-0.026	0.050
M Age at Birth		
Older T	0.222**	0.047
Y Adult	0.150**	0.048
Employment		
14mo	0.132*	0.052
24mo	0.049	0.054
36mo	0.106 ⁺	0.056
64mo	0.095 ⁺	0.055
In-School		
14mo	-0.171**	0.052
24mo	-0.118*	0.059
36mo	-0.116 ⁺	0.061
64mo	0.026	0.064
Romantic		
14mo	0.038	0.049
24mo	0.004	0.051
36mo	0.046	0.052
64mo	0.079	0.053

⁺ $p \leq 0.10$; * $p \leq 0.05$; ** $p \leq 0.01$

Power Analysis

A power analysis was planned to ensure that effects could be detected with the given sample size for the current model. However, the simulation model could not be

estimated with multiply imputed data parameters. This will be further discussed among study limitations in Chapter 5.

Data Analytic Strategy

The section addresses the strategies utilized to test each hypothesis.

Hypotheses and analytic techniques are summarized in Table 17. Modeling strategies and results are given.

Table 17
Summary of Hypotheses and Analytic Strategies

Hypothesis	Analytic Strategy
1) Teen father involvement will start relatively high, increase initially, but then decrease over time.	1) Estimation of a Latent Growth Measurement Model to obtain parameter estimates of slope and intercept for a single latent class.
2) Higher levels of prenatal behaviors and birth behaviors will be positively associated with teen fathers' involvement trajectory.	2) Estimation of LGM (structural model)-Regression of growth trajectory parameters on prenatal and birth behaviors.
3a) Younger teen fathers will have higher levels of prenatal and birth behaviors than counterparts.	3a) Estimation of LGM (structural model)-Regression of prenatal behaviors on father age; regression of birth behaviors on father age.
3b) Younger and resident teen fathers will have higher initial levels and trajectories of involvement than counterparts.	3b) Estimation of LGM (structural model)-Regression of growth trajectory parameters on father age and residence after birth.
4) Male children will have higher initial levels and trajectories of involvement than female children.	NOT ESTIMATED
5a) Extant literature on the influence of parent race on teen fathers' prenatal and birth behaviors is conflicting; current analysis is exploratory. Older mothers will have higher levels of teen fathers' prenatal and birth behaviors.	5a) Estimation of LGM (structural model)-Regression of prenatal behaviors on race; regression of birth behaviors on race. Mother age NOT ESTIMATED
5b) Extant literature on the influence of parent race on teen fathers'	5a) Estimation of LGM (structural model)-Regression of growth parameters on race.

Hypothesis	Analytic Strategy
involvement is conflicting; current analysis is exploratory. Older mothers will have higher initial levels and trajectories of involvement than counterparts.	Mother age NOT ESTIMATED
6) Teen fathers in romantic coparental relationships will have higher levels of concurrent involvement than fathers in nonromantic relationships.	6) Estimation of LGM (structural model)-Regression of involvement with concurrent romantic relationship status.
7) Employed and teen fathers in school will have higher levels of concurrent involvement than unemployed and fathers not in-school.	7) Estimation of LGM (structural model)-Regression of involvement with concurrent employment status. School NOT ESTIMATED
8a) Prenatal behaviors will mediate the association between father age, mother age and involvement patterns.	8a) Estimation of LGM (structural model)-mediation test
8b) Birth behaviors will mediate the association between father age, mother age and involvement patterns.	8b) Estimation of LGM (structural model)-mediation test

To estimate the teen father involvement trajectory from 14- to 64-months, a latent growth curve (LGC) model was estimated using Mplus 5.1 (Muthén & Muthén, 2007). More specifically, a single latent trajectory model was estimated as depicted in Figure 5.

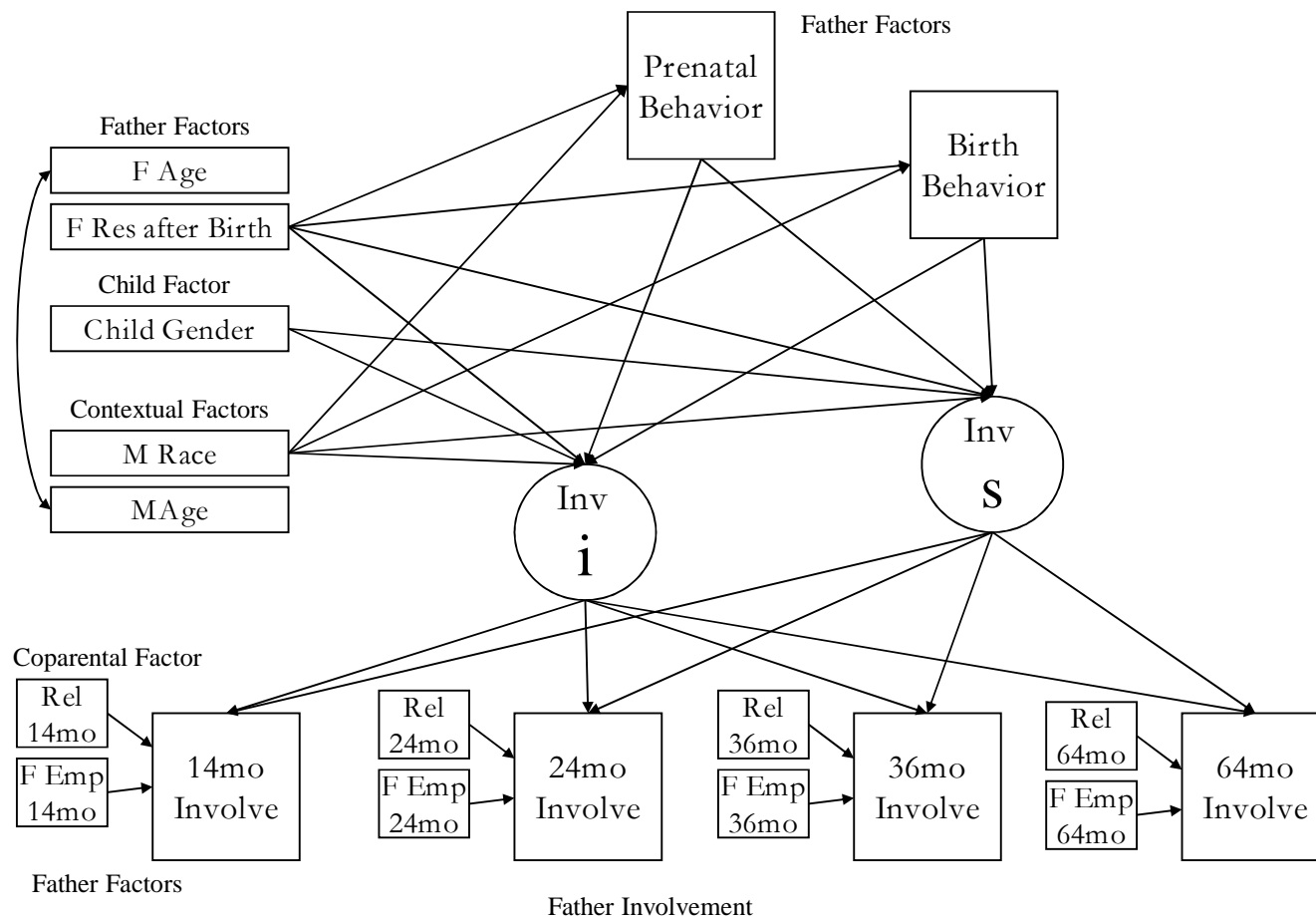


Figure 5. Conceptual Model of Teen Fathers' Latent Trajectory of Involvement

Latent Growth Curve Models

A latent growth model is appropriate because it does not require independence among observations as ordinary regression techniques do. Additionally, LGC allows for flexibility in estimating model parameters, though not as much as prototypic or growth mixture models (McCartney et al., 2006; Muthén, 2004). LGC produces a single latent growth trajectory and assumes that variation is normally and continuously distributed around the mean line (Raudenbush & Bryk, 2002). The latent trajectory is the same for all individuals, thus, all individuals have the same growth parameter estimates (i.e., intercept, slope). Any residual variation is then interpreted as random error (Curran & Willoughby, 2003; Nagin, 2005).

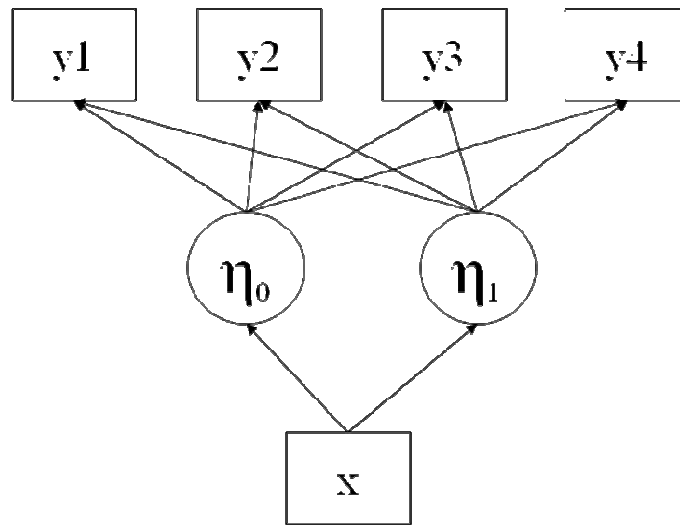


Figure 6. Latent Growth Curve Model

The LGCM aims to estimate the trajectory shape based on repeated measures of an outcome and relate growth parameters to covariates as generally depicted in Figure 6 (Muthén, 2004).

Latent Modeling with Categorical Indicators

However, in contrast to the model depicted in Figure 6, the current study's repeated measures are categorical (i.e., ordinal) rather than continuous. It is possible to analyze ordinal variables as continuous variables, but due to the bimodal distribution of father involvement (i.e., peaks at both the low and high ends), LGC models treating father involvement as continuous variables failed to converge. Thus, father involvement was analyzed as an ordinal variable wherein involvement levels were modeled.

The underlying latent variables are assumed to have a normal distribution. This only poses a problem if the indicators were treated as continuous. In order to align the latent variable distributions with observed ordinal variables, estimators other than Maximum Likelihood are used to link them together. Essentially, the underlying continuous variable is divided into sections such that reaching a certain score or threshold corresponds to the categories of the observed variable. This correspondence is depicted in Figure 7.

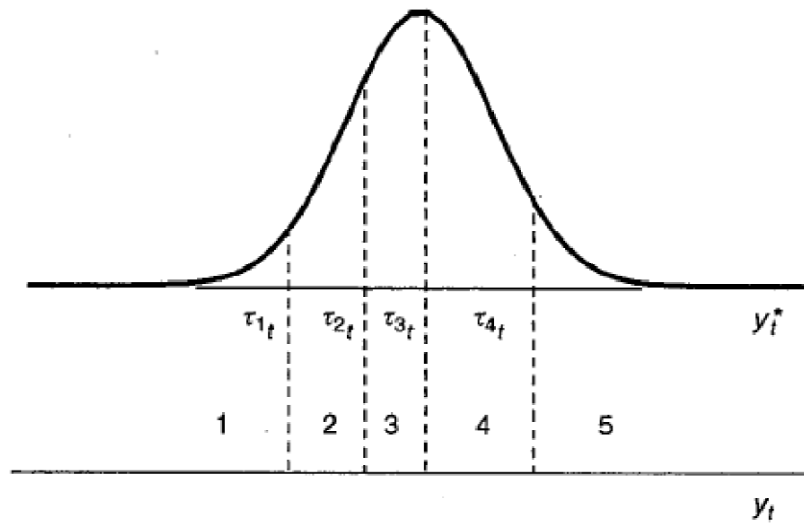


Figure 7. Bollen & Curren (2006) Underlying Continuous Variable (y^*_t) Mapped into Five-Category Ordinal Variable (y_t)

Thus, for latent models with categorical indicators, latent parameter estimates are a function of both parameter values and threshold values. Thresholds can also be thought of negative intercept values. Other than these caveats, model estimation with categorical variables proceeds as usual: estimation of a measurement model followed by estimation of a structural model.

Measurement Model

Model building is based on first estimating the measurement model, in structural equation modeling terms, at the individual level (i.e., level 1). Thus, latent longitudinal model building begins with the estimation of a traditional single-class growth model to determine the overall shape and growth. The current study examined father involvement from 14- to 64-months. To be clear, Mplus estimates individual

change over time in a single multivariate model although it can be conceptualized as multilevel. Equation 1 represents the Level 1 Model.

$$(1) \ y_{it}^* = \eta_{0i} + \eta_{1i} x_t + \varepsilon_{it}$$

$$x_t = 0.00, 0.831, 1.874, 4.038$$

The equation illustrates that father involvement (y_{it}^*) is a function of the underlying growth trajectory, intercept (η_0) and slope (η_1), and error (ε). The growth parameters (i.e., involvement intercept and slope) describe the patterns in repeated measures of teen father involvement for a single homogenous population, thus explaining how individuals change over time. Time was treated as a fixed parameter (x_t) in the model. The time points were fixed incrementally in years based on the average child's age in months at the interview waves (i.e., 14-month interview fixed at 0.00, 24-month interview at 0.831, 36-month interview at 1.874, PreK interview fixed at 4.038).

Models were estimated with the Weighted Least Squares (WLSMV) estimator which estimates using a diagonal weight matrix with standard errors and mean-adjusted and variance-adjusted chi-square test statistics that use a full weight matrix under a probit regression framework. The WLSMV is the default estimator with categorical dependent variables and is most robust to non-normality (Muthén & Muthén, 2006). Also, models were estimated under the Theta parameterization to allow correlations among indicators and residuals. Although the Theta parameterization was used, the default setting (i.e., residual variance for the latent response variable at the first time point is fixed at one, while the residual variances for the latent response variables at the other time points are free to be estimated and residual variances for thresholds were held equal across time) was not. As suggested

by Bollen and Curran (2006), the residual variance for the latent intercept was freely estimated, the residual variance for the first threshold was fixed at 0.00, the residual variance for the second threshold was fixed at 1.00, and residual variances for thresholds were held equal across time. The full Mplus syntax for the Measurement Model is found in Appendix J.

Model fit was determined from several indices. Models were regarded as adequate under the following circumstances: Tucker Lewis Index (TLI) ≥ 0.96 ; Comparative Fit Index (CFI) ≥ 0.95 ; Weighted Root Mean Square Residual (WRMR) ≤ 1.00 ; and Root Mean Square Error of Approximation (RMSEA) ≤ 0.05 as recommended for latent growth models with categorical indicators (e.g., Yu, 2002). Additionally, model fit was assessed with respect to parsimony, particularly when there was not consensus among statistical indices. The fit statistics are summarized for an intercept-only (I), intercept-slope (IS), and intercept-slope-quadratic (ISQ) models in Table 18.

Table 18
Summary of Measurement Model Fit Statistics

Model		1	2	3	2a
Fit Indices	Cutoff	I	IS	ISQ	IS
Parameters ¹		8	11	15	14
χ^2		44.059	8.418	4.647	7.454
CFI	$\geq .96$	0.933	0.996	0.997	0.994
TLI	$\geq .95$	0.962	0.997	0.996	0.994
RMSEA	$\leq .05$	0.113	0.031	0.037	0.046
WRMR	≤ 1.00	1.672	0.604	0.422	0.553

The intercept-only model did not meet fit criteria. Both IS, Model 2, and ISQ, Model 3, models met fit criteria. However, it was postulated that Model 2 would best

¹ Degrees of freedom for the chi-square estimate are not currently available for calculation under the WLSMV estimation (L. Muthen, personal communication, November 15, 2008).

capture the data since there was little variation in the average proportions of involvement over time (see Figure 8).

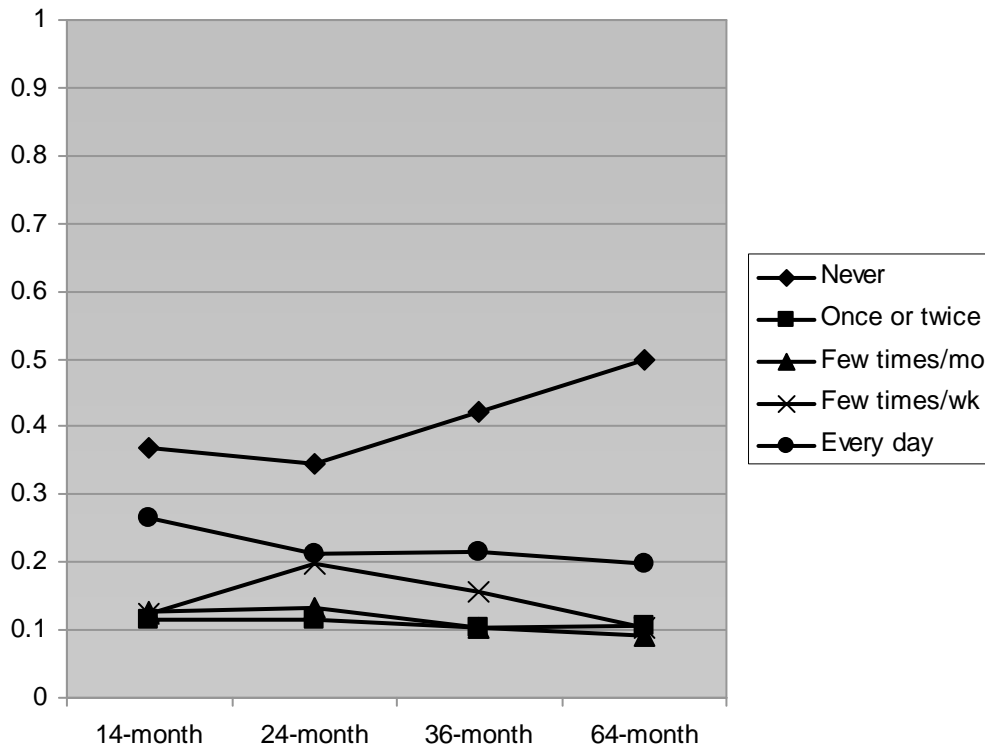


Figure 8. Average Proportions of Involvement

Steps were then taken to best establish a measurement model. From the extant literature (e.g., Parke, 2002), earlier involvement was expected to predict later involvement and for the current study, this was supported by the correlations among father involvement (see Table 12). To further refine the latent growth measurement model, lagged correlations among father involvement indicators were included. In the resulting IS model, Model 2a, the correlations were not significant and fit was not

improved². The resulting modified ISQ model had no free parameters and could not be estimated.

In sum, Model 1 and modified ISQ model were not adequate; the remaining models had adequate fit criteria. Model 2 was more parsimonious than Model 3 and Model 2a. With fewer parameters, Model 2 achieved comparably adequate fit as Model 3 and Model 2a. Additionally, compared to Model 3, Model 2 captured the minimal change in involvement over time. Thus, Model 2, the IS model, was selected as the model that best captured the growth of teen father involvement from 14- to 64-months. The final measurement model is shown in Figure 9 and estimates summarized in Tables 19 and 20.

² Statistical comparison between competing models (e.g., chi-square difference test) was not possible due to use of multiply imputed data with WLSMV estimator.

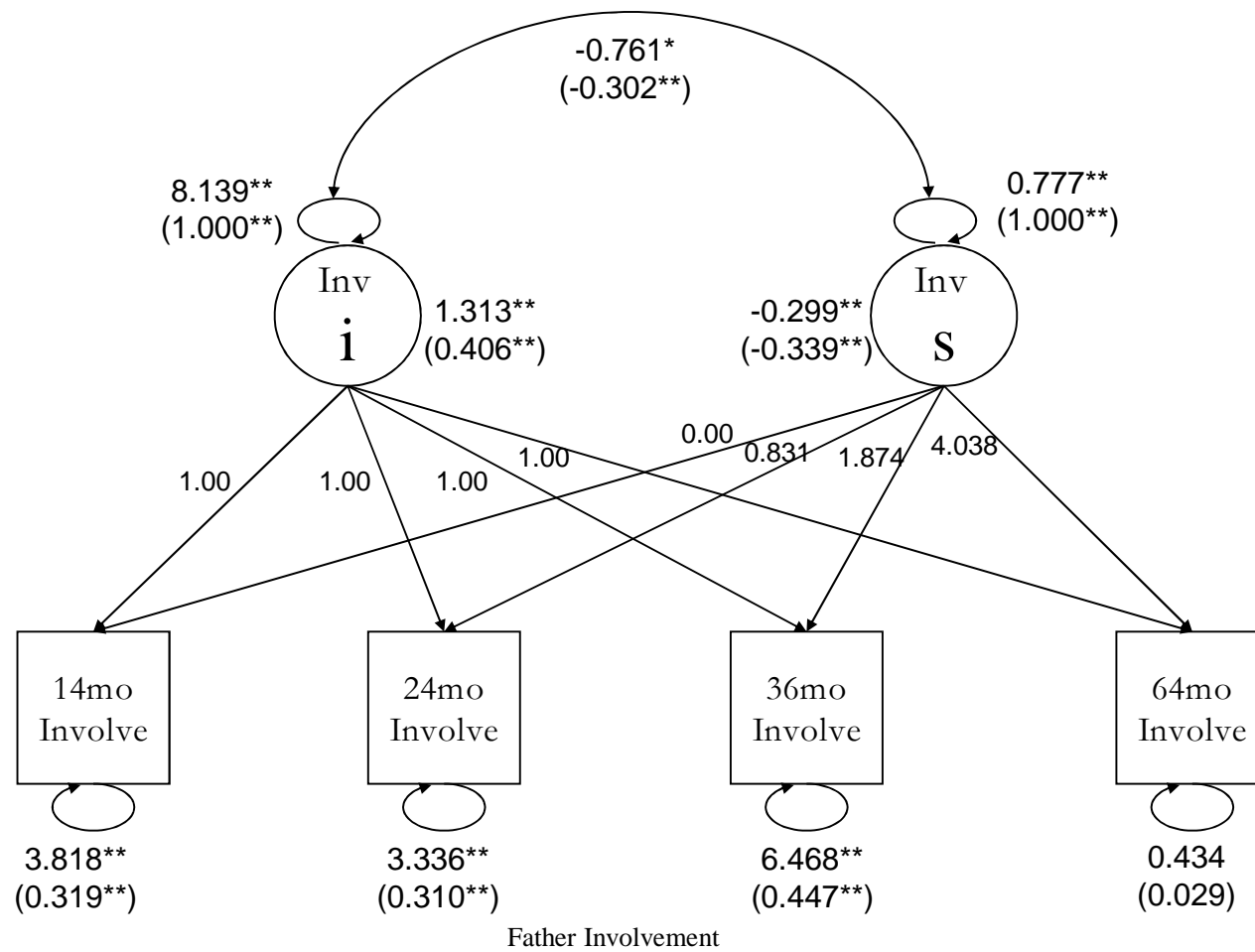


Figure 9. Measurement Model for Teen Father Involvement Note: Standardized estimates are provided in parentheses.

Table 19

Parameter Estimates for Final Single Class Growth Measurement Model

Parameter	Involvement Growth Estimates			
	Estimate	SE	Standardized Estimate	Standardized SE
α_0 intercept	1.313**	0.198	0.406**	0.075
α_1 slope	-0.299**	0.080	-0.339**	0.092
$V(\zeta_0)$ intercept	8.139**	1.710	1.000**	0.000
$V(\zeta_1)$ slope	0.777**	0.236	1.000**	0.000
$V(\varepsilon_{\text{Inv14mo}})$	3.818**	1.112	0.319**	0.062
$V(\varepsilon_{\text{Inv24mo}})$	3.336**	0.934	0.310**	0.054
$V(\varepsilon_{\text{Inv36mo}})$	6.468**	1.594	0.447**	0.053
$V(\varepsilon_{\text{Inv64mo}})$	0.434	2.029	0.029	0.133
$C(\alpha_0, \alpha_1)$	-0.761*	0.341	-0.302**	0.101
Inv14 τ_1	0.000	0.000	0.000	0.000
Inv14 τ_2	1.000	0.000	0.289**	0.029
Inv14 τ_3	2.061**	0.129	0.596**	0.046
Inv14 τ_4	3.589**	0.274	1.038**	0.067
Inv24 τ_1	0.000	0.000	0.000	0.000
Inv24 τ_2	1.000	0.000	0.305**	0.030
Inv24 τ_3	2.061**	0.129	0.629**	0.046
Inv24 τ_4	3.589**	0.274	1.095**	0.066
Inv36 τ_1	0.000	0.000	0.000	0.000
Inv36 τ_2	1.000	0.000	0.263**	0.026
Inv36 τ_3	2.061**	0.129	0.541**	0.039
Inv36 τ_4	3.589**	0.274	0.943**	0.057
Inv64 τ_1	0.000	0.000	0.000	0.000
Inv64 τ_2	1.000	0.000	0.257**	0.031
Inv64 τ_3	2.061**	0.129	0.530**	0.052
Inv64 τ_4	3.589**	0.274	0.924**	0.081

$\chi^2 = 8.418$; CFI = 0.996; TLI = 0.997; RMSEA = 0.031; WRMR = 0.604

⁺ p ≤ 0.10; *p ≤ 0.05 ; **p ≤ 0.01

Table 20
Summary of R^2 Estimates from Final Measurement Model

Observed Variable	R^2
Inv14	0.681**
Inv24	0.690**
Inv36	0.553**
Inv64	0.971**

⁺ $p \leq 0.10$; * $p \leq 0.05$; ** $p \leq 0.01$

Overall, the IS model had an adequate fit (i.e., CFI = 0.996; TLI = 0.997; RMSEA = 0.031; WRMR = 0.604) indicating that the final model reliably accounted for the variance patterns in the current data. The mean latent intercept (α_0), the average value for teen fathers at 14-months, was 1.313 ($p < .01$, $SE = 0.198$). However, there was a significant amount of variance about the intercept factor ($\zeta_0 = 8.139$, $p < .01$, $SE = 1.710$), indicating individual differences for initial involvement. The mean latent slope (α_1), the expected change in involvement, or more specifically, y^* , for a 1 unit change in time, was -0.299 ($p < .001$, $SE = 0.080$). Thus, for every year, teen father involvement *decreased* by 0.299. There was also statistically significant variance of slope factor ($\zeta_1 = 0.777$, $p < .01$, $SE = 0.236$), indicating variability in the rates teen fathers change over time. The intercept and slope factors were correlated ($r = -0.761$, $p < 0.05$, $SE = 0.341$). All teen fathers' involvement decreased over time, however, teen fathers with higher initial involvement trajectories decreased involvement levels at a slower rate than fathers with lower initial involvement trajectories. The model also captured the variance of the error for teen father involvement at 14-, 24-, 36-, and 64-months. This error represents noise,

measurement error, and time specific error, variance that the model could not capture. Despite error, the growth model accounts for high and statistically significant levels of variance in teen father involvement during early childhood ranging (0.553 – 0.971). This also provides validation for the appropriateness of the measurement model. With other factors included in the model, perhaps error variance can be decreased and R^2 increased.

Lastly, to provide an illustration of teen father involvement over time, the estimated latent trajectory was plotted (see Figure 10). Even though involvement was ordinal, a mean estimate was calculated taking into account the latent intercept, latent slope, and time: Intercept + (x_t * Slope). As seen, teen father involvement steadily decreased over time as previously reflected in the negative slope parameter.

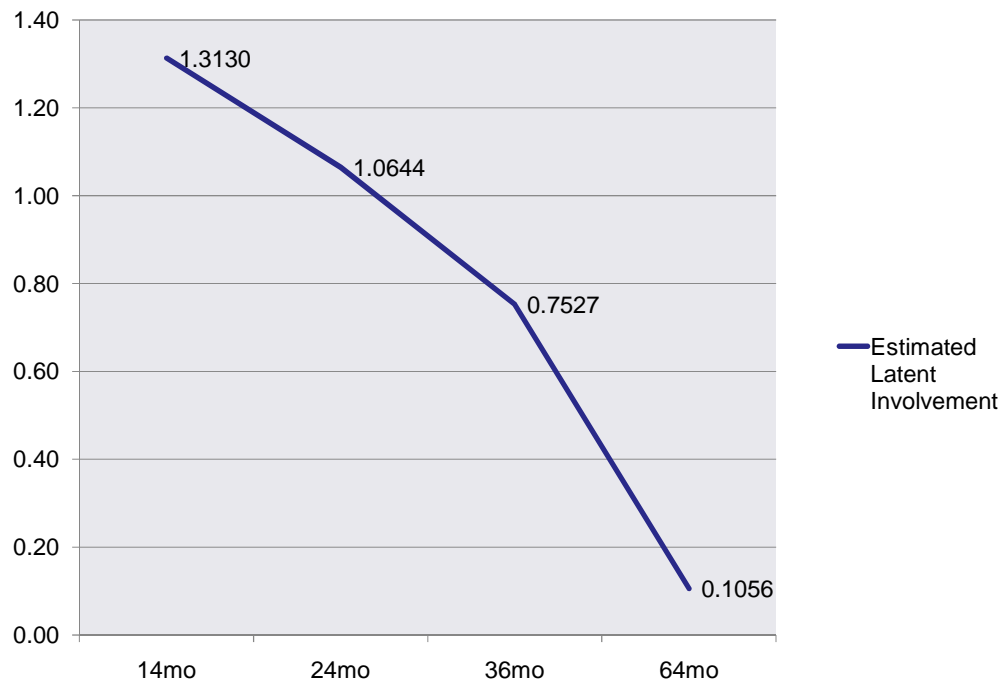


Figure 10. Mean Estimated Latent Involvement from Final Measurement Model

Structural Model

The second step in model building is estimating the structural model, in structural equation modeling terms, at the group level (i.e., level 2). The current study's overall equations were represented by:

$$(2) \eta_{0i} = \alpha_0 + \gamma_{01}fage_i + \gamma_{02}femploy_i + \gamma_{03}fres_i + \gamma_{04}race_i + \gamma_{05}prenatal_i + \gamma_{06}birth_i + \zeta_{0i}$$

$$(3) \eta_{1i} = \alpha_1 + \gamma_{11}fage_i + \gamma_{12}femploy_i + \gamma_{13}fres_i + \gamma_{14}race_i + \gamma_{15}prenatal_i + \gamma_{16}birth_i + \zeta_{1i}$$

At Level 2, the relationships between variables in the model are estimated thus explaining variation in how individuals change over time. Specifically, the influence of predictors and covariates on the involvement growth parameters and prenatal and birth behaviors were estimated. As illustrated in equation 2, the individual intercept for teen fathers' involvement trajectory was defined by the average teen father involvement at 14 months (α_0) and the conditional influence of father age, father employment status, father residence status, parent race, father prenatal behaviors, and father birth behaviors. Similarly, as illustrated in equation 3, the individual slope for teen fathers' involvement trajectory was defined by the average teen father involvement growth rate (α_1) and the conditional influence of father age, father employment status, father residence status, parent race, father prenatal behaviors, and father birth behaviors. It is important to note that this model tests differences in the trajectory components (i.e., intercept, slope) based on conditional means (i.e., age). Thus, this model forces all other model parameters to be equal or invariant across groups (Curran & Willoughby, 2003).

During model building, additional pathways were included to improve model fit based on theory, methodological design, and data correlations. First, prenatal and birth behaviors were correlated. Next, the intercept and slope factors were regressed on the coparental romantic relationships. This estimated the impact of the coparental relationship on teen fathers' trajectory of involvement in addition to concurrent involvement. Similarly, the intercept and slope factors were regressed on father employment status.

The final model with the best fit is presented in Figure 11. The final model parameters are summarized in Tables 21-23 (see Appendix K for model syntax). The amount of variance accounted for in the variables is summarized in Table 24. Even though the overall model did not reach fit criteria (i.e., CFI = 0.778; TLI = 0.741; RMSEA = 0.053; WRMR = 1.141), it accounted for high levels of variance in observed and latent variables.

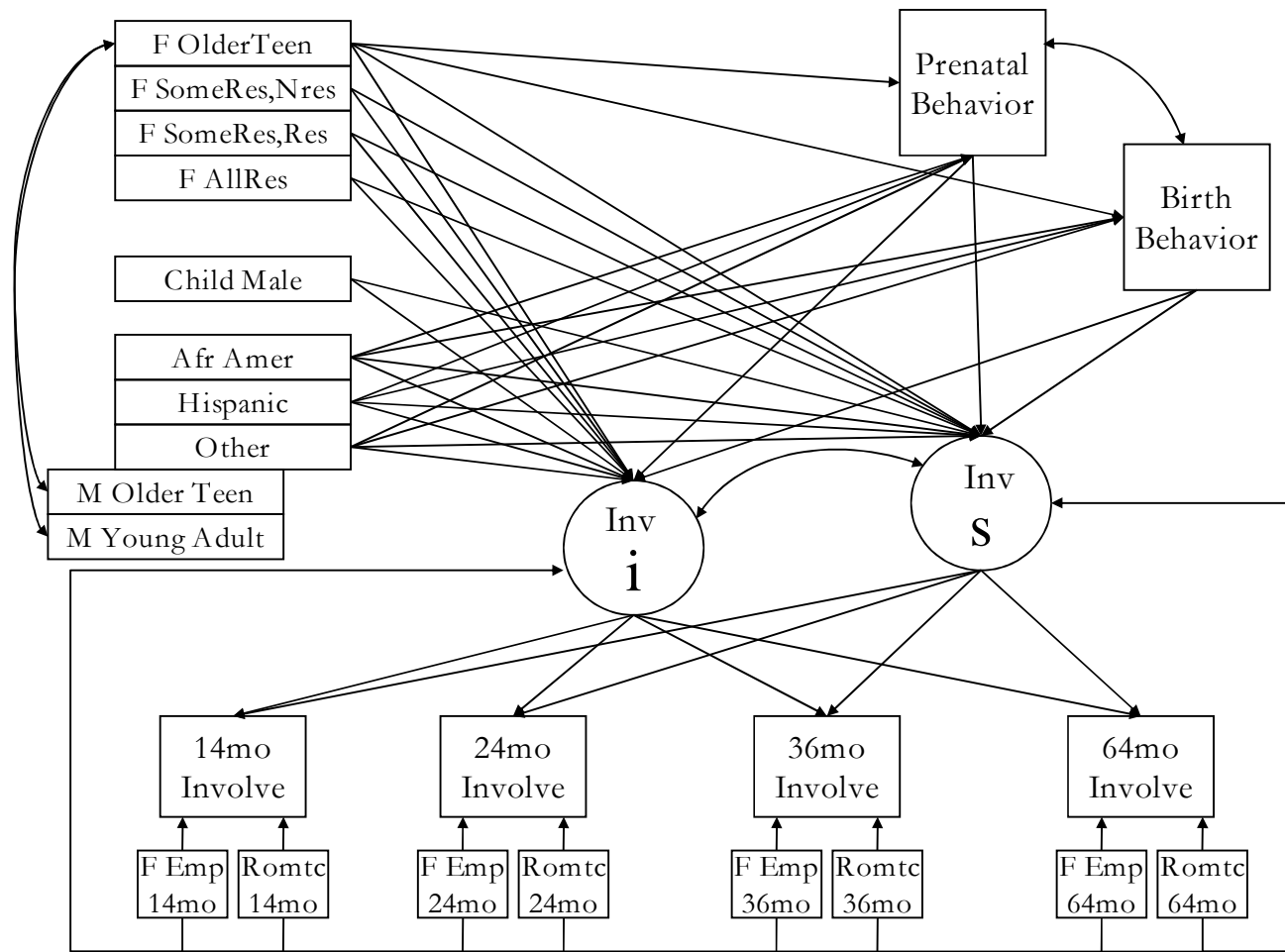


Figure 11. Final LGCM for Teen Father Involvement

Table 21

Parameter Estimates for the Final LCGM of Teen Father Involvement

Parameter	Estimate	SE	Standardized Estimate
α_0 Intercept	-3.140*	1.372	-1.132
α_1 Slope	-1.760*	0.774	-1.741
$V(\zeta_0)$ intercept	0.905	0.933	0.117
$V(\zeta_1)$ slope	0.416	0.304	0.407
$C(\alpha_0, \alpha_1)$	-0.790*	0.392	-1.312
$C_{(\text{Folder, MolderT})}$	0.029	0.025	0.391
$C_{(\text{Folder, MyoungA})}$	0.025	0.017	0.537
$C_{(\text{Prenatal, Birth})}$	0.256**	0.047	0.491
$V(\varepsilon_{\text{Inv14m}})$	1.508 ⁺	0.771	0.156
$V(\varepsilon_{\text{Inv24m}})$	2.818 ⁺	1.565	0.000
$V(\varepsilon_{\text{Inv36m}})$	4.766**	1.504	0.000
$V(\varepsilon_{\text{Inv64m}})$	0.406	3.302	0.000
$V(\varepsilon_{\text{Prenatal}})$	0.521**	0.062	0.963
$V(\varepsilon_{\text{Birth}})$	0.520**	0.067	0.972
$V(\varepsilon_{\text{Romantic14m}})$	0.160**	0.033	1.000
$V(\varepsilon_{\text{Romantic24m}})$	0.168	0.135	1.000
$V(\varepsilon_{\text{Romantic36m}})$	0.171	0.198	1.000
$V(\varepsilon_{\text{Romantic64m}})$	0.165**	0.047	1.000
$V(\varepsilon_{\text{Employ14m}})$	0.222 ⁺	0.125	1.000
$V(\varepsilon_{\text{Employ24m}})$	0.191*	0.081	1.000
$V(\varepsilon_{\text{Employ36m}})$	0.208	0.146	1.000
$V(\varepsilon_{\text{Employ64m}})$	0.220	0.171	1.000
$M_{(\text{Folder})}$	0.627**	0.106	3.872
$M_{(\text{MolderT})}$	0.290*	0.133	0.633
$M_{(\text{MyoungA})}$	0.183**	0.059	0.642
$M_{(\text{Prenatal})}$	1.284**	0.271	1.747
$M_{(\text{Birth})}$	1.459**	0.291	1.998
$M_{(\text{Romantic14m})}$	0.213**	0.075	0.532
$M_{(\text{Romantic24m})}$	0.292**	0.113	0.714
$M_{(\text{Romantic36m})}$	0.328 ⁺	0.184	0.796
$M_{(\text{Romantic64m})}$	0.177 ⁺	0.104	0.434

Parameter	Estimate	SE	Standardized Estimate
$M_{(\text{Employ14m})}$	0.607**	0.080	1.289
$M_{(\text{Employ24m})}$	0.728**	0.123	1.669
$M_{(\text{Employ36m})}$	0.667**	0.210	1.479
$M_{(\text{Employ64m})}$	0.613**	0.208	1.303
$\text{Inv14}\tau_1$	0.000	0.000	0.000
$\text{Inv14}\tau_2$	1.000	0.000	0.322
$\text{Inv14}\tau_3$	2.090**	0.135	0.672
$\text{Inv14}\tau_4$	3.729**	0.290	1.199
$\text{Inv24}\tau_1$	0.000	0.000	0.000
$\text{Inv24}\tau_2$	1.000	0.000	0.267
$\text{Inv24}\tau_3$	2.090**	0.135	0.558
$\text{Inv24}\tau_4$	3.729**	0.290	0.996
$\text{Inv36}\tau_1$	0.000	0.000	0.000
$\text{Inv36}\tau_2$	1.000	0.000	0.266
$\text{Inv36}\tau_3$	2.090**	0.135	0.557
$\text{Inv36}\tau_4$	3.729**	0.290	0.993
$\text{Inv64}\tau_1$	0.000	0.000	0.000
$\text{Inv64}\tau_2$	1.000	0.000	0.210
$\text{Inv64}\tau_3$	2.090**	0.135	0.438
$\text{Inv64}\tau_4$	3.729**	0.290	0.782

$\chi^2 = 36.593$ - 39.642 ; CFI = 0.778; TLI = 0.741; RMSEA = 0.053; WRMR = 1.141
⁺ p ≤ 0.10; *p ≤ 0.05 ; **p ≤ 0.01

Table 22

Pathways of Interest in Predicting Father Involvement, Prenatal Behaviors, and Birth Behaviors: Unstandardized Estimates

Predictor Variables	Outcome Variables															
	Intercept		Slope		Prenatal		Birth		Inv14		Inv24		Inv36		Inv64	
	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE	Est	SE
F Older	-0.834	1.341	-0.006	0.593	-0.593	0.469	-0.678	0.515								
SRes/NRes	0.740+	0.407	-0.125	0.240												
SRes/Res	4.354**	0.678	-0.393	0.329												
AllRes	4.455**	0.535	-0.261	0.230												
Afr Amer	0.698*	0.338	-0.442*	0.210	0.201*	0.092	0.110	0.093								
Hispanic	0.888*	0.398	0.033	0.246	0.199	0.137	0.074	0.118								
Other	0.885	0.577	0.014	0.310	0.325*	0.162	0.147	0.174								
Prenatal	0.571**	0.222	0.081	0.123												
Birth	0.777**	0.225	0.035	0.134												
Rom14	2.880**	0.537	-0.359	0.229					-0.527	0.480						
Rom24	1.481*	0.631	0.199	0.295							2.870*	1.153				
Rom36	0.972	0.784	1.004*	0.411									-1.101	1.611		
Rom64	0.709+	0.401	1.220**	0.388											0.948	1.377
Empl14	0.932+	0.484	0.065	0.225					-0.217	0.491						
Empl24	-0.232	0.349	0.466*	0.219							0.133	0.423				
Empl36	-0.239	0.418	0.301	0.211									1.274	0.778		
Empl64	-0.038	0.658	0.342	0.344											0.947	1.066

+ p ≤ 0.10; *p ≤ 0.05 ; **p ≤ 0.01

Table 23

Pathways of Interest in Predicting Father Involvement, Prenatal Behaviors, and Birth Behaviors: Standardized Estimates

Predictor Variables	Outcome Variables							
	Intercept	Slope	Prenatal	Birth	Inv14	Inv24	Inv36	Inv64
	β	β	β	β	β	β	β	β
F Older	-0.049	-0.001	-0.131	-0.150				
SRes/NRes	0.103	-0.048						
SRes/Res	0.328	-0.081						
AllRes	0.691	-0.111						
Afr Amer	0.126	-0.218	0.136	0.075				
Hispanic	0.123	0.013	0.104	0.038				
Other	0.078	0.003	0.109	0.049				
Prenatal	0.151	0.059						
Birth	0.205	0.025						
Rom14	0.891	0.000			-0.068			
Rom24	0.740	0.224				0.313		
Rom36	0.738	0.504					-0.120	
Rom64	0.582	0.856						0.081
Empl14					-0.033			
Empl24						0.016		
Empl36							0.155	
Empl64								0.093

Table 24

Summary of R^2 Estimates from the Final LGCM

Observed Variable	R^2
Inv14	0.844
Inv24	0.929
Inv36	0.929
Inv64	0.956
Prenatal	0.037
Birth	0.028
Latent Variable	
Intercept	0.883
Slope	0.593

Father Involvement

As summarized in Tables 21 – 24, the mean latent conditional intercept (α_0), the average starting involvement value at the average frequency of prenatal and birth behaviors for younger teen, White, unemployed fathers with female children and in nonromantic coparental relationships, was -3.140 ($p \leq 0.05$, $SE = 1.372$). The mean latent conditional slope (α_1), the expected change in involvement conditional on covariates and predictors, or more specifically, y^* , for a 1 unit change in time, was -1.760 ($p \leq 0.05$, $SE = 0.774$). Thus, for every year, teen father involvement *decreased* by 1.760 when accounting for father age, residence after birth, child gender, parent race, father employment, and coparental relationship status. Notably, there was no residual variance about the latent parameters indicating that the model reliably accounted for the variation about the growth in father involvement.

The intercept and slope factors were correlated ($r = -0.790$, $p \leq 0.05$, $SE = 0.392$). All teen fathers' involvement decreased over time, however, teen fathers with higher initial involvement trajectories decreased involvement levels at a slower rate than fathers with lower initial involvement trajectories. Involvement means are the tau (τ) values for the response categories. The response category "Never" was excluded as the reference category. In Table 21, τ_1 was the negative intercept value for the response category "One or Twice a month", repeated for each time wave. Similarly, τ_2 was the negative intercept value for the response category "A Few Times a month". As previously seen in the frequency descriptives, involvement rates were higher at 14-months and the frequency of looking after children in the past month decreased over time.

There remained a significant amount of error variance for involvement after covariates and predictors were added. This error represents noise, measurement error, and time specific error, variance that the model could not capture. Despite error, the final model accounted for high and statistically significant levels of variance in teen father involvement during early childhood (0.844 – 0.956) and in the latent factors (0.593 – 0.883).

Prenatal and Birth Behaviors

As summarized in Tables 21 – 24, the mean of prenatal behaviors was statistically significant (estimate = 1.284, $p \leq 0.01$, $SE = 0.271$), as was the mean of birth behaviors (estimate = 1.459, $p \leq 0.01$, $SE = 0.291$). There was significant residual error variance about the prenatal and birth behaviors variables indicating that the model did not fully account for the variation. The prenatal and birth behaviors were correlated ($r = 0.256$, $p \leq 0.01$, $SE = 0.047$); higher prenatal behavior frequency was associated with higher birth behavior frequency.

Individual Factors

Individual factors included father age, father residence after birth, father employment, and child gender. Father age was dummy-coded (1 = older teen, 0 = younger teen) and modeled as a time-invariant covariate. Father age at the time of child's birth was modeled as a time-invariant covariate for consistency with extant research. As summarized in Table 21, the mean of father age was statistically significant (estimate = 0.627, $p \leq 0.05$, $SE = 0.106$).

Father residence after birth was dummy-coded ("Some residence after birth and nonresident at 14-months", "Some residence after birth and resident at 14-

months”, and “Always resident”; “Never resident” was excluded as the reference group) and modeled as a time-invariant covariate. Child gender was dummy-coded (1= male, 0 = female) and modeled as a time-invariant covariate.

Father employment status was dummy-coded (1 = Employed, 0 = Not Employed) and modeled as a time-variant covariate. As summarized in Table 21, the means of father employment were statistically significant at 14-months (estimate = 0.607, $p \leq 0.01$, $SE = 0.080$), 24-months (estimate = 0.728, $p \leq 0.01$, $SE = 0.123$), 36-months (estimate = 0.667, $p \leq 0.01$, $SE = 0.210$), and 64-months (estimate = 0.613, $p \leq 0.01$, $SE = 0.208$). There was also significant error variance at 14-months (estimate = 0.222, $p \leq 0.10$, $SE = 0.125$) and 24-months (estimate = 0.191, $p \leq 0.05$, $SE = 0.081$).

Contextual Factors

Individual factors included parent race and mother age. The conceptualization of contextual factors describes higher order social and community level effects that indirectly influence father involvement. However, contextual factors were measured at an individual level. It is statistically possible to analyze individually measured variables at higher levels within a multi-level framework by aggregating individual level data. Data were not analyzed within a multi-level framework because there is no theoretical guidance to determine what level (e.g., Early Head Start Center, residential neighborhood) at which data should be aggregated. Further exploration of the contextual effects at multi-levels is needed at both theoretical and empirical stages.

Parent race was dummy-coded (Black, Hispanic, and Other; White was excluded as the reference group) and modeled as a time-invariant covariate. Mother age was dummy-coded (Older Teens and Young Adults; Younger Teens were excluded as the reference group) and modeled as a time-invariant covariate. The mean of Older Teens was statistically significant (estimate = 0.290, $p \leq 0.05$, $SE = 0.133$), as was the mean of Young Adults (estimate = 0.183, $p \leq 0.01$, $SE = 0.059$). There was no association between father age and older teen mothers ($r = 0.029$, $p \geq 0.10$, $SE = 0.025$), nor between father age and young adult mothers ($r = 0.025$, $p \geq 0.10$, $SE = 0.017$).

Coparental Factors

The coparental factors included the coparental relationship status at each time wave. Coparental relationship status was dummy-coded (1 = Romantic Relationship, 0 = NonRomantic Relationship) and modeled as a time-variant covariate. Status was condensed into 2 categories to ensure adequate frequency for analysis. As summarized in Table 21, the means of coparental relationship status were statistically significant at 14-months (estimate = 0.213, $p \leq 0.01$, $SE = 0.075$), 24-months (estimate = 0.292, $p \leq 0.01$, $SE = 0.113$), 36-months (estimate = 0.328, $p \leq 0.10$, $SE = 0.184$), and 64-months (estimate = 0.177, $p \leq 0.10$, $SE = 0.104$). There was also significant error variance at 14-months (estimate = 0.160, $p \leq 0.01$, $SE = 0.033$) and 64-months (estimate = 0.165, $p \leq 0.01$, $SE = 0.047$).

How do teen fathers' prenatal and birth behaviors influence teen fathers' involvement trajectory?

Based on the final model Figure 11, the influence of prenatal and birth behaviors on father involvement were tested. This was achieved through a regression of the trajectory parameters on the prenatal and birth behavior variables. Prenatal behaviors were positively associated with the latent intercept (estimate = 0.571, $p \leq 0.01$, $SE = 0.222$), but not the latent slope (estimate = 0.081, $p \geq 0.10$, $SE = 0.123$). Birth behaviors were positively associated with the latent intercept (estimate = 0.777, $p \leq 0.01$, $SE = 0.134$), but not the latent slope (estimate = 0.035, $p \geq 0.10$, $SE = 0.134$). Figure 12 summarizes only significant model parameters from the final LGCM.

How do teen father factors influence teen fathers' prenatal and birth behaviors?

Based on the final model Figure 11, the influence of father factors on prenatal and birth behaviors was tested. This was achieved through a regression of the prenatal behavior variable on father age. As summarized in Tables 22 and 23, father age was not associated with prenatal behaviors (estimate = -0.593, $p \geq 0.10$, $SE = 0.469$). Similarly, a regression of the birth behavior variable on father age was conducted. Father age was not associated with birth behaviors (estimate = -0.678, $p \geq 0.10$, $SE = 0.515$).

How do teen father factors influence teen fathers' involvement trajectory?

Based on the final model Figure 11, the influence of father factors on teen fathers' involvement trajectory was tested. This was achieved through a regression of the latent intercept and slope on father age and father residence after birth. As summarized in Tables 22 and 23, father age was not associated with the involvement latent intercept, nor the involvement latent slope.

Any level of residence after birth was significantly associated with the latent intercept but not the latent slope. Specifically, "Some Residence after birth, NonResident at 14-month" was positively associated with latent intercept (estimate = 0.740, $p \leq 0.10$, $SE = 0.407$), "Some Residence after birth, Resident at 14-month" was positively associated with latent intercept (estimate = 4.354, $p \leq 0.01$, $SE = 0.678$), and "Always Resident after birth" was positively associated with latent intercept (estimate = 4.455, $p \leq 0.01$, $SE = 0.535$).

How does the child factor influence teen fathers' involvement trajectory?

The influence of child factors on teen father involvement trajectory was tested. This was achieved through a regression of the growth trajectory parameters on child gender. Child gender was not significantly associated with either father involvement growth parameter.

How do contextual factors influence teen fathers' prenatal and birth behaviors?

The influence of contextual factors on prenatal and birth behaviors was tested. This was achieved through a regression model of the prenatal behavior variable on parent race and a regression model of the birth behavior variable on parent race. Race had few associations with prenatal behaviors and no associations with birth behaviors. Specifically, Black fathers (estimate = 0.201, $p \leq 0.05$, $SE = 0.092$) and fathers of Other Race (estimate = 0.325, $p \leq 0.05$, $SE = 0.162$) were more likely to engage in higher levels of prenatal behaviors than White fathers. There were no differences between Hispanic and White fathers in the level of prenatal behaviors (estimate = 0.199, $p \geq 0.10$, $SE = 0.137$).

How do contextual factors influence teen fathers' involvement trajectory?

The influence of contextual factors on teen fathers' involvement trajectory was tested. This was achieved through a regression model of the growth trajectory parameters on race. Race had little impact on fathers' involvement patterns. Compared to White fathers, Black fathers (estimate = 0.698, $p \leq 0.05$, $SE = 0.338$) and Hispanic fathers (estimate = 0.888, $p \leq 0.05$, $SE = 0.398$) were more likely to have higher initial involvement trajectory levels. Also, Black fathers decreased

involvement rates over time more quickly than White fathers (estimate = -0.442, $p \leq 0.05$, $SE = 0.210$).

How is the coparental relationship factor concurrently associated with teen father involvement throughout early childhood?

The influence of coparental factors on father involvement was examined. This was achieved through a series of regression models of the father involvement indicators at each wave and latent trajectories on concurrent coparental relationship status. Fathers in romantic relationships had higher levels of involvement than fathers in nonromantic relationships. Specifically at 24-months, romantic relationship was associated with 24-month involvement (estimate = 2.870, $p \leq 0.05$, $SE = 1.153$).

Romantic coparental relationships were also positively associated with involvement latent intercept. Fathers in romantic relationships at 14-months (estimate = 2.880, $p \leq 0.01$, $SE = 0.537$), 24-months (estimate = 1.481, $p \leq 0.05$, $SE = 0.631$), and 64-months (estimate = 0.709, $p \leq 0.10$, $SE = 0.401$) had higher initial levels of involvement than fathers in nonromantic relationships. Additionally, fathers in romantic relationships at 36-months (estimate = 1.004, $p \leq 0.05$, $SE = 0.411$) and 64-months (estimate = 1.220, $p \leq 0.01$, $SE = 0.388$) decreased involvement rates over time more slowly than fathers in nonromantic relationships.

How are teen father factors concurrently associated with teen father involvement throughout early childhood?

The influence of father factors on father involvement was examined. This was achieved through a series of regression models of the father involvement indicators at each wave and latent trajectory on concurrent employment status. Employment had

little association with involvement. Employed fathers at 14-months had higher levels of initial involvement than unemployed fathers (estimate = 0.932, $p \leq 0.10$, $SE = 0.484$). Employed fathers at 24-months decreased more slowly in involvement over time than unemployed fathers (estimate = 0.466, $p \leq 0.05$, $SE = 0.219$).

How do teen fathers' prenatal behaviors mediate the influence of father and contextual factors on teen fathers' involvement trajectory?

Based on the Final model in Figure 11, evidence of mediation by prenatal behaviors was assessed. Statistical requirements (MacKinnon, Fairchild, & Fritz, 2007) first were assessed, specifically, association between factor 1 (e.g., father age, race) and mediator (e.g., prenatal behaviors); association between mediator and factor 2 (e.g., intercept, slope); and association between factor 1 and factor 2. Statistical requirements were not met for mediation analyses of the involvement slope because prenatal behaviors (i.e., mediator) were not associated with involvement slope. Mediation analyses were not conducted for father age because requirements were not met (i.e., father age was not associated with prenatal behaviors, father age was not associated with involvement intercept, father age was not associated with involvement slope).

Statistical requirements were met for parent race for African American only. Mediation analyses were conducted to test whether prenatal behaviors mediated the effect between African American race and involvement intercept. Mediation effects were not significant (estimate = 0.00, $p \geq .10$, $SE = -0.004$). African American race and prenatal behaviors have independent and significant influences on initial involvement levels.

How do teen fathers' birth behaviors mediate the influence of father and contextual factors on teen fathers' involvement trajectory?

Based on the Final model in Figure 11, evidence of mediation by birth behaviors was assessed. Statistical requirements (MacKinnon, Fairchild, & Fritz, 2007) first were assessed, specifically, association between factor 1 (e.g., father age, race) and mediator (e.g., birth behaviors); association between mediator and factor 2 (e.g., intercept, slope); and association between factor 1 and factor 2. Statistical requirements were not met for mediation analyses of the involvement slope because birth behaviors (i.e., mediator) were not associated with involvement slope. Statistical requirements were not met for father age because father age was not associated with birth behaviors, involvement intercept, nor involvement slope. Mediation analyses were not conducted for father age because requirements were not met. Statistical requirements were not met for parent race because race was not associated with birth behaviors. Mediation analyses were not conducted for parent race.

CHAPTER V: DISCUSSION

The current longitudinal, person-focused analysis of low-income teen father involvement provides valuable insight into the parenting behaviors of teen fathers. Compared to teen mothers or adult fathers, far less is known about teen fathers. Little research has examined the behaviors of fathers longitudinally. Moreover, an examination of father behavior throughout early childhood has not been explored for teen fathers, unlike teen mothers. The current study facilitates how future research and service programs could be designed to promote optimal development and relationships for teen fathers and their families.

Teen Father Involvement

Teen father involvement was examined from 14- to 64-months for teen fathers (14- to 19-years) with children's mothers aged 24-years and younger. Teen fathers' involvement levels varied both within *and* across time waves. Fathers were most involved at 14-months: 39% of teen fathers looked after their children frequently (i.e., every day, a few times in the past week) in the past month while another 36% of fathers never saw their children. Four years later at 64-months, fewer fathers were frequently involved (i.e., 30%) while the percentage of fathers who never were involved increased (i.e., 50%).

Current findings paralleled previous variable-centered studies. Although children's ages were not known in most cases, cross-sectional studies found that the majority of teen fathers were involved with their children at least monthly (Fagot et al., 1998; Rhein et al., 1997; Tarkow, Cabrera, & Shannon, 2005) or weekly

(Stouthamer-Loeber & Wei, 1998). Thus, the current study extends previous findings by delineating rates of involvement uniquely for teen fathers at specific points during children's lives. Importantly in this study, the same sample of teen fathers was followed from infancy to early childhood. Moreover, younger and older teen fathers' involvement rates were compared to distinguish child age effects and father maturation effects.

Only from this design was it clear that all teen fathers were initially highly involved during infancy but involvement rates declined as children aged. This pattern held for younger teen fathers who were still teenagers during their children's toddlerhood and early childhood years and for the older teen fathers who were young adults. Perhaps the mixture of children's ages in previous cross-sectional studies with teen fathers masked these trends. Research with adult fathers also finds that rates of involvement are highest during infancy and decrease as children age (Lamb, 2000), but no study has documented at what age this decline occurs and why. Variable-centered analyses give only overall frequencies and cannot track how individual fathers change over time. The current latent longitudinal analyses of teen father involvement identified these patterns.

Latent Father Involvement Trajectory

Analysis of teen fathers longitudinally has not been accomplished to date. Further, empirical analyses of *fathers'* involvement trajectories have not been described. Providing a description of low-income teen fathers' involvement from infancy through early childhood was a valuable first step for the field. The current study examined how individual teen fathers were involved with their children over

time through a latent growth curve model. The pattern of involvement was best captured by a latent intercept and slope factor. The LGC model results mirror those from the variable-centered analyses: teen fathers engaged in high levels of involvement initially but consistently decreased their involvement through 64-months. However, teen fathers who were initially highly involved decreased involvement at a slower rate than fathers with lower levels of initial involvement; fathers' early involvement was in and of itself a positive influence for their later involvement. Additionally, there was significant variability about the intercept and the slope meaning that there was heterogeneity for how fathers were initially involved and how they declined over time.

A postulated explanation for the decrease in involvement over time could be teen fathers' increased pressure and responsibility to maintain their father role as children age and require more than direct care and attention. The parenting responsibility of meeting infants' immediate needs for care (e.g., feeding, clothing, and bathing; Bornstein, 2002) expands beyond basic needs as children continue to develop, mature, and learning skills to become self-sufficient (e.g., feeding oneself). For example, parenting during toddlerhood also includes additional monitoring and coordination (e.g., child care/preschool, play dates) responsibilities (Pope Edwards & Lui, 2002) and parenting during early and middle childhood present challenges of connecting children with the peer system and school system, and providing educational and social support (Collins, Madsen, Sussman-Stillman, 2002). It is also important to keep in mind while evaluating their trajectories over time that these men were developing through adolescence into young adulthood while their children were

simultaneously developing through infancy into young childhood. Fathers' own developmental needs may compete with those needs of their children during times of increased parenting complexity.

Concurrent with increases in parenting challenges over times is the increasing the complexity of coparenting. Over time, the number of coparental romantic (and residential) relationships also decreased. Coparental romantic relationships were associated with higher levels of father involvement throughout early childhood. Thus, fathers may find it more difficult to continue to be involved, especially positively involved, with their children when they have nonromantic or negative, conflictual coparental relationships. Although not measured in the current study, extant literature finds that younger fathers disengage from "first" families over time to engage with multiple partners or "second" families, thus, decreasing involvement with the focal child over time (Johnson, 2001; Roy, 2006). Perhaps involvement patterns of teen fathers reflect both coparental relationships and current romantic or familial obligations.

The current findings are an important contribution to the field. Few studies have examined teen father involvement longitudinally, none with three or more assessment waves after birth. Studies that had more than one assessment wave (typically two) examine predictors or risk factors of teen fatherhood (e.g., education, delinquency) or associations of teen father involvement (e.g., cohabitation, coparental relationship quality). Additionally, studies examined earlier involvement during the pregnancy and its prediction of fathers' involvement after the birth. The predictors

and covariates of the current study were modeled to explain the variability in teen fathers' involvement patterns.

Explaining Father Involvement Trajectories

Based on the extant literature, several salient predictors and covariates were selected to explain the variability in teen fathers' involvement patterns. The goal was to explain the longitudinal data by elucidating sensitive time periods in fathers' involvement and critical characteristics that influence their involvement. Similarly, the design emphasized how dynamic and fluctuating young couples' and parents' lives are. Overall, the design emphasized the conceptual framework (Doherty et al., 1998) that formed the foundation of this study: contextual influences on the development and engagement of fathering among overlapping systems (e.g., father-child, mother-father, mother-child).

The latent explanatory model did not meet statistical fit criterion, but several statistically significant parameters emerged. There could be several explanations the final model did not reach criterion levels. First, the study examined only low-income teen fathers who have been under-researched to date (Coley & Chase-Lansdale, 1998; Paschal, 2006). Less is known about teen fathers' parenting, which rendered the question of how characteristics would influence involvement more exploratory.

Second, the methodological approach utilized was unique. Although the predictors and covariates modeled have shown influence on fathers' involvement concurrently or in short-term, the impact on *individual latent trajectories* was exploratory and did not meet statistical fit criteria. The proposed pathways may not hold for teen fathers or all fathers within a latent framework. Variable-centered

approaches have affirmed the importance of several factors (e.g., father, mother, child, coparental) for positive father involvement, however, further research is needed to determine if these factors vary for individual fathers (i.e., person-centered approach), vary by developmental progression (e.g., unique experiences of teen fathers), and how these factors change over time for fathers and children.

Moreover, there are many individual, contextual, and coparental characteristics that the current study did not include. Other measures or constructs could uniquely influence father involvement or perhaps in combination with the current covariates. Further research with additional measures and analyses is needed to better determine these patterns. Suggestions will be discussed in the subsequent sections.

Lastly, it is also possible that the pathways did not hold uniquely for the current sample of low-income teen fathers' whose children participated in the EHSRE Project. This sample was comprised of a group of mothers who were motivated to seek services for themselves and their families. Perhaps the uniqueness of the sample extended to the fathers as well. Further research is needed to better determine how these characteristics are associated with fathers' involvement trajectories in at-risk populations.

Father Prenatal and Birth Behaviors

In the current study, the majority of teen fathers were engaged in prenatal and birth behaviors that represented their involvement as parents. Although counterintuitive with respect to societal stereotypes and expectations of young fathers, these findings are congruent with previous studies of teen fathers (e.g., Rhein

et al., 1997). Importantly, teen fathers were predominantly present during the pregnancy, birth, and the first few years of children's lives.

Moreover, the current study found that prenatal behaviors were positively associated with birth behaviors. This parallels the finding from a national sample of teen fathers using the ECLS-B from retrospective report at 9-months (Bronte-Tinkew et al., 2007). Both prenatal and birth behaviors were positively associated with involvement at 14-, 24-, and 36-months. Other studies have found teen fathers' prenatal involvement linked with father engagement at 3- and 9-months (Bronte-Tinkew et al., 2007; Fagan et al., 2007). Hence, the early fathering behaviors during the pregnancy and at birth were indicators of how frequently teen fathers were involved with their infants and toddlers.

Although encouraging findings, it is unclear both from the literature and current study through what process early behaviors are connected to later behaviors, what these behaviors mean to teen fathers and mothers, and in turn, how best to measure prenatal and birth behaviors. For instance, it could be that certain men participate in prenatal and birth behaviors and are also inclined to engage with their children due to inherent personality traits, individual history, or contextual supportive factors. It also possible that prenatal and birth involvement induces change in men that increases the likelihood that they will engage with their children. Indeed, a small sample of African American teen fathers perceived themselves to be premature fathers and wished they had postponed fatherhood, but balanced their assessments by a sense of connection with their children (Allen & Doherty, 1996). The variables for

prenatal and birth behaviors utilized in the current study (i.e., frequency counts) may only partially tap a more complex construct in need of further assessment.

Additionally, early fathering behaviors were linked with the coparental relationship. Prenatal and birth behaviors were positively associated with being always resident after birth and were negatively associated with being always nonresident. In contrast, being sometimes resident was not strongly associated with these behaviors. Similarly, prenatal and birth behaviors were positively associated with romantic relationships at 14-months; prenatal behaviors were also positively associated with romantic relationships at 24- and 36-months. Teen fathers who were supportive and involved during the pregnancy and birth were more likely to continuously live with mothers for the first year after the birth and have a romantic relationship with her. Thus, it seems that when fathers support mothers and children, the mother-father relationship is facilitated.

The findings lend further support to the bidirectionality of influence among family systems as postulated by Doherty et al. (1998). Similarly, according to family systems theory, the coparental relationship affects and is affected by the parent-child relationship through transactional interactions (Grych, 2002; Minuchin, 1985).

Additionally, there is evidence that positive support from teen fathers helps mothers positively adjust to motherhood (Cutrona et al., 1998; East & Felice, 1996; Gee & Rhodes, 2003; 1999). In the end, being involved during the pregnancy has positive effects for fathers, father-child relationships, mothers, and coparental relationships. Researchers' and practitioners' task is to translate this into services for teen fathers and their families.

Individual Characteristics

The current study examined how several individual characteristics (i.e., father age, father residence after birth, child gender, father employment status, father school status) influenced teen father involvement. These were examined as time-invariant, stable characteristics and as time-varying, dynamic characteristics.

Time-Invariant Characteristics

Teen fathers' age at the birth of the child was examined as a father characteristic and modeled as a time-invariant covariate. Because of the restricted sample range and explicit interest in examining the heterogeneity among teen fathers, father age was dichotomized into younger (i.e., 14- to 17-years) and older teen fathers (i.e., 18- to 19-years). In contrast to extant literature, father age was not associated with other study variables. Father age was only associated with mother age, indicating that older teen fathers were less likely to partner with younger teen mothers and more likely to partner with older teen mothers and younger adult mothers. This pattern of partnering parallels that from national studies (Manlove et al., 2006).

Despite few associations among variables, there were differences between younger and older teen fathers. Older teen fathers were more likely involved than younger teen fathers at 14- and 64-months, in contrast to findings from extant literature (e.g., Danziger & Radin, 1990; Gavin et al., 2002; Rhein et al., 1997). However, there were no differences between younger and older teen fathers on prenatal and birth behaviors. Extant literature examining teen fathers' behaviors before the birth have not assessed age effects among teen fathers. Findings from the current study indicate that younger and older teen fathers had similar levels of

engagement during the pregnancy, in contrast to general trends in the father literature (Lamb, 2000; 2004; Parke, 2002). At the same time, older teen fathers were more likely to be highly involved during early childhood, in contrast to the teen father literature but in accord with general trends in the father literature.

Older teen fathers may be more likely to be highly involved for similar reasons as adult fathers, such as their more established and stable life circumstances allowing for greater time commitment to children. In fact, older teen fathers were more likely to be continuously resident, less likely to have younger teen mother partners, more likely to be employed, and less likely to be in school. These characteristics and factors could support fathers' involvement. Father residence has consistently been associated with increased father involvement among adult fathers (Lamb, 2004), although residential status has not been examined with teen fathers. Fathers' employment status has consistently shown associations with fathers' involvement among adult fathers (Parke, 2002) and with teen fathers (e.g., Gavin et al., 2002). Although there is not empirical evidence supporting partners' age or school status among teen fathers, these provide theoretical support for father involvement.

Lastly, in consideration of improving future LGCM, it is possible also to conceptualize father age as a time-varying covariate. This could serve to capture more of the father developmental trajectory in relation to the involvement trajectory. This analytical approach may simulate a continuous developmental pattern while also allowing measurement of changes in development. Reconceptualizing father age beyond a covariate could also reflect literature on their emergence into adulthood

(Arnett, 2007). At the same time, this “maturational” effect may only be a proxy for other personality or developmental characteristics that are independent of age. Further investigation of fathers’ developmental process through adolescence and emerging adulthood, while concurrently transitioning into fatherhood and coparenting relationships, is required.

In addition to father age, fathers’ residence after birth was examined was examined as a father characteristic and modeled as a time-invariant covariate. Approximately half of fathers were continuously nonresident to their children from birth to 14-months, whereas another quarter of fathers were continuously resident with children. Interestingly, fathers were more likely to have patterns of inconsistent residency followed by nonresidence at 14-months (i.e., 18%) than followed by residence at 14-months (i.e., 4%). In sum, for the current sample of low-income teen fathers, fathers tended to never live with their children or become nonresident during infancy. However, these descriptive statistics are difficult to contextualize within the extant literature because samples are restricted to residential or nonresidential teen fathers only and studies are largely cross-sectional. Studies focused solely on cohabiting teen couples represent a small portion of teen parents; programs and services aimed to help these families may not help the majority of teen parents in various other family structures.

As anticipated, residence since birth was associated with father involvement. Specifically, always nonresident since birth was negatively associated with involvement at 14-, 24-, 36-, and 64-months. Similarly, always resident was positively associated with involvement at 14-, 24-, 36-, and 64-months. Although few

fathers followed this pattern, inconsistent residency followed by residence at 14-months was positively associated with involvement at 14-, 24-, and 36-months. Thus, residency with children, particularly at 14-months, was associated with increased father involvement whereas nonresidency was associated with decreased father involvement. It is noteworthy that early residency patterns are also linked with later involvement rates. However, other researchers have not supported these findings. For example, in a sample of teen mothers and their partners, there were no associations among coparental relationship quality and father involvement with continuous residence whereas continuous involvement positively predicted 6-month HOME scores (Cutrona et al., 1998).

Residence was also associated with coparental romantic relationships in the same pattern of involvement. Specifically, being always nonresident since birth was negatively associated with romantic relationships at 14-, 24-, 36-, and 64-months. Similarly, being always resident was positively associated with romantic relationships at 14-, 24-, 36-, and 64-months. Inconsistent residency followed by residence at 14-months was positively associated with romantic relationships at 14-, 24-, and 36-months. Thus, overall, residence was associated with romantic relationships. Or more specifically, residence, involvement, and romantic relationships were positively associated as has been reaffirmed many times with adult fathers (Lamb, 2004).

Additionally, residence after birth was associated with the contextual factor of race. Specifically, being always nonresident since birth was negatively associated with being White and positively associated with being African American. Being always resident was negatively associated with being African American and

positively associated with being Hispanic. Similarly, in an examination of a national sample of teen mothers with 6-year-old children, White mothers were more likely to live with their partners after birth than African American teen mothers (Unger & Cooley, 1992). Although residence is associated with higher levels of involvement and romantic coparental relationships, perhaps White race teen fathers mainly utilize residence, through cohabitation and marriage, as a means of enacting their father role and fulfilling their responsibilities. In contrast, perhaps African American teen fathers can enact their father role without living with their children emphasizing the importance of family and community in child-rearing (McAdoo, 1990, 2002; Sullivan, 1993). Fewer studies compare and have found differences between White and Hispanic fathers so it is interesting that in the current study low-income Hispanic teen fathers were more likely to live with their children than White fathers. The Fragile Families Study has found that the Hispanic subgroup had the highest percentage of unmarried couples living together after the birth of the child compared to White and African American couples (McLanahan, Garfinkel, Reichman, & Teitler, 2001). In sum, there were lower residence rates for African American teen fathers and higher residence rates for Hispanic teen fathers.

Lastly, gender effects were examined. Child gender was not associated with any study variables and thus was not included in the final analysis model. Previous studies have found mixed results for the impact of child gender, thus, the null finding for this exploratory variable is not surprising. The lack of findings is similar to the extant literature with adult fathers (Parke, 2002).

Time-Varying Characteristics

Father employment status was examined as a father characteristic and modeled as a time-varying covariate. Father employment status (i.e., employed, not employed) was assessed at 14-, 24-, 36-, and 64-months. More than two-thirds of all fathers were employed at each wave and employment levels increased through 36-months (i.e., 70%), then decreased somewhat (i.e., 65%). Further, employment status was positively associated over time.

In contrast to previous findings (Danziger & Radin, 1990; Gavin et al., 2002), father employment was inconsistently associated with father involvement. There were a few strong, positive correlations: 14- and 36-month employment status with 36-month involvement; and 64-month employment status with 64-month involvement. It is unclear why employment was inconsistently associated with father involvement, particularly during infancy. Also, in contrast to adult findings (e.g., Chambers, Schmidt, & Wilson, 2006), employment status was only positively associated with residence at 14-months. Perhaps with younger fathers experiencing varying family structures and dynamics, employment serves less as a proxy for fathers' fulfillment of provision. For example, Achatz and MacAllum's (1994) ethnographic study of inner-city young fathers described their frustration of not being able to provide for their families through legitimate employment. However, young fathers desired to provide for their families; some used illegitimate means (e.g., selling drugs) to make money. Perhaps future research with teen fathers should assess both employment and provision (e.g., in-kind support) to best capture fathers' engagement in the labor market and fulfillment of his father role.

In addition to father employment, father school status was examined as a father characteristic and modeled as a time-varying covariate. Father school status

(i.e., in-school, not in-school) was assessed at 14-, 24-, 36-, and 64-months. The percentage of fathers attending school decreased over time from 17% to 8%, however, school status was associated over time.

School status was largely unassociated with other study variables. However, school status was negatively associated with employment status concurrently. Thus, if fathers were attending school, they were less likely to be concurrently employed. This may be important since younger teen fathers were more likely to be in-school than older teen fathers. It was notable in the current study that school status did not have a direct link to father involvement. It is possible that school engagement (i.e., subsequently, education) has indirect associations with father involvement. It is also possible that current employment and school factors (i.e., subsequently, education) have distal benefits for fathers' employment patterns, career, income and in turn positive effects for involvement with children and coparental relationships. Education can be an important factor for obtaining employment with a living wage to support a family and prevent shame for inability to provide for one's family (Erkut, Szalacha, & Garcia Coll, 2005). Given the emphasis on job training and education in the majority of fatherhood programs, particularly those serving low-income and young fathers, concurrent and distal influences of education are important for families. More research is needed to disentangle the complex dynamics young fathers face economically, educationally, and career trajectories as they navigate through child support mandates, providing for their families, and interrupted educational experiences.

Contextual Characteristics

The current study examined how contextual characteristics (i.e., mother race, mother age) influenced teen father involvement. These were examined as time-invariant, stable characteristics.

Race was described by categories: White, African American, Hispanic, and Other. Nearly half of the sample was African American and another third was White. Race was not associated with many study variables, however, some racial patterns with father involvement were indicated. African American teen fathers were less likely (than non-African American) to be involved at 24- and 64-months while Hispanic teen fathers were more likely (than non-Hispanic) to be involved at 24- and 64-months. Some researchers find that African American fathers were more likely than White fathers to be absent from birth through 9-years, less involved with their 3-year-old children (Gee et al., 2007), and have less frequent contact with their 6-year-old children (Mott, 1993; Unger & Cooley, 1992). On the other hand, African American teen fathers were more likely to visit their children daily than White teen fathers (Mott, 1993). Among low-income unmarried couples, both African American and Hispanic fathers were less likely than White fathers to provide in-kind support when children were 3-years-old (Gee et al., 2007). Thus, the findings from the current study add to extant literature about race and father involvement, yielding mixed results.

Mother age was also included as a contextual characteristic. Mother age was reduced into three categories: younger teen, older teen, and young adult. Over half of the sample was younger teen mothers and another third was older teen mothers. Only

9% were young adult mothers. Mother age was not associated with involvement, prenatal or birth behaviors. There is little evidence that mother age is directly associated with fathers' behaviors, however, in one study of African American mothers on welfare, teen mothers were less likely than older mothers to have their children visited by the fathers (Greene & Moore, 2000). Thus, mother age was included only as a covariate of father age in the structural model.

Although within the current and other studies there are not always age effects, the importance of examining the family as a context remains. Similar to the research on fathers, the ages of the mother and father and their coupling determine in part how a young family begins their life together, the involvement of both grandparents (Krishnakumar & Black, 2003), and subsequently how fathers' involvement plays out over time.

Coparental Relationship

The current study examined how the coparental relationship (i.e., romantic coparental relationship) influenced teen father involvement. These were examined as time-varying, dynamic characteristics. Coparental relationship status (i.e., romantic, not romantic) was assessed at 14-, 24-, 36-, and 64-months. Approximately, half of fathers were in romantic relationships at 14- and 24-months, but these rates decreased. At 36-months, two-fifths of fathers were in romantic relationships; at 64-months, one-fourth of fathers were in romantic relationships. However, romantic relationship status was positively associated over time.

Romantic relationship status was positively correlated with involvement within and across time. Thus, teen fathers in romantic relationships were more likely

to be involved with their children. Other studies of teen fathers have also found that current romantic coparental relationship status was associated with more frequent father-child contact and coparental interaction than nonromantic status (Herzog et al., 2007). However, romantic relationship was partly confounded with residential status because it included married and cohabiting fathers in addition to “boyfriend” fathers who were nonresidential. It is unclear what impact the coparental romantic relationship has on father involvement separate from the impact of father residence. Future studies are needed to distinguish these effects.

Limitations

As with all studies, the current study has methodological limitations. First, all measures of interest were derived from maternal report at various interview waves. Mothers are regarded as reliable sources for fathers’ demographic characteristics (Hernandez & Coley, 2007), however, agreement between mother and father reports of father involvement is moderate. Each parent provides a unique perspective of how and how often fathers are involved with their children, neither of which should be discounted as inaccurate. At the same time, the bias of the perspective needs to be acknowledged.

Nevertheless, the current study gains a broader range of father characteristics and involvement by using mothers’ report rather than fathers’ report. Studies that rely solely on father report tend to have biased samples, excluding fathers who are less involved with their children and have poorer relationships with their children’s mothers (Cabrera et al., 2004; Fagan & Barnett, 2003). Thus, the current study examined the longitudinal trajectories, dynamics, and influences of involved *and*

uninvolved teen fathers in an understudied population. Future research should include both mothers' and fathers' perspectives of family relationships.

Further, the use of maternal report on all measures of interest introduces monomethod and monoreporter bias. The same method (i.e., questionnaire) was used for both predictors and outcomes. Similarly, the same reporter (i.e., mother) was used for all measures. Thus, significant findings could be due to the shared variance of method or reporter (i.e., error) rather than measures. Future studies could reduce error bias with multiple measures, methods, and reporters.

Because the current study was a secondary analysis of a larger national study, some aspects of design and measurement were not ideal for the current research questions, but were best approximations. For instance, the fathers' prenatal involvement was assessed retrospectively a year after birth. Retrospective interview introduces the possibility of participants forgetting actual events and biasing answers based on current behaviors (e.g., responding that father was not involved during the pregnancy even though in actuality he was because he is not involved currently). Future studies could employ prospective designs to assess involvement behaviors during pregnancy or at birth to reduce the lag of retrospective influence. Similarly, this study did not have data regarding parents' relationship or sociodemographic characteristics during pregnancy or at birth (except for those mothers who enrolled during pregnancy). Again, future studies could employ a prospective design to interview parents during pregnancy and at birth to gain that information.

Lastly, the current study's sample did not represent all teen fathers in EHS, nor was it representative of all low-income teen fathers. The larger EHSRE study was

designed to represent EHS eligible families in 1996; thus, the current sample represents teen fathers whose children were eligible for EHS in 1996. This sample and its patterns of involvement provided preliminary information about teen fathers when little is known. Additionally, these data help generate hypotheses and directions for future studies.

Future Directions

The current study provided an important portrait of low-income teen fathers' involvement throughout early childhood and salient influences on that involvement. Several areas would be important for further examination including expanded measurement, additional constructs, and continued exploration of analytical approaches.

Prenatal and birth behaviors were important constructs of early father behaviors in the current study as has been shown in extant literature (e.g., Bronte-Tinkew et al., 2007). However, the measurement of both could be improved and expanded beyond the frequency count utilized in the current study. Several aspects of prenatal and birth behaviors merit further exploration, including timing, frequency, quality, voluntary participation, requests for participation, and response to participation. Similarly, father involvement consisted of only one question assessing his availability for potential interaction with child. Father involvement is a complex and diverse construct. Future studies are needed to determine the patterns of other aspects of teen fathers' involvement.

The current study reaffirmed the importance of the coparental relationship; however, assessment was limited to relationship status. Distinguishing among

intimate relationship status, residential status, coparenting alliance, and coparenting relationship quality are critical steps for the field. The measurement of coparental relationship quality in addition to status would be an important expansion because poor relationship quality tends to “spill-over” into father-child interactions. For example, teen fathers who reported positive relations with their partners during pregnancy had more positive adjustments (e.g., lower stress, less child abuse potential, less physical discipline) to fatherhood when children were 2-years-old (Florsheim et al., 2003). Additionally, teen prenatal behavior has important indications and consequences for the coparental relationship. For instance, higher levels of prenatal and birth involvement of young fathers with teen mothers were associated with coparental romantic relationship status and lower interparental conflict when infants were 6-months-old (Fagan et al., 2003). High involvement during the pregnancy may be a signal of future “good parenting” and indicative of the father as a suitable marriage partner. In the current study, prenatal and birth behaviors were strongly associated with coparental relationship at 14-months, however this pathway was not included in the statistical model.

Additionally, it is important to measure the coparenting relationship in terms of the parenting alliance (distinct from romantic relations) because positive coparenting predicts father involvement (Schoppe-Sullivan, Mangelsdorf, et al., 2004). Since romantic relations are unstable and hostile (Gee & Rhodes, 2003; Moore & Florsheim, 2001), the coparenting relationship may be more appropriate for teen parents who must foster parenting ties as they enter adulthood and the child grows. The child still needs a positive, nurturing environment regardless of romantic

relationship status of parents. Although there is some overlap in parenting alliance and a romantic coparental relationship (Fagan, Schmidt, & Lloyd, 2007), a strong coparenting relationship may reduce the risk of instability in teen parent relationships (Hess, Papas, & Black, 2002). Positive associations between support during pregnancy, presence at birth, financial support, and grandparent support of father, with father-child contact and coparental interaction, have been explained by mothers' satisfaction with father and the desire to have father involved when the parents were not in a romantic relationship for teen parents (Herzog et al., 2007).

The current study helped identify important influences on teen father involvement patterns, but future research is needed to identify the possible later outcomes of father involvement. Child well-being is typically assessed for how father involvement positively influences it, but research with teen fathers may not be at that stage. Little is known about teen fathers and even less is known about how engaging in fathering impacts them. For instance, subsequent coparenting, father education or employment, delinquency, or multipartner fertility could serve as interesting distal outcomes of involvement trajectories during early childhood. Moreover, future studies could assess the impact of involvement trajectories through middle childhood and beyond.

Additionally, future research is needed to examine salient teen father characteristics within a latent class framework. Given the wide variation among teen fathers, it is likely that there are different “types” of teen fathers based on combinations of characteristics who then have distinct patterns of involvement over time. With larger samples, additional measures, and different analyses, future

research could better determine teen fathers' trajectories and potential points of intervention.

Lastly, a mixed method approach could examine the question of teen father involvement in a more refined way. Extant literature on teen fathers includes several qualitative studies (e.g., Allen & Doherty, 1996; Dallas & Chen, 1998; Lesser et al., 2001), which provide in-depth and important context to teen fathers' lives. At the same time, quantitative studies have been conducted with both small-scale and large-scale samples, which provide data for rates of behaviors and comparisons among groups. However, utilizing both approaches would allow for a better assessment and description of the dynamics unique to teen fathers' lives.

Policy Implications

What to target and when to offer services and programs for teen fathers varies widely among teen fatherhood programs (Mazza, 2002). Moreover, program variation also impacts program effectiveness for improving the outcomes for teen fathers and their children (Bronte-Tinkew, Burkhauser, & Metz, 2008). The results of the current study have important policy and practice implications, particularly given the high-risk nature of the sample.

First, the current findings emphasize the salience of the prenatal period for offering services to fathers and initializing interventions. Trying to engage fathers at the birth of their children is almost too late. More specifically, starting at birth would only reach the fathers who are *already* involved and likely remain involved regardless of intervention. As shown with the current sample, fathers who participated in prenatal activities likely participated in activities at the birth. Further, participation in

prenatal and birth activities was associated with higher initial levels of involvement giving a positive trajectory with their young children. Perhaps with intervention that positive trajectory could be promoted during pregnancy and supported during early childhood. However, a recent review of teen fatherhood programs revealed few programs beginning services during pregnancy (cf. “A Prenatal Education Intervention”) and fewer with evidence from an experimental evaluation (Bronte-Tinkew et al., 2008). The authors provide practical guidance to achieve effective teen fatherhood programs (i.e., offer a comprehensive array of services; incorporate teaching methods that are appropriate for teen fathers and their culture and age), but programs will not be successful in promoting father involvement unless a developmental, ecological perspective is considered. Thus, advocacy for more services and programs for the partners of teen mothers is consonant with the data from this and other studies (e.g., Mazza, 2002; Lane & Clay, 2000). “Teen pregnancy” is not a woman issue and the well-being of the new triad could be best served with prenatal services for mom *and* dad.

In addition to starting early, programs should extend over time. By providing long-term services to teen fathers over early childhood programs can support father involvement over time. Leadbeater and Way’s (2001) study of low-income, minority teen mothers further indicated that while 26% reported frequent and emotionally positive contact with fathers when children were 3-years-old, contact decreased to 12% when children were 6-years-old. Fathers’ positive involvement benefits both mothers and children (e.g., Gee & Rhodes, 2003) and fathers (e.g., Palkovitz, 1997). The majority of teen fatherhood programs have short program services (e.g., 6-

months) and offer services to fathers while they are teens and their children are young. In light of involvement trajectories and the developmental paths of both teen fathers (e.g., adolescence, “emerging adulthood”, early adulthood, adulthood) and their children (e.g., prenatal, infancy, toddlerhood, early childhood, middle childhood, preadolescence, adolescence), perhaps teen fatherhood programs could offer services to fathers at multiple stages to meet their individual needs. Neither parenthood, nor teen parenthood is a solitary event. At many points, teen fathers face challenges to successfully parent; a solitary program could not be expected to meet those needs. By tailoring programs and policies to reflect the dynamic and longitudinal nature of teen fatherhood, they will be better equipped to serve the population.

Teen fatherhood programs target a myriad of outcomes. Of utmost importance is the coparental relationship. Providing services in isolation of these relationships will not yield an optimal impact on fathers or families. Just as teen mother programs learned to integrate maternal grandparents, teen father programs must also integrate other family members. In addition to including the mother, programs may need to consider both paternal and maternal grandparents as program participants because they could be valuable facilitators or notable barriers. Qualitative studies with teen fathers have demonstrated the importance of paternal grandparents (i.e., teen father’s parents) in maintaining fathers’ involvement, educational success, and relations with the mother and her family, particularly in African-American communities (e.g., Paschal, 2006). Similar findings have been established within the teen mother literature regarding her partner (e.g., Gavin et al., 1999). Working with the parents

and family would ultimately allow the father to best adapt to the situation and enact his fathering role for the best of the child.

Conclusions

While teen births are on the rise and marriage rates are on the decline, fathers have become a recent focus, especially for TANF and child support enforcement. Although teen births are higher among low-income families, the extant literature has been slow to gather information on teen fathers' *parenting* behaviors. The current study represents an important step in determining low-income teen fathers' involvement trajectories and potential points of intervention.

The current study provided a portrait of Early Head Start teen fathers' involvement throughout early childhood and salient influences on that involvement. This study maximized developmental and life course perspectives through employing longitudinal analysis that emphasized time-effects. The majority of teen fathers were involved with children initially, but their involvement decreased over time. Consistent with extant literature, teen fathers who were prenatally engaged, resident after the birth, and in romantic coparental relationships at 14- and 24-months were more involved in their children's lives initially. Teen fathers who were in romantic coparental relationships at 36- and 64-months were less likely to decrease their involvement over the course of early childhood. Surprisingly, age, race, employment, and school status were not significant influences on father involvement.

Although the present study had its limitations, trends were noted and should be considered in future studies. Teen fathers are a unique population facing several challenges to meeting their own developmental needs and enacting their father role.

Some conceptual factors shown to be influential for father involvement with adult and married fathers (i.e., age, employment) do not hold the same meaning and impact among teen fathers. The conceptual and ultimately practical meaning of behaviors and characteristics must be contextualized within teen fathers' developmental trajectory and ecological settings.

Similarly, examination of teen fathers within a dynamic, longitudinal framework emphasized the need to address fatherhood in a different way. Previous studies have examined longitudinal data, but not examined the patterns of involvement for individual fathers. Cross-sectional studies have examined factors of influence on father involvement, but this is at a variable level, not how the influence varies for individual fathers. From the current study, this different perspective (i.e., person-centered) revealed unique patterns for teen fathers. (It is also possible that person-centered analyses would reveal different patterns from variable-centered analyses for adult fathers; empirical research is needed.) Further analyses will allow when and how to best intervene with teen fathers.

Teen fathers may be at-risk, but they are involved with their children and can positively benefit both children and mothers. Head Start and Early Head Start could continue to support teen fatherhood through its mission to serve low-income children *and* parents; availability from pregnancy through 5-years; and mission to adapt to the needs of the community and family. But without support or intervention, cycle of teen of parenthood is perpetuated.

APPENDICES

EARLY HEAD START

HSFIS APPLICATION / ENROLLMENT FORMS

**SECTION 1 : APPLICATION INFORMATION
APPLICANT DEMOGRAPHICS**

1.2 Date of birth:

Completed: HA1-asp

MM DD YY

1.8 What race/ethnicity do you consider yourself to be? (Mark only one)

HA1-8

- | | |
|---|---|
| 100 <input type="checkbox"/> White (non-Hispanic) | 300 <input type="checkbox"/> Hispanic (specify): |
| 200 <input type="checkbox"/> Black (non-Hispanic) | 301 <input type="checkbox"/> Mexican/Chicano <input type="checkbox"/> Cuban |
| 500 <input type="checkbox"/> American Indian : Tribal affiliation _____ | 304 <input type="checkbox"/> Central American 305 <input type="checkbox"/> Other: _____ |
| 500 <input type="checkbox"/> Eskimo | 302 <input type="checkbox"/> Puerto Rican |
| 500 <input type="checkbox"/> Aleut | |
| 600 <input type="checkbox"/> Other, specify: _____ | 400 <input type="checkbox"/> Asian or Pacific Islander (specify): |
| | <input type="checkbox"/> Chinese <input type="checkbox"/> Guamanian |
| <input type="checkbox"/> Biracial/multiracial | <input type="checkbox"/> Filipino <input type="checkbox"/> Japanese |
| Specify races: _____ | <input type="checkbox"/> Korean <input type="checkbox"/> Asian Indian |
| | <input type="checkbox"/> Samoan <input type="checkbox"/> Hawaiian |
| | <input type="checkbox"/> Vietnamese <input type="checkbox"/> Other: _____ |

**SECTION 3: APPLICATION INFORMATION
OTHER FAMILY MEMBERS**

(FATHER)

3.2 Date of birth:

MM DD YY

3.4 Gender:

☐ Male

☐ Female

3.8 What is this person's relationship to your child(ren) who are eligible for Early Head Start listed in Section one?

Focus Child 1: (Name: _____ Birthdate: ____/____/____)

HA3-8

- | | | |
|---|--|--|
| 07 <input type="checkbox"/> Biological parent | <input type="checkbox"/> Sibling | <input type="checkbox"/> Other relative |
| 08 <input type="checkbox"/> Adoptive parent | <input type="checkbox"/> Step/half sibling | <input type="checkbox"/> Godparent |
| <input type="checkbox"/> Step parent | <input type="checkbox"/> Grandparent | <input type="checkbox"/> Legal guardian |
| <input type="checkbox"/> Foster parent | <input type="checkbox"/> Aunt/Uncle | 19 <input type="checkbox"/> No biological/legal relationship |

**SECTION 2: APPLICATION INFORMATION
EARLY HEAD START ELIGIBLE CHILDREN**

FOCUS CHILD

2.2 Date of birth:

MM DD YY

2.4 Gender:

☐ Male

☐ Female


2.6 What is this child's relationship to you (i.e., the applicant, who is the primary care provider)? (Mark one)

HA2-6

- | | | | |
|--|---|---------------------------------------|-------------------------------------|
| 03 <input type="checkbox"/> Biological Child | <input type="checkbox"/> Adoptive Child | <input type="checkbox"/> Foster Child | <input type="checkbox"/> Step Child |
| <input type="checkbox"/> Relative: Specify _____ | <input type="checkbox"/> Other: Specify _____ | | |

04

APPENDIX B: 14-month Parent Interview

<div style="display: flex; align-items: center; justify-content: center;"><div style="text-align: center;"><h1 style="margin: 0;">EARLY HEAD START</h1></div><div style="margin: 0 20px; border-left: 3px double black; height: 150px;"></div><div style="text-align: center;"><h2 style="margin: 0;">PARENT INTERVIEW</h2></div></div> <div style="text-align: center; margin-top: 20px;">REVISED - 3/23/98</div> <div style="text-align: center; border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;">FOR PARENTS OF 14-MONTH-OLD INFANTS</div> <p style="font-size: small; margin-top: 20px;">Public reporting burden for this collection of information is estimated to average 2.5 hours per response for the interview and assessments, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to ACF Reports Clearance Officer, Paperwork Reduction Project (OMB# 0970-0143), Administration for Children and Families, Office of Information Services, 370 L'Enfant Promenade, S.W., Washington, DC 20447. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB number for this project is 0970-0143.</p> <div style="border: 1px solid black; padding: 10px; margin-top: 20px;"><div style="display: flex; justify-content: space-between;"><div>MPR ID #: <input type="text"/></div><div></div></div><div style="display: flex; justify-content: space-between;"><div>DATA COLLECTOR ID #: <input type="text"/></div><div></div></div><div style="display: flex; justify-content: space-between;"><div>DATE: <input type="text"/> / <input type="text"/> / 19 <input type="text"/></div><div></div></div><div style="display: flex; justify-content: space-between;"><div></div><div>MONTH DAY YEAR</div></div><div style="display: flex; justify-content: space-between;"><div>TIME START: <input type="text"/> : <input type="text"/> AM/PM</div><div></div></div><div style="display: flex; justify-content: space-between;"><div>TIME END: <input type="text"/> : <input type="text"/> AM/PM</div><div></div></div><div style="display: flex; justify-content: space-between;"><div>TIME START: <input type="text"/> : <input type="text"/> AM/PM</div><div></div></div><div style="display: flex; justify-content: space-between;"><div>TIME END: <input type="text"/> : <input type="text"/> AM/PM</div><div></div></div></div> <div style="margin-top: 20px; text-align: center;"><p>Conducted for: Mathematica Policy Research, Inc. P.O. Box 2393 Princeton, NJ 08543-2393 and Administration on Children, Youth, and Families U.S. Department of Health and Human Services</p></div>	<p>OMB No.: 0970-0143</p> <p>Expiration Date: 10/31/99</p>
---	--

Parents of 14-Month-Old Infants

SECTION 5
ABOUT CHILD'S FATHER

5.0 INTERVIEWER: YOU ARE INTERVIEWING . . .

CIRCLE ONE

MOTHER	01	
FATHER	02	→ GO TO SECTION 5 SUPPLEMENT--FATHER
GRANDMOTHER	03	} → GO TO SECTION 5 SUPPLEMENT-- GRANDMOTHER
OTHER FEMALE RELATIVE (SPECIFY)	04	

_____	<input type="text"/> <input type="text"/>	
OTHER (SPECIFY)	05	→ GO TO Q6.1

_____	<input type="text"/> <input type="text"/>	
FOSTER MOTHER	06	
FOSTER FATHER	07	

The next questions are about when (CHILD) was born, and about (his/her) father and other men who might be father-figures to (him/her).

5.1 First, how old was (his/her) biological father when (CHILD) was born?

YEARS → **GO TO Q5.2**

DON'T KNOW AGE -1 → **ASK A**

5.4 While you were pregnant, did (CHILD)'s father do any of the following?

scs

	<u>YES</u>	<u>NO</u>	<u>NA</u>
A. Discuss how your pregnancy was going with you?	01	00	<div style="background-color: #cccccc; width: 40px; height: 20px; margin: 0 auto;"></div>
B. Go to the doctor with you?	01	00	-4

5.3 Was (his/her) father present when (CHILD) was born, either in the hospital or wherever the birth was?

scs

CIRCLE ONE

YES, IN HOSPITAL 01
 YES, ELSEWHERE 02 → **GO TO B**
 NO 00

scs

A. When (CHILD) was in the hospital after (he/she) was born, did (his/her) father come to see (him/her)?

YES 01
 NO 00

5.5 What is your relationship with (CHILD)'s biological father now? Is he your . . .

CIRCLE ONE

Husband, 01
 Live-in partner, 02
 Boyfriend, 03
 Friend, 04
 Something else, or (SPECIFY) 05

Are you not in any relationship
 with him at all? 06

5.7 **CODE WITHOUT ASKING IF KNOWN:**

CCDP

Now, I'd like to talk about (CHILD) and (his/her) relationship with (his/her) father. Does (CHILD)'s biological father live with you and (CHILD)?

CIRCLE ONE

CHILD USUALLY LIVES WITH
BIOLOGICAL FATHER 01 → **GO TO Q5.9**

CHILD LIVES WITH BIOLOGICAL
FATHER SOME OF THE TIME
(SPLIT CUSTODY) 02

CHILD DOES NOT LIVE WITH
BIOLOGICAL FATHER 03

VOLUNTEERED: BIOLOGICAL
FATHER DECEASED 04

DON'T KNOW WHO BIOLOGICAL
FATHER IS 05

ASK Q5.8

SECTION 5A

RESIDENT BIOLOGICAL FATHER

5.10 Is (FATHER) currently working, in school, in a training program or is he doing something else?

ECCO

CIRCLE ALL THAT APPLY

WORKING 01

UNEMPLOYED 02

LOOKING FOR WORK 03

LAID OFF 04

IN SCHOOL/TRAINING 05

IN JAIL 06

IN MILITARY 07

SOMETHING ELSE (SPECIFY) 08

DON'T KNOW -1

RETIRED 09

5.11 What is the highest grade or year of regular school that he has completed?

ECCO

CODE GED AS 12

CIRCLE ONE

ELEMENTARY SCHOOL 01 02 03 04 05 06
MIDDLE/HIGH SCHOOL 07 08 09 10 11 12
COLLEGE 13 14 15 16
POST-COLLEGE 17
DON'T KNOW -1

5.13 In the past month, how often has (FATHER) looked after (CHILD) while you did other things? Was it . . .

CCDP

PROBE: The last 30 days.

CIRCLE ONE

SHOW
CARD
5

Every day or almost every day, 01
A few times a week, 02
A few times a month, 03
Once or twice, or 04
Never? 05

HOME

SECTION 5B

NON-RESIDENT BIOLOGICAL FATHER

5.20 Is (FATHER) currently working, in school or training program or is he doing something else?

ECCO

CIRCLE ALL THAT APPLY

WORKING 01
UNEMPLOYED 02
LOOKING FOR WORK 03
LAID OFF 04
IN SCHOOL/TRAINING 05
IN JAIL/PRISON 06
IN MILITARY 07
SOMETHING ELSE (SPECIFY) 08

DON'T KNOW -1
RETIRED 09

5.21 What is the highest grade or year of regular school that he has completed?

ECCO

CODE GED AS 12

CIRCLE ONE

ELEMENTARY SCHOOL 01 02 03 04 05 06
MIDDLE/HIGH SCHOOL 07 08 09 10 11 12
COLLEGE 13 14 15 16
POST-COLLEGE 17
DON'T KNOW -1

5.22 Have you had any contact with (FATHER) since (CHILD) was born?

YES 01
NO 00 → **GO TO Q5.34**

B. And, in the last three months, about how often has (CHILD) seen (his/her) father? Was it . . .

PROBE: That would be in the last 90 days.

CIRCLE ONE

- Every day or almost every day, 01
 - A few times a week, 02
 - A few times a month, 03
 - About once a month, 04
 - Less often than that, or 05
 - Never? 06 → **GO TO Q5.30**
- **GO TO Q5.25**

5.25 In the past month, how often has (FATHER) taken care of (CHILD) while you did other things? Was it . . .

CCDP

PROBE: In the last 30 days.

CIRCLE ONE

SHOW
CARD
5

HOME

- Every day or almost every day, 01
- A few times a week, 02
- A few times a month, 03
- Once or twice, or 04
- Never? 05

APPENDIX C: 24-month Parent Interview

OMB No.: 0970-0143

Expiration Date: 8/31/2000

EARLY HEAD START

PARENT INTERVIEW

*FOR PARENTS OF
2-YEAR-OLD CHILDREN*

Public reporting burden for this collection of information is estimated to average 2½ hours per response for the interview and assessments, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to ACF Reports Clearance Officer, Paperwork Reduction Project (OMB# 0970-0143), Administration for Children and Families, Office of Information Services, 370 L'Enfant Promenade, S.W., Washington, DC 20447. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB number for this project is 0970-0143.

MPR ID #:
DATE COLLECTOR ID #:
DATE: / / 19
 MONTH DAY YEAR
TIME START: : AM/PM
TIME END: : AM/PM



Conducted for:
Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, NJ 08543-2393
and
Administration on Children, Youth, and
Families U.S. Department of Health and Human
Service

Parent Interview 2-Year-Olds

SECTION 5

ABOUT CHILD'S FATHER

5.0 INTERVIEWER: YOU ARE INTERVIEWING . . .

CIRCLE ONE

MOTHER	01	
FATHER	02	→ GO TO SECTION 5 SUPPLEMENT--FATHER
GRANDMOTHER	03	→ GO TO SECTION 5 SUPPLEMENT-- GRANDMOTHER
OTHER FEMALE RELATIVE (SPECIFY)	04	
<hr/>		
	_ _	
OTHER (SPECIFY)	05	→ GO TO SECTION 6
<hr/>		
	_ _	
FOSTER MOTHER	06	
FOSTER FATHER	07	

The next questions are about (CHILD)'s father and other men who might be important to (him/her).

5.1 What is your relationship with (CHILD)'s biological father now? Is he your . . .

CIRCLE ONE

Husband,	01
Live-in partner,	02
Boyfriend,	03
Friend,	04
Something else, or (SPECIFY)	05
<hr/>	
	_ _
Are you not in any relationship with him at all?	06

5.2

CCDP

CODE WITHOUT ASKING IF KNOWN:

Now, I'd like to talk about (CHILD) and (his/her) relationship with (his/her) father. Does (CHILD)'s biological father live with you and (CHILD)?

CIRCLE ONE

CHILD USUALLY LIVES WITH
BIOLOGICAL FATHER 01 → **GO TO Q5.4**

CHILD LIVES WITH BIOLOGICAL
FATHER SOME OF THE TIME
(SPLIT CUSTODY) 02

CHILD DOES NOT LIVE WITH
BIOLOGICAL FATHER 03

VOLUNTEERED: BIOLOGICAL
FATHER DECEASED 04

DON'T KNOW WHO BIOLOGICAL
FATHER IS 05

SECTION 5A

RESIDENT BIOLOGICAL FATHER

5.7

CCDP

In the past month, how often has (FATHER) looked after (CHILD) while you did other things? Was it . . .

PROBE: The last 30 days.

CIRCLE ONE

SHOW
CARD
5

HOME

Every day or almost every day, 01

A few times a week, 02

A few times a month, 03

Once or twice, or 04

Never? 05

SECTION 5B

NON-RESIDENT BIOLOGICAL FATHER

A. Since (CHILD)'s first birthday, has (CHILD) had any contact with (FATHER)?

YES 01

NO 00 → **GO TO Q5.19**

5.14 And, in the last three months since (MONTH), about how often has (CHILD) seen (his/her) father? Was it . . .

SHOW
CARD
4

CIRCLE ONE

Every day or almost every day, 01

A few times a week, 02

A few times a month, 03

About once a month, 04

Less often than that, or 05

Never? 06 → **GO TO Q5.17**

5.15 In the past month, how often has (FATHER) looked after (CHILD) while you did other things? Was it . . .

CCDP

PROBE: In the last 30 days.

SHOW
CARD
5

CIRCLE ONE

Every day or almost every day, 01

A few times a week, 02

A few times a month, 03

Once or twice, or 04

Never? 05

HOME

APPENDIX D: 24-month Father Interview

OMB No.: 0970-0169

Expiration Date: 12/31/2000

FATHER INTERVIEW



Public reporting burden for this collection of information is estimated to average 1 hour per response for the interview and assessments, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to ACF Reports Clearance Officer, Paperwork Reduction Project (OMB# 0970-0169), Administration for Children and Families, Office of Information Services, 370 L'Enfant Promenade, S.W., Washington, DC 20447. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB number for this project is 0970-0169.

MPR ID #:	<input type="text"/>
DATA COLLECTOR ID #:	<input type="text"/>
DATE:	<input type="text"/> / <input type="text"/> / 19 <input type="text"/>
	MONTH DAY YEAR
TIME START:	<input type="text"/> : <input type="text"/> AM/PM
TIME END:	<input type="text"/> : <input type="text"/> AM/PM



Conducted for:
Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, NJ 08543-2393
and
Administration on Children, Youth, and Families
U.S. Department of Health and Human Services

ENTRY INTO SAMPLE:

NATIONAL	01
NEWBORN A	02
NEWBORN B	03

Father Interview 2-Year-Olds

SECTION 7

ABOUT YOU--DEMOGRAPHICS, EMPLOYMENT, EDUCATION

7.1 Are you of Hispanic origin or descent?

YES 01

NO 00

DON'T KNOW -1

REFUSED -3

GO TO Q7.2

A. Are you . . .

CIRCLE ONE

Central American, 01

Cuban, 02

Mexican or Chicano, 03

Puerto Rican, 04

South American, 05

Dominican, or 06

From some other background?
(SPECIFY) 00

_____ | |

7.2 How do you primarily identify your racial background?

ASIAN OR PACIFIC ISLANDER,
INCLUDING NATIVE HAWAIIAN . . . 01

BLACK OR AFRICAN AMERICAN . . . 02

WHITE 03

AMERICAN INDIAN OR
ALASKA NATIVE, INCLUDING
CENTRAL AND SOUTH
AMERICAN INDIANS 04

OTHER (SPECIFY) 00

_____ | |

7.3 How old are you?

| | YEARS OLD

APPENDIX E: 36-month Parent Interview

OMB No.: 0970-0143

Expiration Date: 10/31/01

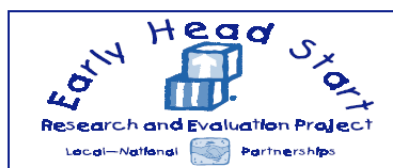
EARLY HEAD START

PARENT INTERVIEW

*FOR PARENTS OF
3-YEAR-OLD CHILDREN*

Public reporting burden for this collection of information is estimated to average 2 hours per response for the interview and assessments, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to ACF Reports Clearance Officer, Paperwork Reduction Project (OMB# 0970-0143), Administration for Children and Families, Office of Information Services, 370 L'Enfant Promenade, S.W., Washington, DC 20447. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB number for this project is 0970-0143.

MPR ID #:	<input type="text"/>
DATA COLLECTOR ID #:	<input type="text"/>
DATE:	<input type="text"/> / <input type="text"/> / 19 <input type="text"/>
	MONTH DAY YEAR
TIME START:	<input type="text"/> : <input type="text"/> AM/PM
TIME END:	<input type="text"/> : <input type="text"/> AM/PM
Final Disposition Code:	<input type="text"/>



Conducted for:
Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, NJ 08543-2393
and
Administration on Children, Youth, and Families
U.S. Department of Health and Human Services

Parent Interview 3-Year-Olds

SECTION 5

ABOUT CHILD'S FATHER

5.0 INTERVIEWER: YOU ARE INTERVIEWING . . .

CIRCLE ONE

- MOTHER 01
- FATHER 02 → GO TO SECTION 5
SUPPLEMENT-FATHER
- GRANDMOTHER 03
- OTHER FEMALE
- RELATIVE (SPECIFY) 04 → GO TO SECTION 5
SUPPLEMENT--
GRANDMOTHER
- _____ | | |
- OTHER (SPECIFY) 05 → GO TO SECTION 6
- _____ | | |
- FOSTER MOTHER 06
- FOSTER FATHER 07

The next questions are about (CHILD)'s father and other men who might be important to (him/her).

5.1 What is your relationship with (CHILD)'s biological father now? Is he your . . .

CIRCLE ONE

- Husband, 01
- Live-in partner, 02
- Boyfriend, 03
- Friend, 04
- Something else, or (SPECIFY) 05
- _____ | | |
- Are you not in any relationship
with him at all? 06
- SEPARATED/DIVORCED 07
- DECEASED 08

ESTABLISHING MEN TO ASK ABOUT

5.2

CCDP

CODE WITHOUT ASKING IF KNOWN:

Now, I'd like to talk about (CHILD) and (his/her) relationship with (his/her) father. Does (CHILD)'s biological father live with you and (CHILD)?

CIRCLE ONE

CHILD USUALLY LIVES WITH
BIOLOGICAL FATHER 01 → **GO TO Q5.4**

CHILD LIVES WITH BIOLOGICAL
FATHER SOME OF THE TIME
(SPLIT CUSTODY) 02

CHILD DOES NOT LIVE WITH
BIOLOGICAL FATHER 03

VOLUNTEERED: BIOLOGICAL
FATHER DECEASED 04

DON'T KNOW WHO BIOLOGICAL
FATHER IS 05

SECTION 5A

RESIDENT BIOLOGICAL FATHER

5.7

CCDP

In the past month, how often has (FATHER) looked after (CHILD) while you did other things? Was it . . .

PROBE: The last 30 days.

CIRCLE ONE

SHOW
CARD
5

HOME

Every day or almost every day, 01

A few times a week, 02

A few times a month, 03

Once or twice, or 04

Never? 05

SECTION 5B

NON-RESIDENT BIOLOGICAL FATHER

5.13A Since (CHILD)'s second birthday, has (CHILD) had any contact with (FATHER)?

YES 01

NO 00 → **GO TO Q5.20**

5.14 And, in the last three months since (MONTH), about how often has (CHILD) seen (his/her) father? Was it . . .

SHOW
CARD
4

CIRCLE ONE

Every day or almost every day, 01

A few times a week, 02

A few times a month, 03

About once a month, 04

Less often than that, or 05

Never? 06 → **GO TO Q5.18**

5.15 In the past month, how often has (FATHER) looked after (CHILD) while you did other things? Was it . . .

CCDP

PROBE: In the last 30 days.

SHOW
CARD
5

CIRCLE ONE

Every day or almost every day, 01

A few times a week, 02

A few times a month, 03

Once or twice, or 04

Never? 05

HOME

APPENDIX F: 36-month Father Interview

OMB No.: 0970-0169

Expiration Date: 01/31/2002

FATHER INTERVIEW

Early Head Start
For Fathers of
3-Year-Old Children

Public reporting burden for this collection of information is estimated to average 1 hour per response for the interview and assessments, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to ACF Reports Clearance Officer, Paperwork Reduction Project (OMB# 0970-0169), Administration for Children and Families, Office of Information Services, 370 L'Enfant Promenade, S.W., Washington, DC 20447. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB number for this project is 0970-0169.

MPR ID #:
DATA COLLECTOR ID #:
DATE: / /
MONTH DAY YEAR
TIME START: : AM/PM
TIME END: : AM/PM



Conducted for:
Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, NJ 08543-2393
and

Administration on Children, Youth, and Families
U.S. Department of Health and Human Services

ENTRY INTO SAMPLE:

NATIONAL 01 →
NEWBORN A SAMPLE 02
NEWBORN B SAMPLE 03

IF THIS FATHER/FATHER-FIGURE
WAS NOT INTERVIEWED AT
24 MONTHS, ALSO ADMINISTER
36 MONTH FATHER STUDY
SUPPLEMENT, DOCUMENT F-22-E.

SECTION 7

ABOUT YOU--DEMOGRAPHICS, EMPLOYMENT, EDUCATION

7.1 A. What is your date of birth?

|_|_| / |_|_| / |_|_|
MONTH DAY YEAR

APPENDIX G: 64-month Parent Interview

EARLY HEAD START

PARENT INTERVIEW

*FOR PARENTS OF
PRE-K CHILDREN*

MPR ID #:

DATA COLLECTOR ID#:

DATE: / /

MONTH DAY YEAR

TIME START: : AM. . . . 01
PM. . . . 02

TIME END: : AM. . . . 01
PM. . . . 02

INTERVIEW COMPLETED IN ENGLISH 01

INTERVIEW COMPLETED IN SPANISH 02

OTHER LANGUAGE (SPECIFY): _____ 03

CHILD ASSESSMENT COMPLETED? YES 01
NO 00

**AFFIX MPR ID BARCODE
LABEL HERE**

Conducted for:

Administration on Children, Youth, and Families
U.S. Department of Health and Human Services

(Revised 5/24/01)

SECTION 10

ABOUT CHILD'S FATHER

10.0 (EHS Parent Interview, Section 5)

INTERVIEWER: YOU ARE INTERVIEWING . . .

CIRCLE ONE

MOTHER 01
FATHER 02
GRANDMOTHER 03
OTHER FEMALE
RELATIVE (SPECIFY) 04

OTHER (SPECIFY) 05 → **GO TO SECTION 11,
PAGE 75**

FOSTER MOTHER 06
FOSTER FATHER 07

10.1 What is your relationship with (CHILD)'s biological father now? Is he your . . .

CIRCLE ONE

Husband, 01
Live-in partner, 02
Boyfriend, 03
Friend, 04
Something else, or (SPECIFY) 05

Are you not in any relationship
with him at all? 06
SEPARATED/DIVORCED 07
DECEASED 08

10.2 **CODE WITHOUT ASKING IF KNOWN:**

CCDP Now, I'd like to talk about (CHILD) and (his/her) relationship with (his/her) father. Does (CHILD)'s biological father live with you and (CHILD)?

CIRCLE ONE

CHILD USUALLY LIVES WITH
BIOLOGICAL FATHER 01 → **GO TO Q10.4,
PAGE 61**

CHILD LIVES WITH BIOLOGICAL
FATHER SOME OF THE TIME
(SPLIT CUSTODY) 02

CHILD DOES NOT LIVE WITH
BIOLOGICAL FATHER 03

VOLUNTEERED: BIOLOGICAL
FATHER DECEASED 04

DON'T KNOW WHO BIOLOGICAL
FATHER IS 05

RESIDENT BIOLOGICAL FATHER

10.7 In the past month, how often has (FATHER) looked after (CHILD) while you did
CCDP other things? Was it . . .

PROBE: The last 30 days.

CIRCLE ONE

Every day or almost every day, 01

A few times a week, 02

A few times a month, 03

Once or twice, or 04

Never? 05

HOME

SECTION 10B

NON-RESIDENT BIOLOGICAL FATHER

10.13 Since (CHILD)'s third birthday, has (CHILD) had any contact with (FATHER)?

YES 01

NO 00 → **GO TO Q10.19**

10.14 And, in the last three months since (MONTH), about how often has (CHILD) seen (his/her) father? Was it . . .

CIRCLE ONE

Every day or almost every day, 01

A few times a week, 02

A few times a month, 03

About once a month, 04

Less often than that, or 05

Never? 06 → **GO TO Q10.19**

10.15 In the past month, how often has (FATHER) looked after (CHILD) while you did other things? Was it . . .

CCDP

PROBE: In the last 30 days.

CIRCLE ONE

Every day or almost every day, 01

A few times a week, 02

A few times a month, 03

Once or twice, or 04

Never? 05

HOME

EARLY HEAD START

FATHER INTERVIEW

*FOR FATHERS OF
PRE-K CHILDREN*

MPR ID #: | | | | | | | |

DATA COLLECTOR ID#: | | | | |

DATE: | | | / | | | / | | |
MONTH DAY YEAR

**AFFIX MPR ID BARCODE
LABEL HERE**

TIME START: | | | : | | | AM.01
PM.02

TIME END: | | | : | | | AM.01
PM.02

INTERVIEW COMPLETED IN ENGLISH01

INTERVIEW COMPLETED IN SPANISH02

OTHER LANGUAGE (SPECIFY): _____ 03

FOCUS CHILD'S BIRTHDATE: | | | / | | | / | | |
MONTH DAY YEAR

Conducted for:

Administration on Children, Youth, and Families
U.S. Department of Health and Human Services

Version: 2

FPK-INT1

(Revised 4/12/02)

FATHER TYPE:

- RESIDENT BIOLOGICAL FATHER 01
RESIDENT FATHER-FIGURE 02
NON-RESIDENT BIOLOGICAL FATHER 03
NON-RESIDENT FATHER-FIGURE 04

SECTION 7

ABOUT YOU--DEMOGRAPHICS, EMPLOYMENT, EDUCATION

7.1 What is your date of birth?

|_|_| / |_|_| / |_|_|
MONTH DAY YEAR

7.6 Are you of Hispanic origin or descent?

- YES 01
NO 00
DON'T KNOW -1
REFUSED -3

GO TO Q7.7

A. Are you ...

CIRCLE ONE

- Central American, 01
Cuban, 02
Mexican or Chicano, 03
Puerto Rican, 04
South American, 05
Dominican, or 06
From some other background?
(SPECIFY) 00

|_|_|

7.7 How do you primarily identify your racial background?

- ASIAN OR PACIFIC ISLANDER,
INCLUDING NATIVE HAWAIIAN 01
- BLACK OR AFRICAN AMERICAN . . . 02
- WHITE 03
- AMERICAN INDIAN OR
ALASKA NATIVE, INCLUDING
CENTRAL AND SOUTH
AMERICAN INDIANS 04
- OTHER (SPECIFY) 00

--	--

APPENDIX I: Correlation Table of All Study Variables

	Inv 14m	Inv 24m	Inv 36m	Inv 64m	Pren	Brt	F old	No Res	SRes NRes	SRes Res	All Res	Ma le	M yng	M old	M adt	Wht	Blk	His	Oth	Rom 14m	Rom 24m	Rom 36m	Rom 64m	Emp 14m	Emp 24m	Emp 36m	Emp 64m	Sch 14m	Sch 24m	Sch 36m	Sch 64m
Inv 14m																															
Inv 24m	.67																														
Inv 36m	.51	.55																													
Inv 64m	.40	.54	.65																												
Pren	.40	.43	.36		.65																										
Brt	.46	.45	.43	.31	.58	.64																									
F Old																															
No Res	-.63	-.45	-.44	-.40	-.51	-.52																									
SRes NRes					.32																										
SRes Res	.46	.34	.42																												
All Res	.76	.57	.51	.48	.55																										
Ma Le																															
M Yng																															
M Old																															
M Adt																															
Wht																															
Blk																															
His																															

	Inv 14m	Inv 24m	Inv 36m	Inv 64m	Pren	Brt	F old	No Res	SRes NRes	SRes Res	All Res	Ma le	M yng	M old	M adt	Wht	Blk	His	Oth	Rom 14m	Rom 24m	Rom 36m	Rom 64m	Emp 14m	Emp 24m	Emp 36m	Emp 64m	Sch 14m	Sch 24m	Sch 36m	Sch 64m
Oth																															
Rom 14m	.78	.67	.57	.42	.53	.54		-.68		.64	.82																				
Rom 24m	.52	.73	.52	.54	.37			-.49		.42	.59									.73											
Rom 36m	.42	.55	.77	.55	.30			-.41		.45	.39									.54	.71										
Rom 64m	.40	.46	.64	.85		.30		-.45			.45						-.32			.56	.59	.70									
Emp 14m			.38								.38																				
Emp 24m																								.39							
Emp 36m			.41																			.42		.47	.43	.44					
Emp 64m				.31																				.34							
Sch 14m																								-.54							
Sch 24m																									-.35			.48			
Sch 36m								-.33																-.35	-.43	-.45			.61		
Sch 64m																										.43	-.32	.42			

Note: Only correlations ≥ 0.30 are listed

APPENDIX J: Mplus Syntax for Final Measurement Model

TITLE: Dissertation- all teens sample "look" model

FINAL measurement model

DATA:

File is C:\Documents and Settings\Allison1\My Documents\Dissertation\
Analysis\FINAL models\all_impute_sets.dat;

Type is IMPUTATION;

VARIABLE:

Names are ehSid site program

fageCB f19yrs f17yrs FteenYng

resbirth NoRes SResNRes SResRes AllRes m1biores m2biores m3biores mKbiores

Fbrace4 c1age c2age c3age cKage cgender

mageCB m19yrs m17yrs MteenYng Myteen Moteen Myadult

MHFrace4 White Black Hispanic Other

mKeduc3 mKHSles Hmedic Hafdc Hfoodst Hwic Hssi

prenatal birth m1presbr m1visith m1disprg m1docprg m1clsprg m1atdcls m1harprg

m1cntact m2cntact m3cntact mKcntact

m1seen3 m1seen m2seen m3seen mKseen

m1look m2look m3look mKlook

HFmfrel m1mfrel m1mfroma Husband1 Cohab1 Boyfrnd1 Friend1 SomElse1

NoRel1 SepDiv1 Decease1

m2mfrel m2mfroma Husband2 Cohab2 Boyfrnd2 Friend2 SomElse2 NoRel2

SepDiv2 Decease2

m3mfrel m3mfroma Husband3 Cohab3 Friend3 SomElse3 NoRel3

SepDiv3 Decease3

mKmfrel Kmfroma HusbandK CohabK BoyfrndK FriendK SomElseK NoRelK

SepDivK DeceaseK

m2trres m2tresmo m2trnres m3trres m3tresmo mKtrres mKtresmo

m1jail m1oth m2jail m2oth m3jail m3oth mKjail mKoth

m1empl m1wkscl m2empl m2wkscl m3empl m3wkscl mKempl mKwkscl

m1schl m2schl m3schl mKschl

m1educ3 m1HSles mKbeduc3 mKbHSles;

Missing are all (-99);

Idvariable is ehSid;

Usevariables are m1look m2look m3look mKlook;

Categorical are m1look m2look m3look mKlook;

ANALYSIS:

Type is Missing H1;

!ESTIMATOR = WLSMV;

PARAMETERIZATION = THETA;

MODEL:

!from measurement model

i s | m1look@0 m2look@0.8315 m3look@1.874 mKlook@4.038;

[i];

m1look*;

!m1look with m2look m3look@0 mKlook@0;

!m2look with m3look mKlook@0;

!m3look with mKlook;

!Thresholds equal across time- thresh1 fix@0, thresh2 fix@1

[m1look\$1@0 m2look\$1@0 m3look\$1@0 mKlook\$1@0];

[m1look\$2@1 m2look\$2@1 m3look\$2@1 mKlook\$2@1];

[m1look\$3 m2look\$3 m3look\$3 mKlook\$3](300);

[m1look\$4 m2look\$4 m3look\$4 mKlook\$4](400);

OUTPUT:

TECH1 TECH2 Tech3 STDYX standardized;

SAVEDATA:

!FILE IS Final_Model_no_mediation_9-15-08.dat; NOT AVAILABLE

!ESTIMATES ARE ESTIMATES_Final_Model_no_mediation_9-15-08.dat; NOT AVAILABLE

!DIFFTEST IS H1deriv_chisq_Final_Model_no_mediation_9-15-08.dat; NOT AVAILABLE

SAMPLE IS SAMPLE_IS_thresh01_FINAL.dat;

RESULTS ARE RESULTS_IS_thresh01_FINAL.dat;

TECH3 IS COVMATX_PARAMETER_IS_thresh01_FINAL.dat;

TECH4 IS COVMTX_LATENT_IS_thresh01_FINAL.dat;

APPENDIX K: Mplus Syntax for Final LGCM Model

TITLE: Dissertation- all teens sample "look" model
FINAL LGCM

DATA:

File is C:\Documents and Settings\Allison1\My Documents\Dissertation\
Analysis\FINAL models\all_impute_sets.dat;
Type is IMPUTATION;

VARIABLE:

Names are ehSid site program
fageCB f19yrs f17yrs FteenYng
resbirth NoRes SResNRes SResRes AllRes m1biores m2biores m3biores mKbiores
Fbrace4 c1age c2age c3age cKage cgender
mageCB m19yrs m17yrs MteenYng Myteen Moteen Myadult
MHFrace4 White Black Hispanic Other
mKeduc3 mKHSles Hmedic Hafdc Hfoodst Hwic Hssi
prenatal birth m1presbr m1visith m1disprg m1docprg m1clsprg m1atdcls m1harprg
m1cntact m2cntact m3cntact mKcntact
m1seen3 m1seen m2seen m3seen mKseen
m1look m2look m3look mKlook
HFmfrel m1mfrel m1mfroma Husband1 Cohab1 Boyfrnd1 Friend1 SomElse1
NoRel1 SepDiv1 Decease1
m2mfrel m2mfroma Husband2 Cohab2 Boyfrnd2 Friend2 SomElse2 NoRel2
SepDiv2 Decease2
m3mfrel m3mfroma Husband3 Cohab3 Friend3 SomElse3 NoRel3
SepDiv3 Decease3
mKmfrel Kmfroma HusbandK CohabK BoyfrndK FriendK SomElseK NoRelK
SepDivK DeceaseK
m2trres m2tresmo m2trnres m3trres m3tresmo mKtrres mKtresmo
m1jail m1oth m2jail m2oth m3jail m3oth mKjail mKoth
m1empl m1wkscl m2empl m2wkscl m3empl m3wkscl mKempl mKwkscl
m1schl m2schl m3schl mKschl
m1educ3 m1HSles mKbeduc3 mKbHSles;

Missing are all (-99);
Idvariable is ehSid;

Usevariables are m1look m2look m3look mKlook
prenatal birth
FteenYng SResNRes SResRes AllRes
Moteen Myadult
Black Hispanic Other
m1mfroma m2mfroma m3mfroma Kmfroma

m1empl m2empl m3empl mKempl;

Categorical are m1look m2look m3look mKlook;

ANALYSIS:

Type is Missing H1;

!ESTIMATOR = WLSMV;

PARAMETERIZATION = THETA;

MODEL:

!from measurement model

i s | m1look@0 m2look@0.8315 m3look@1.874 mKlook@4.038;
[i];

m1look*;

!Thresholds equal across time- thresh1 fix@0, thresh2 fix@1

[m1look\$1@0 m2look\$1@0 m3look\$1@0 mKlook\$1@0];

[m1look\$2@1 m2look\$2@1 m3look\$2@1 mKlook\$2@1];

[m1look\$3 m2look\$3 m3look\$3 mKlook\$3](300);

[m1look\$4 m2look\$4 m3look\$4 mKlook\$4](400);

!Step 1

i on prenatal (p1)

birth (p2);

s on prenatal (p3)

birth (p4);

!Step 2

i on FteenYng (p5);

s on FteenYng (p6);

i s on SResNRes SResRes AllRes;

Moteen with FteenYng;

Myadult with FteenYng;

!Step 3

i on Black (p9)

Hispanic (p10)

Other (p11);

s on Black (p14)

Hispanic (p15)

Other (p16);

!Step 4
prenatal on FteenYng (p17);
birth on FteenYng (p18);

!Step 5
prenatal on Black (p21)
 Hispanic (p22)
 Other (p23);
birth on Black (p26)
 Hispanic (p27)
 Other (p28);

!Step 6
m1look on m1mfroma;
m2look on m2mfroma;
m3look on m3mfroma;
mKlook on Kmfroma;

!Step 7
m1look on m1empl;
m2look on m2empl;
m3look on m3empl;
mKlook on mKempl;

!Step 8
prenatal WITH birth;

!Step 9- no lag romantic
m1mfroma WITH m1empl@0 m2empl@0 m3empl@0 mKempl@0
m2mfroma@0 m3mfroma@0 Kmfroma@0 prenatal@0 birth@0 FteenYng@0;
m2mfroma WITH m1empl@0 m2empl@0 m3empl@0 mKempl@0
m3mfroma@0 Kmfroma@0 prenatal@0 birth@0 FteenYng@0;
m3mfroma WITH m1empl@0 m2empl@0 m3empl@0 mKempl@0
Kmfroma@0 prenatal@0 birth@0 FteenYng@0;
Kmfroma WITH m1empl@0 m2empl@0 m3empl@0 mKempl@0 prenatal@0
birth@0 FteenYng@0;

!Step 10 no lag employ
m1empl WITH m2empl@0 m3empl@0 mKempl@0 prenatal@0 birth@0
FteenYng@0;
m2empl WITH m3empl@0 mKempl@0 prenatal@0 birth@0 FteenYng@0;
m3empl WITH mKempl@0 prenatal@0 birth@0 FteenYng@0;
mKempl WITH prenatal@0 birth@0 FteenYng@0;

!Step 11
i on m1mfroma
m2mfroma
m3mfroma
Kmfroma;
s on m1mfroma
m2mfroma
m3mfroma
Kmfroma;

!Step 12
i on m1empl
m2empl
m3empl
mKempl;
s on m1empl
m2empl
m3empl
mKempl;

OUTPUT:
TECH1 TECH2 Tech3 STDYX standardized;

SAVEDATA:
!FILE IS Final_Model_no_mediation_9-15-08.dat; NOT AVAILABLE
!ESTIMATES ARE ESTIMATES_Final_Model_no_mediation_9-15-08.dat; NOT
AVAILABLE
!DIFFTEST IS H1deriv_chisq_Final_Model_no_mediation_9-15-08.dat; NOT
AVAILABLE
SAMPLE IS SAMPLE_IS_thresh01_step1,2,3,4,5,6,7,8,11,12FINAL.dat;
RESULTS ARE RESULTS_IS_thresh01_step1,2,3,4,5,6,7,8,11,12FINAL.dat;
TECH3 IS
COVMATX_PARAMETER_IS_thresh01_step1,2,3,4,5,6,7,8,11,12FINAL.dat;
TECH4 IS COVMATX_LATENT_IS_thresh01_step1,2,3,4,5,6,7,8,11,12FINAL.dat;

References

- Achatz, M., & MacAllum, C. A. (1994). *The Young Unwed Fathers Demonstration Project: A status report*. Philadelphia: Public/Private Venture.
- Ahmeduzzaman, M., & Roopnarine, J.L. (1992). Sociodemographic factors, functioning style, social support, and fathers' involvement with preschoolers in African-American families. *Journal of Marriage and the Family*, 54, 699-707.
- Alan Guttmacher Institute, (1999). *Teenage Pregnancy: Overall Trends and State-by-State Information*. New York: Alan Guttmacher Institute.
- Allen, W.D., & Doherty, W.J. (1996). The responsibilities of fatherhood as perceived by African American teenage fathers. *Families in Society*, 77, 142-155.
- Amato, P. R. (1998). More than money? Men's contributions to their children's lives. In A. Booth & A. C. Crouter (Eds.), *Men in families: When do they get involved? What difference does it make?* (pp. 241-278). Mahwah, NJ: Lawrence Erlbaum Associates.
- Amato, P.R., & Gilbreth, J.G. (1999). Nonresident fathers and children's well-being: meta-analysis. *Journal of Marriage and the Family*, 61, 15-73.
- Anderson, E. (1990). *Streetwise: Race, Class, and Change in an Urban Community*. Chicago, IL: The University of Chicago Press.
- Argys, L., & Peters, H. (1999). Patterns of nonresident-father involvement. In R. Michael (Ed). *Social awakening: adolescent behavior as adulthood approaches*. (pp. 49-78). New York, New York: Russell Sage Foundation.

- Arnett, J.J. (2007). Suffering, selfish, slackers? Myths and reality about emerging adults. *Journal of Youth and Adolescence*, 36, 23-29.
- Aronson, R.E., Whitehead, T.E., & Baber, W.L. (2003). Challenges to masculine transformation among urban low-income African American males. *American Journal of Public Health*, 93, 732-741.
- Becker, G. (1981). *A Treatise on the Family*. New York: Harvard University Press.
- Beitel, A., & Parke, R. (1998). Paternal involvement in infancy: The role of maternal and paternal attitudes. *Journal of Family Psychology*, 12(2), 268-288.
- Bell, R.Q. (1971). Stimulus control of parent or caretaker behavior by offspring. *Developmental Psychology*, 4, 63-72.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, 55, 83-96.
- Belsky, J., & Miller, B. (1986). Adolescent fatherhood in the context of the transition to parenthood. In A.B. Elster & M.E. Lamb (Eds.), *Adolescent fatherhood* (pp. 107-122). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Bollen, K.A., & Curran, P.J. (2006). Latent curve models: A structural equation approach. Hoboken, NJ: Wiley
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U. (2005). (Ed.). *Making human beings hums: Bioecological perspectives on human development*. Thousand Oaks, CA: Sage Publications, Inc.

- Bronte -Tinkew, J., Horowitz, A., Kennedy, E., & Perper, K. (2007). Men's pregnancy intentions and prenatal behaviors: What they mean for fathers' involvement with their children. *Child Trends Research Brief, Publication #2007-18*.
- Brooks-Gunn, J., & Chase-Lansdale, L. (1995). Adolescent parenthood. In M. Bornstein (Ed.), *Handbook of parenting* (vol. 2). Mahwah, NJ: Lawrence Erlbaum Associates.
- Brophy-Herb, H. E., Gibbons, C., Omar, M.A., & Shiffman, R.F. (1999). Low-income fathers and their infants: Interactions during teaching episodes. *Infant Mental Health Journal, 20*, 305-321.
- Brown, S., & Eisenberg, L. (1995). *The best intentions*. Washington, DC: National Academy Press.
- Cabrera, N. (2004). Father involvement: Models and theoretical frameworks. In C. S. Fischer & R. Lerner (Eds.), *Human Ecology: An encyclopedia of children, families, communities, and environments*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Cabrera, N., Brooks-Gunn, J., Moore, K., West, J., Boller, K., & Tamis-LeMonda, C. (2002). Bridging research and policy: Including fathers of young children in national studies. In C. Tamis-LeMonda & N. Cabrera (Eds.), *Handbook of father involvement: Multidisciplinary perspectives* (pp. 489-523). Mahwah, NJ: Lawrence Erlbaum Associates.

- Cabrera, N., Fitzgerald, H., Bradley, R., & Roggman, L. (in press). Modeling the dynamics of paternal influences on children over the life course. *Special issue of the Journal of Applied Developmental Science*.
- Cabrera, N., & Peters, H.E. (1999). Public policies and father involvement. *Marriage and Family Review*, 29, 295-314.
- Cabrera, N., Ryan, R., Shannon, J., Brooks-Gunn, J., Vogel, C., Raikes, H., & Tamis-LeMonda, C. (2004). Low-income biological fathers' involvement in their toddlers lives: The Early Head Start National Research and Evaluation Study. *Fathering: A Journal of Theory, Research, And Practice About Men as Fathers*, 1, 5-30.
- Cabrera, N., Tamis-LeMonda, C., Bradley, R., Hoffereth, S., & Lamb, M. (2000). Fatherhood in the twenty-first century. *Child Development*, 71, 127-136.
- Centers for Disease Control and Prevention. (2004). Youth risk behavior surveillance-United States, 2003. *Morbidity and Mortality Weekly Report*, 53, 1-96.
- Cervera, N. (1991). Unwed teenage pregnancy: Family relationships with the father of the baby. *Families in Society*, 29-37.
- Chambers, A.L., Schmidt, K.M., & Wilson, M.N. (2006). Describing differences among a sample of low-income fathers: A glimpse into their romantic relationships. *Psychology of Men and Masculinity*, 7(3), 144-152.
- Coley, R.L. (1998). Children's socialization experiences and functioning in single-mother households: The importance of fathers and other men. *Child Development*, 69, 219-230.

- Coley, R.L. (2001). (In)visible men: Emerging research on low-income, unmarried, and minority fathers. *American Psychologist*, 56, 743-753.
- Coley, R.L. & Chase-Lansdale, P.L. (1998). Adolescent pregnancy and parenthood: Recent evidence and future directions. *American Psychologist*, 53, 152-166.
- Coley, R., & Chase-Lansdale, P. (1999). Stability and change in paternal involvement among urban African American fathers. *Journal of Family Psychology*, 13, 416-435.
- Coley, R.L., & Morris, J. (2002). Comparing mother and father reports of father involvement in low-income minority families. *Journal of Marriage and Family*, 64, 982-997.
- Collins, W.A., Madsen, S.D., & Susman-Stillman, A. (2002). Parenting during middle childhood. In M.H. Bornstein (Ed.), *Handbook of Parenting, vol.1, Children and Parenting* (pp. 73-102). Mahwah, NJ: Lawrence Erlbaum Associates.
- Cummings, E.M., & Davies, P.T. (2002). Effects of marital conflict on children: Recent advances on and emerging themes on process-oriented research. *Journal of Child Psychology and Psychiatry*, 43, 31-63.
- Curran, P.J., & Willoughby, M.T. (2003). Implications of latent trajectory models for the study of developmental psychopathology. *Development and Psychopathology*, 15, 581-612.
- Cutrona, C.E., Hessling, R.M., Bacon, P.L., & Russell, D.W. (1998). Predictors and correlates of continuing involvement with the baby's father among adolescent mothers. *Journal of Family Psychology*, 12, 369-387.

- Dallas, C.M., & Chen, S.C. (1998). Experiences of African American adolescent fathers. *Western Journal of Nursing Research*, 20, 210-222.
- Dallas, C.M., Wilson, T., & Salgado, V. (2000). Gender differences in teen parents' perceptions of parental responsibilities. *Public Health Nursing*, 17(6), 423-433.
- Danzinger, S.K., & Radin, N. (1990). Absent does not equal uninvolved: Predictors of fathering in teen mother families. *Journal of Marriage and the Family*, 52, 636-642.
- Davey, A., Shanahan, M.J., & Schafer, J.L. (2001). Correcting for selective nonresponse in the National Longitudinal Survey of Youth using multiple imputation. *The Journal of Human Resources*, 36, 500-519.
- Day, R.D., & Lamb, M.E. (2004). *Conceptualizing and Measuring Father Involvement*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Day, R.D., Lewis, C., O'Brien, M., & Lamb, M.E. (2005). Fatherhood and father involvement: Emerging constructs and theoretical orientations. In V.L. Bengston, A.C. Acock, K.R. Allen, P. Dilworth-Anderson, & D.M. Klein (Eds.), *Sourcebook of family theory and research* (pp. 341-351). Thousand Oaks, CA: Sage.
- Doherty, W.J., Kouneski, E.F., & Erickson, M.F. (1998). Responsible fathering: An overview and conceptual framework. *Journal of Marriage and the Family*, 60, 277-292.
- East, P.L., & Felice, M.E. (1996). *Adolescent pregnancy and parenting: Findings from a racially diverse sample*. Mahwah, NJ: Lawrence Erlbaum Associates.

- Eggebeen, D.J. (2002). Social perspectives on fatherhood: What do we know about fathers from social surveys? In C.S. Tamis-LeMonda & N. Cabrera (Eds.), *Handbook of father involvement: Multidisciplinary perspectives* (pp. 189-209). Mahwah, NJ: Lawrence Erlbaum Associates.
- Erkut, S., Szalacha, L.A., & Garcia Coll, C. (2005). A framework for studying minority youths' transitions to fatherhood: The case for Puerto Rico adolescents. *Adolescence*, 40 (160), 709-727.
- Elder, G.H. (1998). The life course and human development. In W. Damon (Ed.), *Handbook of child psychology: Vol. 1*. New York: Wiley.
- Fagan, J. (1996). A preliminary study of low-income African American fathers' play interactions with their preschool-age children. *Journal of Black Psychology*, 22, 7-19.
- Fagan, J. (1998). Correlates of low-income African American and Puerto Rican fathers' involvement with their children. *Journal of Black Psychology*, 24(3), 351-367.
- Fagan, J. (2000). African American and Puerto Rican American parenting styles, paternal involvement, and Head Start children's social competence. *Merrill-Palmer Quarterly*, 46, 592-612.
- Fagan, J., & Barnett, M. (2003). The relationship between maternal gatekeeping, paternal competence, mothers' attitudes about the father role, and father involvement. *Journal of Family Issues*, 24(8), 1020-1043.
- Fagan, J., Barnett, M., Bernd, E., & Whiteman, V. (2003). Prenatal involvement of adolescent unmarried fathers. *Fathering*, 1(3), 283-302.

- Fagan, J., Bernd, E., & Whiteman, V. (2007). Adolescent fathers' parenting stress, social support, and involvement with infants. *Journal of Research on Adolescence, 17*(1), 1-22.
- Fagan, J., & Palkovitz, R. (2007). Unmarried, nonresident fathers' involvement with their infants: A risk and resilience perspective. *Journal of Family Psychology, 21*(3), 479-489.
- Fagan, J., Schmitz, M.F., & Lloyd, J.J. (2007). The relationship between adolescent and young fathers' capital and marital plans of couples expecting a baby. *Family Relations, 56*(3), 231-243.
- Fagan, J., & Stevenson, H. (1995). Men as teachers: A self-help program on parenting for African American men. *Social Work with Groups, 17*(4), 29-42.
- Fagot, B.I., Pears, K.C., Capaldi, D.M., Crosby, L., & Leve, C.S. (1998). Becoming an adolescent father: Precursors and parenting. *Developmental Psychology, 34*, 1209-1219.
- Faldowski, R.A. (2003). *Missing data issues for EHS analyses: Methods and considerations*. Paper presented at the biennial meeting of the Head Start Research Conference, Washington, DC.
- Federal Interagency Forum on Child and Family Statistics. (1998). *Nurturing fatherhood: Improving data and research on male fertility, family formation, and fatherhood*. Washington, D.C.: U.S. Government Printing Office.
- Felice, M.E., Shragg, G.P., James, M., & Hollingsworth, D.R. (1987). Psychosocial aspects of Mexican-American, White, and Black teenage pregnancy. *Journal of Adolescent Health Care, 8*, 330-335.

- Fitzgerald, H., & McKelvey, L. (2005). Low-income adolescent fathers: Risk for parenthood and risky parenting. *Zero to Three*, 25, 35-41.
- Florsheim, P., Moore, D., Zollinger, L., MacDonald, J., & Sumida, E. (1999). The transition to parenthood among adolescent fathers and their partners: Does antisocial behavior predict problems in parenting? *Applied Developmental Science*, 3, 178-191.
- Florsheim, P., & Smith, A. (2005). Expectant couples' relations and subsequent parenting behavior. *Infant mental Health Journal*, 26(6), 533-548.
- Florsheim, P., Sumida, E., McCann, Winstanley, Fukui, Seefeldt, & Moore, D. (2003). The transition to parenthood among young African American and Latino couples: Relational predictors of risk for parental dysfunction. *Journal of family Psychology*, 17, 65-79.
- Furstenberg, F.F., Jr. (1976). *Unplanned parenthood: The social consequences of teenage childbearing*. The Free Press: New York.
- Furstenberg, F.F., Brooks-Gunn, J., & Morgan, S.P. (1987). *Adolescent mothers in later life*. New York: Cambridge University Press.
- Furstenberg, F.F., & Harris, K.M. (1993). When and why fathers matter: Impacts of father involvement on the children of adolescent mothers. In R.I. Lerman & T.J. Ooms (Eds.), *Young unwed father: Changing roles and emerging policies*. (pp. 117-140). Philadelphia: Temple University Press.
- Furstenberg, F.F., & Weiss, C. (2000). Intergenerational transmission of fathering roles in at risk families. *Marriage and Family Review*, 29, 181-201.

- Futris, T.G., & Schoppe-Sullivan, S.J. (2007). Mothers' perceptions of barriers, parenting alliance, and adolescent fathers' engagement with their children. *Family Relations*, 56, 258-269.
- Gavin, L., Black, M., Minor, S., Abel, Y., Papas, M., & Bentley, M. (2002). Young, disadvantaged fathers' involvement with their infants: An ecological perspective. *Journal of Adolescent Health*, 31, 266-276.
- Geary, D.C., & Flynn, M.V. (2001). Evolution of human parental behavior and the human family. *Parenting: Science and Practice*, 1, 5-61.
- Gee, C., & Rhodes, J. (2003). Adolescent mothers' relationship with their children's biological fathers: Social support, social strain, and relationship continuity. *Journal of Family Psychology*, 17, 370-383.
- Gleason, J.B. (1975). Fathers and other strangers: Men's speech to young children. In D.P. Dato (Ed.), *Developmental psycholinguistics: Theory and applications* (pp. 289-297). Washington, D.C.: Georgetown University Press.
- Greene, A., & Moore, K. (2000). Nonresident father involvement and child well-being among children in families on welfare. *Marriage and family review*, 29, 159-181.
- Goldberg, W.A., Clark-Stewart, K. A., Rice, J.A., & Dellis, E. (2002). Emotional energy as an explanatory construct for fathers' engagement with their infants. *Parenting: Science & Practice*, 2(4), 379-409.
- Goodyear, R., Newcomb, M., & Allison, R. (2000). Predictors of Latino men's paternity in teen pregnancy: Test of a mediational model of childhood

- experiences, gender role attitudes, and behaviors. *Journal of Counseling Psychology*, 47, 116-128.
- Grossman, K., & Volkmer, H. (1984). Fathers' presence during birth of their infants and paternal involvement. *International Journal of Behavioral Development*, 7, 157-165.
- Harkness, S., & Super, C.M. (1992). The cultural foundations of fathers' roles: evidence from Kenya and the United States. In B.S. Hewlett (Ed.). *Father-child relations: Cultural and biosocial contexts* (pp. 191-211). New York: Hawthorne Press.
- Hayes, C.D. (1987). *Risking the future: Adolescent pregnancy and childbearing* (vol.1). Washington, D.C.: National Academy Press.
- Hendricks, L.E. (1980). Unwed adolescent fathers: Problems they face and their sources of social support. *Adolescence*, 60, 861-869.
- Hendricks, L.E., & Montgomery, T. (1983). A limited population of unmarried adolescent fathers: A preliminary report of their views of fatherhood and their relationship with the mothers of their children. *Adolescence*, 69, 201-210.
- Hernandez, D. C., & Coley, R., L. (2007). Measuring father involvement within low-income families: Who is a reliable and valid reporter. *Parenting*, 7(1), 69-97.
- Hossain, Z., & Roopnarine, J.L. (1993). Division of household labor and child care in dual-earner African-American families with infants. *Sex Roles*, 29, 571-583.

- Hu, L.T., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.
- Jarrett, R.L., Roy, K.M., & Burton, L.M. (2002). Fathers in the “Hood”: Insight from qualitative research on low-income African American men. In C.S. Tamis-LeMonda & N. Cabrera (Eds.), *Handbook of father involvement: Multidisciplinary perspectives* (pp. 211-248). Mahwah, NJ: Lawrence Erlbaum Associates.
- Johnson, W. (2001). Paternal involvement among unwed fathers. *Children and youth services review*, 23, 513-536.
- Kalil, A., Ziol-Guest, K.M., & Coley, R.L. (2005). Perceptions of father involvement patterns in teenage-mother families: Predictors and links to mothers’ psychological adjustment. *Family Relations*, 54(2), 197-211.
- Kelley, M.L., Smith, T.S., Green, A.P., Berndt, A.E., & Rogers, M.C. (1998). Importance of fathers’ parenting to African-American toddler’s social and cognitive development. *Infant Behavior and Development*, 21, 733-744.
- King, V., Harris, K.M., & Heard, H.E. (2004). Racial and ethnic diversity in nonresident father involvement. *Journal of Marriage and Family*, 66, 1-21.
- Kowaleski-Jones, L., & Wolfinger, N.H. (2006). *Fragile families and the marriage agenda*. New York: Springer.
- Laakso, J. (2004). Key determinants of mothers’ decision to allow visits with non-custodial fathers. *Fathering: A Journal of Theory, Research, and Practice*, 2, 131-145.

- Lamb, M.E. (1977). Father-infant and mother-infant interaction in the first year of life. *Child Development*, 48 (1), 167-181.
- Lamb, M.E. (1981). *The role of the father in child development* (2nd ed). New York: John Wiley & Sons, Inc.
- Lamb, M.E. (1997). *The role of the father in child development* (3rd ed). New York: John Wiley & Sons, Inc.
- Lamb, M.E. (2000). A history of research on father involvement: An overview. *Marriage and Family Review*, 29, 23-42.
- Lamb, M.E. (2004). *The role of the father in child development* (4th ed). New York: John Wiley & Sons, Inc.
- Lamb, M.E., & Elster, A.B. (1985). Adolescent mother-infant-father relationships. *Developmental Psychology*, 21(5), 768-773.
- Lamb, M.E., & Elster, A.B. (1986). Parental behavior of adolescent mothers and fathers. In A.B. Elster & M.E. Lamb (Eds.), *Adolescent fatherhood* (pp. 89-106). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Lamb, M.E., & Lewis, C. (2004). The development and significance of father-child relationships in two-parent families. In M.E. Lamb (Ed.), *The role of the father in child development* (4th ed., pp. 272-306). Hoboken, NJ: Wiley.
- Lamb, M.E., Pleck, J.,H. Charnov, E.L., & Levine, J.A. (1985). Paternal behavior in humans. *American Zoologist*, 25, 883-894.
- Lamb, M.E., Pleck, J.H., Charnov, E.L., & Levine, J.A. (1987). A biosocial perspective on paternal behavior and involvement. In J.B. Lancaster, J.

- Altmann, A.S. Rossi, & L.R. Sherrod (Eds.), *Parenting across the life span: Biosocial dimensions* (pp. 111-142). New York: Aldine de Gruyter.
- Landale, N., & Oropesa, R.S. (2001). Father involvement in the lives of mainland Puerto Rico children: Contributions of nonresident, cohabitating, and married fathers. *Social Forces*, 79, 945-968.
- LaRossa, R. (1988). Fatherhood and social change. *Family Relations*, 37(4), 451-457.
- Leaper, C. (2002). Parenting girls and boys. In M. Bornstein (Ed.), *Handbook of Parenting, Volume 1, Children and Parenting, second edition* (pp. 189-225). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Lerman, R.I. (1993). A national profile of young unwed fathers. In R.I. Lerman & T.J. Ooms (Eds.), *Young unwed fathers: Changing roles and emerging policies* (pp. 27-51). Philadelphia: Temple University Press.
- Lerman, R.I., & Ooms, T.J. (1993) *Young unwed fathers: Changing roles and emerging policies*. Philadelphia: Temple University Press.
- Lerman, R., & Sorenson, E. (2000). Father involvement with their nonmarital children: Patterns, determinants, and effects on their earnings. *Marriage and Family Review*, 29, 137-158.
- Lesser, J., Tello, J., Koniak-Griffin, D., Kappos, B., & Rhys, M. (2001). Young Latino fathers' perceptions of paternal role and risk for HIV/AIDS. *Hispanic Journal of Behavioral Sciences*, 23, 327-343.
- Levine, J.A., & Pitt, E.W. (1997). Community strategies for responsible fatherhood: On-ramps to connection. *Zero to Three*, 18, 36-41.

- Lewis, C., & Lamb, M.E. (2003). Fathers' influences on children's development: The evidence from two-parent families. *European Journal of Psychology of Education, 18*, 212-228.
- Little, R.J.A., & Rubin, D.B. (1987). *Statistical analysis with missing data*. New York: John Wiley & Sons, Inc.
- Little, R.J.A., & Rubin, D.B. (2002). *Statistical analysis with missing data* (2nd ed.). New York: John Wiley & Sons, Inc.
- Lohr, S. L. (1999). *Sampling : Design and Analysis*. Duxbury Press, Belmont.
- Lundberg, S., McLanahan, S., & Rose, E. (2007). Child gender and father involvement in Fragile Families. *Demography, 44*(1), 79-92.
- Lupton, D., & Barclay, L. (1997). *Constructing fatherhood: Discourses and experiences*. Thousand Oaks, CA: Sage.
- MacDonald, K., & Parke, R.D. (1984). Bridging the gap: Parent-child play interaction and peer interactive competence. *Child Development, 55*, 1265-1277.
- MacDonald, K., & Parke, R.D. (1986). Parent-child physical play: The effects of sex and age of children and parents. *Sex Roles, 7-8*, 367-379.
- Manlove, J., Terry-Humen, E., & Ikramullah, E. (2006). Young teenagers and older sexual partners: Correlates and consequences for males and females. *Perspectives on Sexual and Reproductive Health, 38*(4), 197-207.
- Manning, W., Stewart, S., & Smock, P., (2003). The complexity of fathers' parenting responsibilities and involvement with nonresident children. *Journal of family issues, 24*, 645-667.

- Marsiglio, W., Amato, P., Day, R.D., & Lamb, M. (2000). Scholarship on fatherhood in the 1990s and beyond. *Journal of Marriage and the Family*, 62, 1173-1191.
- Marsiglio, W., & Cohan, M. (1997). Young fathers and child development. In M.E. Lamb (Ed.), *The role of the father in child development* (3rd ed) (pp. 227-244). New York: John Wiley & Sons, Inc.
- Marsiglio, W., Roy, K., & Fox, G.L. (2006). *Situated Fathering: A focus on physical and social spaces*. New York: Rowman & Littlefield Publishers, Inc.
- Martin, J.A., Hamilton, B.E., Sutton, P.D., Ventura, S.J., Menacker, F., & Munson, M.L. (2003). Births: Final data for 2003. *National Vital Statistics Reports*, 54(2), 57-58.
- Mathematica Policy Research, (2001). *Building their futures: How Early Head Start programs are enhancing the lives of infants and toddlers in low-income families*: Technical report.
- Mathematica Policy Research, (2002). *Making a difference in the lives of infants and toddlers and their families: The impacts of Early Head Start*: Final technical report.
- Mazza, C. (2002). Young dads: The effects of a parenting program on urban African American adolescent fathers. *Adolescence*, 37, 681-693.
- McAdoo, J.L. (1990). Understanding African American teen fathers. In P.E. Leone (Ed.), *Understanding Troubled and Troubling Youth* (pp. 229-245). Newbury Park, CA: Sage Publications.

- McBride, B.A. & Rane, T.R. (1998). Parenting alliance as a predictor of father involvement: An exploratory study. *Family Relations*, 47, 229-236.
- McCartney, K., Burchinal, M.R., & Bub, K.L. (2006). Best practices in quantitative methods for developmentalists. *Monographs of the Society for the Research in Child Development*, 71(3).
- McKenry, P.C., Price, S.J., Fine, M.A., & Serovich, J. (1992). Predictors of single, non-custodial fathers' physical involvement with their children. *Journal of Genetic Psychology*, 153, 305-320.
- McLanahan, S., Garlinkel, I., Reichman, N. E., & Teitler, J. O. (2001). Unwed parents of fragile families: Implications for welfare and child support policy. In L. L. Wu & B. Wolfe (Eds.), *Out of wedlock: Causes and consequences of nonmarital fertility* (pp. 202-228). New York: Russell Sage Foundation.
- Miller, D. (1994). Influences on the parental involvement of African American adolescent fathers. *Child and Adolescent Social Work II*, (5), 363-378.
- Mincy, R.B., & Oliver, H. (2003). *Age, race, and children's living arrangements: Implications for TANF reauthorization* (Policy Brief B-53). Washington, DC: Urban Institute Publications.
- Moore, D.R., & Florsheim, P. (2001). Interpersonal processes and psychopathology among expectant and nonexpectant adolescent couples. *Journal of Consulting and Clinical Psychology*, 69, 101-113.
- Mortimer, J.T., & Staff, J. (2004). Early work as a source of developmental discontinuity during the transition to adulthood. *Development and Psychopathology*, 16, 1047-1070.

- Mott, F.L. (1993). *Absent fathers and child development: Emotional and cognitive effects at ages five to nine*. Report prepared for the National Institute of Child Health and Human Development.
- Muthén, B.O. (2004). Latent variable analysis: Growth mixture modeling and related techniques for longitudinal data. In D. Kaplan (Ed.), *Handbook of quantitative methodology for the social sciences* (pp. 345-368). Newbury Park, CA: Sage.
- Muthén, L.K., & Muthén, B.O., (2007). *Mplus users guide*. Los Angeles, CA: Muthén and Muthén.
- Nelson, T.J., Clampet-Ludquist, S., & Edin, K. (2002). Sustaining fragile fatherhood: Involvement among low-income, noncustodial African-American fathers in Philadelphia. In C.S. Tamis-LeMonda & N. Cabrera (Eds.), *Handbook of father involvement: Multidisciplinary perspectives* (pp. 525-554). Mahwah, NJ: Lawrence Erlbaum Associates.
- Nesmith, J.D., Klerman, L.V., Oh, M.K., & Feinstein, R.A. (1997). Procreative experiences and orientations toward paternity held by incarcerated adolescent males. *Journal of Adolescent Health*, 20, 198-203.
- Neville, B., & Parke, R.D. (1997). Waiting for paternity: Interpersonal and contextual implications of the timing of fatherhood. *Sex Roles*, 37, 45-60.
- Nicholson, J., Gist, N.F., & Klein, R.P. (1983). Outcomes of father involvement in pregnancy and birth. *Birth: Issues in Perinatal Care & Education*, 10(1), 5-9.
- Palkovitz, R. (1997). Reconstructing 'involvement': Expanding conceptualizations of men's caring in contemporary families. In A.J. Hawkins & D.C. Dollahite

- (Eds.), *Generative fathering: Beyond deficit perspectives* (pp. 200-216). Thousand Oaks, CA: Sage Publications.
- Palkovitz, R. (2002). *Involved fathering and men's adult development: Provisional balances*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Parke, R.D. (2002). Fathers and families. In M.H. Bornstein (Ed.), *Handbook of Parenting, vol.2, Being and Becoming a Parent* (pp. 27-74). Mahwah, NJ: Lawrence Erlbaum Associates.
- Paschal, A.M. (2006). *Voices of African-American teen fathers: "I'm doing what I got to do"*. New York: Haworth Press.
- Pedersen, F.A., & Robson, K.S. (1969). Father participation in infancy. *American Journal of Orthopsychiatry*, 39(3), 466-472.
- Pirog-Good, M.A. (1995). The family background and attitudes of teen fathers. *Youth and Society*, 26, 351-356.
- Pirog-Good, M.A. (1996). The education and labor market outcomes of adolescent fathers. *Youth and Society*, 28, 236-262.
- Pleck, E.H. (2004). Two dimensions of fatherhood: A history of the good dad-bad dad complex. In M.E. Lamb (Ed.), *The role of the father in child development (4th ed.)* (pp. 32-57). New York: John Wiley & Sons.
- Pleck, J.H. (1987). American fathering in historical perspective. In M.S. Kimmel (Ed.), *Changing men: New directions in research on men and masculinity* (pp. 83-97). Thousand Oaks, CA: Sage Publications.

- Pleck, J.H. (1997). Paternal involvement: Levels, sources, and consequences. In M.E. Lamb (Ed.), *The role of the father in child development*. (3rd ed.) (pp. 66-103). New York: Wiley.
- Pleck, E.H., & Pleck, J.H. (1997). Fatherhood ideals in the United States: Historical dimensions. In M.E. Lamb (Ed.), *The role of the father in child development*. (3rd ed.) (pp. 33-48). New York: Wiley.
- Pope Edwards, C., & Liu, W. (2002). Parenting toddlers. In M.H. Bornstein (Ed.), *Handbook of Parenting, vol.1, Children and Parenting* (pp. 45-72). Mahwah, NJ: Lawrence Erlbaum Associates.
- Radin, N. (1994). Primary-caregiving fathers in intact families. In A.E. Gottfried & A.W. Gottfried (Eds.), *Redefining families: Implications for children's development* (pp. 11-54). New York: Plenum Press.
- Rangarajan, A., & Gleason, P. (1998). Young unwed fathers of AFDC children: Do they provide support? *Demography*, 35, 175-186.
- Raudenbush, S.W., & Bryk, A.S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Rhein, L.M., Ginsburg, K.R., Schwarz, D.F., Pinto-Martin, J.A., Zhao, H., Morgan, A.P., & Slap, G.B. (1997). Teen father participation in child rearing: Family perspectives. *Journal of Adolescent Health*, 21, 244-252.
- Roggman, L.A., Fitzgerald, H.E., Bradley, R.H., & Raikes, H. (2002). Methodological, measurement, and design issues in studying fathers: An interdisciplinary perspective. In C. Tamis-LeMonda & N. Cabrera (Eds.),

- Handbook of father involvement: Multidisciplinary perspectives* (pp. 489-523). Mahwah, NJ: Lawrence Erlbaum Associates.
- Roy, K.M. (2006). Father stories: A life course examination of paternal identity among low-income African American men. *Journal of Family Issues*, 27(1), 31-54.
- Sachs, B.A., Poland, M.L., & Giblin, P.T. (1990). Enhancing the adolescent reproductive process: Efforts to implement a program for Black adolescent fathers. *Health Care for Women International*, 11(4), 447-460.
- Sameroff, A. (1994). Developmental systems and family functioning. In R. Parke & Kellam (Eds.), (pp. 199-214)
- Schafer, J.L. (1997). *Analysis of incomplete multivariate data*. London: Chapman and Hall.
- Schafer, J.L., & Graham, J.W. (2002). Missing data: Our view of the state of the art. *Psychological Methods*, 7, 147-177.
- Shannon, J.D., Cabrera, N.J., Tamis-LeMonda, C.S., & Lamb, M.E. (2005). Determinants of father involvement: Presence/absence and quality of engagement. Paper presented at the biennial meeting of the Society for Research in Child Development, Atlanta, GA.
- Shannon, J., Tamis-LeMonda, C., London, K., & Cabrera, N. (2002). Beyond rough and tumble: Low-income fathers' interactions and children's cognitive development at 24 months. *Parenting: Science and Practice*, 2, 77-104.

- Shostak, A. (1993). The role of unwed fathers in the abortion decision. In R. Lerman & T. Ooms (Eds.) *Young unwed fathers: Changing roles and emerging policies*. (pp. 288-296). Philadelphia: Temple University Press.
- Sidel, R. (1996). *Keeping women and children last: America's war on the poor*. New York: Penguin Books.
- Spingarn, R.W., & DuRant, R.H. (1996). Male adolescents involved in pregnancy: Associated health risk and problem behaviors. *Pediatrics*, 98, 262-267.
- Stewart, S.D. (1999). Nonresident mothers' and fathers' social contact with children. *Journal of Marriage & Family*, 61(4), 894-907.
- Stier, H., & Tienda, M. (1993). Are men marginal to the family? Insights from Chicago's inner city. In J.C. Hood (Ed.), *Men, work, and family* (pp. 23-44). Newbury Park, CA: Sage.
- Stouthamer-Loeber, M., & Wei, E.H. (1998). The precursors of young fatherhood and its effect on delinquency of teenage males. *Journal of Adolescent Health*, 22, 56-65.
- Sullivan, M.L. (1993). Young fathers and parenting in two inner-city neighborhoods. In R.I. Lerman & T.J. Ooms (Eds.), *Young unwed fathers: Changing roles and emerging policies* (pp. 52-73). Philadelphia: Temple University Press.
- Super, C.M., & Harkness, S. (2002). Culture structures the environment for development. *Human Development*, 45(4), 270-274.
- Tamis-LeMonda, C.S., & Cabrera, N.J. (2002). *Handbook of father involvement: Multidisciplinary perspectives*. Mahwah, NJ: Lawrence Erlbaum Associates.

- Tamis-LeMonda, C., Shannon, J., Cabrera, N., & Lamb, M. (2004). Fathers and mothers at play with their 2- and 3-year-olds: Contributions to language and cognitive development. *Child Development, 75*, 1806-1820.
- Tarkow, A.K.H., Cabrera, N.J., & Shannon, J.D. (2005). *Adolescent fathers in Early Head Start: Who are they and how are they involved?* Poster session presented at the biennial meeting of the Society for Research in Child Development, Atlanta, GA.
- Thompson, S.D., Osteen, S.R., & Youngker, L.G. (2001). Who fares better? Postnatal adjustment of adolescent fathers and mothers. *Marriage and Family Review, 33*, 31-46.
- Thornberry, T.P., Smith, C.A., & Howard, G.J. (1997). Risk factors for teenage fatherhood. *Journal of Marriage and the Family, 59*, 505-522.
- U.S. Department of Health and Human Services, (2006). "Welfare Reform Reauthorized: Healthy Marriage, Fatherhood Initiative Approved; Work Requirement Strengthened." News Release, February 8. U.S. Department of Health and Human Services, Administration for Children and Families, Washington, DC. <http://www.dhhs.gov/news/press/2006pres/20060208.html>.
- Volling, B.L. & Belsky, J. (1991). Multiple determinants of father involvement during infancy in dual-earner and single-earner families. *Journal of Marriage and the Family, 53*, 461-474.
- Westney, O.E., Cole, O.J., & Munford, T.L. (1988). The effects of prenatal education intervention on unwed prospective adolescent fathers. *Journal of Adolescent Health Care, 9*, 214-218.

- Wical, K.A., & Doherty, W.J. (2005). How reliable are fathers' reports of involvement with their children? A methodological report. *Fathering: A Journal of Theory, Research, and Practice*, 3, 81-91.
- Xie, H., Cairns, B.D., & Cairns, R.B. (2001). Predicting teen motherhood and teen fatherhood: Individual characteristics and peer affiliations. *Social Development*, 10, 488-511.
- Yeung, W.J., Sandberg, S.F., Davis-Kean, P.E., & Hofferth, S.L. (2001). Children's time with fathers in intact families. *Journal of Marriage and Family*, 63, 136-154.
- Yogman, M.W. (1981). Games fathers and mothers play with their infants. *Infant Mental Health Journal*, 2(4), 241-248.