RELATIONSHIP DISSOLUTION IN COMPLEX FAMILY STRUCTURES: THE ROLE OF MULTIPARTNERED FERTILITY

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ABSTRACT

PAJARITA CHARLES: Relationship Dissolution in Complex Family Structures: The Role of Multipartnered Fertility
(Under the direction of Dennis K. Orthner, Ph.D.)

Multipartnered fertility (MPF) is a growing phenomenon in many families and occurs in as many as 74% of couples in certain socio-economic groups (Meyer, Cancian, & Cook, 2005). MPF describes the occurrence of parents having children with more than one partner. As these are often couples that social workers meet in various service environments, understanding their needs is an important consideration for social work practice, policy, and research.

Previous evidence demonstrates that couples with MPF are at an increased risk for unstable relationships (Teachman, 2008a), yet we know little about the timing of relationship dissolution and the differential role that MPF plays in union instability. The primary research question for this study is: "To what extent does multipartnered fertility influence whether and when a couple divorces or separates if they are married, cohabiting, or dating?"

The data (N = 3,022) come from three waves of the Fragile Families and Child Wellbeing Study, a multistage stratified probability sample of hospital births in 20 large U.S. cities. Kaplan-Meier estimates are used to describe the event by illustrating the length of time couples remain in their relationship and to test group differences. Survival

analysis using discrete-time models is used to estimate the effects of MPF and covariates on relationship dissolution.

The survivor function suggests a decreasing rate of remaining in the relationship over the study period, especially in father-only and father/mother MPF cases. Furthermore, the hazard function indicates a fast rate of dissolution in the early period following birth, especially among these two groups. The discrete-time models show that father-only and father/mother MPF cases are significantly more likely to end their relationship than couples without MPF, after other factors are accounted for. Moreover, unmarried couples, previously incarcerated fathers, younger mothers, and unsupported mothers are more likely to separate.

Multipartnered fertility among both mothers and fathers may play a critical role in the outcome of couple relationships. The findings from this study suggest that programs and policies to strengthen unmarried couples need to take MPF into consideration, and should carefully consider the timing of interventions to ensure that they are provided at the appropriate time.

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CHAPTER 1

INTRODUCTION

Among the most concerning of recent changes to the traditional two-parent nuclear family model is relationship instability. Couple instability has garnered attention because of its negative effects on children, especially among low-income families. Despite what is known about the consequences and causes of relationship instability among *married* couples, less is known about the mechanisms behind union dissolution among *unmarried* couples, who are likely to differ in important ways from couples who marry.

Although most parents are romantically involved at the time of their child's birth, unmarried couples tend to end their relationships quickly (Bumpass & Lu, 2000). Over half (54%) of cohabiting couples, for example, end their relationship either through separation or marriage within one year (Binstock & Thornton, 2003). The risk of relationship dissolution is particularly high during the early stages of parenting, when couples face stressors that are often difficult to manage (Center for Research on Child Wellbeing, 2003; C. P. Cowan & Cowan, 2000; Twenge, Campbell, & Foster, 2003), leaving children more likely to grow up without both parents.

The proportion of children who live with a lone parent is more than double that of 35 years ago, and nearly half of all U.S. children will spend some part of their life in a single-parent household (Andersson, 2002; Bumpass & Lu, 2000). This disturbing

consequence of the rapid changes in family structure has become significant to policy makers and researchers because single parenting has been found to be associated with detrimental effects on children on a range of economic, educational, behavioral, and psychological outcomes (Amato & Booth, 1997; McLanahan, 1997; McLanahan & Sandefur, 1994; Thomas & Sawhill, 2005).

Single parenting, however, does not account for all family arrangements outside the two-biological-married-parent structure. Multipartnered fertility is a growing phenomenon that describes the occurrence of parents having children with more than one partner. It occurs in as few as 8% of couple relationships and in as many as 74% in certain socio-economic/racial-ethnic groups (Guzzo & Furstenberg, 2007a; Meyer et al., 2005). Previous research on stepfamilies has shown that couples with children from previous partners are at an increased risk for unstable relationships (Teachman, 2008a). Furthermore, evidence suggests that fathers with children in multiple families can be a source of stress for many couples and a risk factor for relationship dissolution (Lichter et al., 2006). Despite this evidence, we know little about the timing of union dissolution and the differential effects of multipartnered fertility when it occurs with one or both parents compared to neither parent.

Although the effects of couple dissolution are well documented, evidence-based practice and treatment methods to address it have not been well developed. Despite this apparent lag in research, social policy initiatives to stem relationship instability abound. The Temporary Assistance for Needy Families Reauthorization Bill, passed in February 2006 as part of the Deficit Reduction Act of 2005, appropriated up to $750 million to support healthy marriage and responsible fatherhood programs. In 2006, there were over

250 Healthy Marriage grants awarded to service providers in states across the country working to strengthen and sustain marriages and relationships (Administration for Children and Families, 2006)[1]. Many of these programs operate in settings serviced by social workers. Since social workers often work with at-risk couples with multipartnered fertility in these and a variety of other social service environments, understanding their needs is an important consideration for social work practice, policy, and research.

Several social and economic explanations exist for the recent demographic changes observed in the traditional two-parent family model. Some posit that the weakening link or "decoupling" of marriage and parenthood, as well as a shift in norms and an increased acceptance of alternatives in family structure, play a part (Cherlin, Cross-Barnet, Burton, & Garrett-Peters, 2008; Edin & Kefalas, 2005). Changes in gender role expectations of men and women, as well as women's desire to increase their self-efficacy through childbearing (Edin & Kefalas, 2005) are other possible reasons for the shifts in family patterns. Economic explanations focusing on the expansion of economic opportunities for women (Becker, 1991), incentive effects due to welfare (Bitler, Gelbach, Hoynes, & Zavodny, 2004), and the decrease in men's earning potential (Oppenheimer, 1994), also exist . Despite the numerous hypotheses about changes to family formation patterns, no single theory explains a satisfactory portion of the problem. In fact, finding an accurate explanation has proven to be one of the most difficult and frustrating problems for social scientists in years (Ellwood & Jencks, 2001). To help address this challenge, this paper seeks to improve our understanding of the relationship between multipartnered fertility and union instability among a sample of parents who recently had a child together.

[1] This is likely an undercount of grantees because it does not include later contracts that were awarded.

CHAPTER 2

INSTABILITY IN NONMARITAL UNIONS

Nonmarital Unions & Childbearing

Nonmarital childbearing has grown dramatically during the last 50 years, increasing from 5% in 1960 to almost 40% in 2007 (Martin et al., 2007; Ventura, 2009). The number of infants born to unmarried women rose to 1.7 million in 2007, the highest number ever recorded for which comparable statistical data are available. Proportions of births to unmarried women vary widely by race and ethnicity. For instance, 70% of all births to non-Hispanic black women were to mothers who were unmarried in 2005, compared to 48% and 25% for Hispanic and white women respectively (Martin et al., 2007).

Contrary to popular belief, many unmarried women who bear children do so with a partner who is actively engaged with the mother during and, at least for some time, after pregnancy. While the findings are somewhat mixed, cohabitation arrangements appear to account for a large portion of what are conventionally thought of as non-marital, single-mother births. According to Bumpass & Lu (2000), completely unattached mothers (i.e., women in no type of sustained partner relationship at all) are actually quite rare, with evidence suggesting that the rise in childbirth among unmarried mothers is for the most part due to a rise in births to cohabiting, two-parent couples.

Approximately 4.6 million couples in the U.S. are in a cohabiting relationship, a stark contrast to the .4 million households with cohabiting couples in 1960 (Seltzer, 2004). With half of couples cohabiting before marriage, this co-residential romantic relationship has become the normative experience for many Americans (Cherlin, 2005). "It has in fact become so prevalent that the majority of marriages and remarriages now begin as cohabiting relationships, and most younger men and women cohabitate at some point in their lives" (Smock, 2000, p. 1). The dramatic increase in cohabitation over the last several decades has garnered significant attention because of numerous social implications associated with it. Cohabitation has been associated with an increase in marital unhappiness and a weakening of people's commitment to the norm of marriage (Amato, Johnson, Booth, & Stacey, 2003; Axinn & Thornton, 1992). It has also been linked to unstable relationships (Bumpass & Lu, 2000) and poor child outcomes (Bulanda & Manning, 2008; Teachman, 2008b).

Union Instability

Despite the increase in rates of cohabitation, stability within such unions is becoming less common (Lichter et al., 2006; Manning, Smock, & Majumdar, 2004). Cohabiting couples are more likely to end their relationships compared to married couples and are more likely to divorce once they have gotten married; the exception to this is when women cohabit exclusively with their husbands (Teachman, 2003). The proportion of cohabiting couples that separated between 1980 and 1994, regardless of eventual marriage to each other, increased from 45% to 54% (Bumpass & Lu, 2000). Cohabiting relationships tend to be short-lived, with about half such relationships lasting one year or less. Within five years, about 40% of cohabiting couples separate and another

50% end the cohabitation through marriage (Binstock & Thornton, 2003; Bumpass & Lu, 2000; Smock, 2000). As cohabitation becomes more socially acceptable and more people enter into cohabiting relationships for convenience, it is expected that commitment levels within relationships will drop leading to even higher rates of dissolution (Bumpass & Lu, 2000).

Differences in relationship outcomes among cohabiting couples who are poor compared to their nonpoor counterparts suggest these two groups may face different relationship stability risks. While transitions out of cohabitation are prevalent for both groups, in a study by Lichter and colleagues (2006) over half (52%) of the relationships ended in dissolution for disadvantaged women compared to 42% for nonpoor women. Among those who were poor, only one-third ended in marriage compared to 51% for the nonpoor group.

Despite the instability of most nonmarital unions, the majority of couples in cohabiting and dating relationships report very favorable attitudes toward marriage and most cohabiters expect to marry eventually. Approximately three-quarters of cohabiting women, for example, report that they intend to marry their partner in the future (Manning & Smock, 2002; McLanahan, 2009). This supports the view that unmarried couples, specifically those cohabiting, see themselves as taking steps toward marriage, not as seeking an alternative to it (Guzzo, 2009; Oppenheimer, 2003).

Implications of Union Instability

Economic Consequences

Relationships that involve children and that eventually dissolve are a concern to policymakers and researchers because of the risk for lower economic well-being among

single parents and children in these family types. Thomas and Sawhill (2005) compared median income across family types after adjusting for tax credits and liabilities, food stamp benefits, child care costs, and family size and found that married-parent families are generally better off financially than either single-parent or cohabiting families by as much as 45% and 35%, respectively. Single-parent families, especially single-*mother* families, have the highest poverty rate (34%) of all other family configurations, including married (7.6%), and cohabiting (21.5%) families (Thomas & Sawhill, 2005). Despite these inequalities, previous research has found that low-income single mothers have some economic advantages that resemble those of married, two-parent families. For instance, Orthner et al. (2004) found that single parents' ability to save and to pay bills on time approached that of married, dual parents primarily because of advantages from government assistance programs.

Research on income variation among unmarried mothers shows noteworthy differences between cohabiting, romantically involved, and completely unattached mothers (i.e., mothers who are not cohabiting or romantically involved with the father of their baby). Jackson, Tienda, and Huang (2001) found that single mothers in no partnership at all face the most precarious economic circumstances among all relationship types. Married mothers reported $55,000 in household earnings compared to approximately $24,000 for cohabiting women and $20,000 for unattached mothers. Furthermore, only 40% of unattached mothers claimed that they received cash assistance from the father of their baby compared to 95% of cohabiting mothers and 83% of romantically involved mothers.

Couple stability also appears to affect wealth and asset accumulation. Cohabiting individuals, and especially those in short-term relationships, are generally at a disadvantage when it comes to long-term wealth accumulation and rarely generate levels of wealth similar to those of married couples (Wilmoth & Koso, 2002). For example, married individuals in a study of savings performances among low-income participants in an Individual Development Account savings program had higher levels of home ownership and car ownership than unmarried participants by as much as 20% (Grinstein-Weiss, Zhan, & Sherraden, 2006).

Although the economic impact of union instability on women is generally well understood, the effects of leaving a relationship for men are somewhat less clear and seem to depend on whether the transition is out of a cohabiting relationship or a marriage. For instance, Avellar and Smock (2005) found that following divorce, married men typically experience increases in their personal earnings and decreases in their poverty levels. This is contrary to the experience of cohabiting men whose poverty levels tend to increase, a finding potentially attributable to cohabiting men's likelihood to have fewer skills and less education than those who marry.

Research on the economic effects of relationship stability and family formation is hampered by the question of whether the differences in income among family types are driven by family structure per se or by selection (Parke, 2003). It is possible, for example, that couples with the most resources choose marriage while those with fewer resources opt for cohabitation, and those with the least resources end up as single parents. Researchers have, however, attempted to control for these possible selection biases (using fixed and random effects models, for example) and have found that couple arrangements

and marriage are still associated with economic benefits for mothers and children (Lerman, 2002; Thomas & Sawhill, 2005).

Child Well-Being

Instability in unmarried couple relationships has negative implications beyond those of economic effects. The consequences for children are of primary concern early and later in life because of evidence that points to a strong link between family structure and behavioral, educational, psychological, employment, and physical health outcomes (McLanahan, 1997). Children raised by two biological married parents tend to fare better than children from other family structures, particularly single-parent families (McLanahan & Sandefur, 1994). Children raised in single-parent families are more likely to be at high risk for lower socioeconomic achievement, poor educational performance, poorer psychological well-being, and lower social integration (Amato & Booth, 1997; Pagani, Boulerice, & Tremblay, 1997; Teachman, 2008b; Wen, 2008). They are also at risk for lower rates of high school and college completion, teenage childbearing, idleness in young adulthood (McLanahan & Sandefur, 1994) and higher rates of poverty and lower earnings later in life (Corcoran & Adams, 1997) .

Previous research has found that once important family characteristics such as income, race, and socioeconomic status are taken into account, children from families with only one parent are more likely to experience problems both during childhood and in adulthood (Duncan & Brooks-Gunn, 1997). More recent research, however, suggests that the negative effects of parental living arrangements and father absence have been exaggerated in public discourse and are largely attenuated once income and education are taken into account (DeBell, 2008; Foster & Kalil, 2007). This suggests that the

determinants of child outcomes stem from multiple factors, not only family living arrangements. Further, it may indicate that family structure plays less of a role as a main effect and is more of a proxy for other processes that affect child outcomes (e.g., fatherhood involvement) (Foster & Kalil, 2007).

Although children in cohabiting and married families generally appear different on several socio-emotional and educational outcomes, the evidence remains inconsistent. For example, Dunifon & Kowaleski-Jones (2002) found that while white children with cohabiting parents had lower math scores in school, black children with cohabiting parents had higher test scores. Another study showed no effects on behavior but significant negative effects on math and reading scores for children who remained in a cohabiting family compared to those whose mothers eventually married (Acs, 2005). In the same study, children in families who transitioned from cohabitation to marriage, however, had higher math and reading scores even before their mothers married, suggesting that a high quality union may explain more of the benefits of having married parents than marriage itself. Similar findings were made with the Fragile Families Study showing that children from cohabiting families demonstrate more problem behaviors (e.g., depression, anxiety, withdrawal, and aggressiveness) than children from married families, although the differences were found to be largely attributable to background characteristics of the parents who chose marriage (Center for Research on Child Wellbeing, 2005b).

Policy Context

Heated debate over the implementation of welfare reform legislation has centered on the complex issue of *whether*, and if so *how*, the government should assist

disadvantaged couples in sustaining their relationships and potentially getting married, given the range of negative outcomes associated with nonmarital unions and childbearing. On one side are marriage supporters who argue that marriage would dramatically decrease the child poverty rate (Rector, Johnson, Fagan, & Noyes, 2003). On the other side are critics of marriage promotion who maintain that women and children who are victims of domestic violence will be unnecessarily pressured into staying in violent relationships under the guise of "healthy marriage" goals (Catlett & Artis, 2004). Others fall somewhere in the middle and contend that while some couples are likely to benefit from government-sponsored pro-marriage programs, many of them will need additional support to form stable families, including mental health services, employment services, and assistance after reentry from incarceration (McLanahan, 2009).

As reported above, the evidence on children's outcomes from unmarried versus married parents remains mixed. Regardless of the true effects of marriage on poverty and child well-being, it is known that most unmarried couples aspire to marry and believe that marriage is good for themselves and for their children. Despite their high hopes of marrying, some groups face significant barriers to doing so and are at significant risk of being alone or in serial relationships. Many factors have been identified with union instability and yet programs and policies to help couples stabilize and strengthen their relationship still remain in their infancy, particularly those that serve low-income, minority populations (Reardon-Anderson, Stagner, Macomber, & Murray, 2005). Additional evidence is needed to guide policymakers and program planners as to how best to support couples at risk of dissolution. This study serves to inform this knowledge

gap through examination of the role that multipartnered fertility, along with other factors, plays in the stability of low-income couple relationships.

Multipartnered Fertility

Multipartnered fertility (MPF) refers to adults having children with more than one partner, either outside the current relationship or in a former relationship (M. Carlson & Furstenberg, 2006). Despite this growing phenomenon, information on the prevalence of multipartnered fertility is limited because of the difficulty in capturing complex family relationships, especially among poor parents who typically experience frequent transitions. Accurate fertility histories of men are almost non-existent, and thus much of what is known comes from mother reports like those in the Fragile Families Study. While the Fragile Families Study is useful, it is nonetheless limited to the population of nonmarital births in large U.S. cities. Some other sources of information exist, however, that are useful in creating a general picture of multipartnered fertility in the U.S.

A Wisconsin study of welfare recipients in the late 1990s found that among the mothers and fathers interviewed, three-fourths had a child with a previous partner (Meyer et al., 2005). Data from the 2002 National Survey of Family Growth provide a useful snapshot of multipartnered fertility among a nationally representative sample of men aged 15-44. Guzzo and Furstenberg (2007a) found that nearly 8% of all American men reported having had children with more than one partner. Despite this rather low percentage, a different story was revealed when the researchers examined only fathers. In this case, 17% of the men reported having had a child with at least one other mother. Using the National Longitudinal Study of Adolescent Health (Add Health), Guzzo and Furstenberg (2007b) found that among women aged 19-25 with a nonmarital first birth,

14% subsequently went on to have a second child with a new partner. Moreover, 41% of women with two or more children reported having had their children with multiple partners.

Research shows that multipartnered fertility is problematic because of how it affects family formation decisions and stability. For example, multipartnered fertility acts as a risk factor for separation among married couples and is a disincentive to sustain a relationship among unmarried couples, particularly when they are economically disadvantaged (Lichter et al., 2006). Moreover, when a father has a child from a prior relationship, it acts as a risk factor for dissolution among both married and cohabiting couples (Osborne, Manning, & Smock, 2004). Additional evidence suggests that unmarried parents are less likely to progress into a cohabiting or marital relationship after having had a baby when the father or mother has a child from a previous relationship (M. Carlson, McLanahan, & England, 2004; Harknett & McLanahan, 2004; Upchurch, Lilliard, & Panis, 2001).

The negative effects of multiple partnerships on union formation appear to differ by gender. For women, it may be explained by a hesitation to move the relationship to a more committed level when the partner is paying child support to another woman or is potentially inclined to sustain old romantic ties (Edin & Kefalas, 2005). Multipartnered fertility may be equally unattractive for a man because the choice to marry or to move in with a woman who already has a child often means bearing the economic cost of another man's child (Koo, Suchindran, & Griffith, 1984; Lichter & Graefe, 2001).

Multipartnered fertility has implications for mothers, fathers, and children beyond those related to family structure. For example, Harknett and Knab (2007) found that

multipartnered fertility among both mothers and fathers was associated with the perception of reduced support from social networks in the form of housing, financial, and childcare assistance. Other research shows that fathers' multipartnered fertility is associated with deleterious effects on both his prior and new family because of ineffective parenting and an inability to cooperate with either partner, i.e., the former mother and the new mother (M. Carlson & Furstenberg, 2007).

Despite the good intentions of lone fathers and mothers to find a stable partner and stepparent for their child, the complex family configurations that result from multipartnered fertility often further reduce the chances of forming an enduring relationship and family system. This has significant effects on family formation processes, and makes it particularly unlikely for children born to unmarried disadvantaged parents to rise out of poverty (McLanahan, 2009).

Correlates of Relationship Instability

Prior research has shown that multipartnered fertility is one of numerous factors affecting relationship outcomes among unmarried couples. Other factors include demographic, socioeconomic, and relationship characteristics.

Previous research has consistently shown that family-of-origin factors, including family structure, play an important role in predicting future family formation outcomes (Amato & Cheadle, 2005; Teachman, 2002). Parental arrangements have been shown to act as a template for offspring (Sassler, Cunningham, & Lichter, 2009) and evidence suggests that growing up without both biological parents can lead to a lower chance of getting married and developing high quality relationships later in life (South, 2001).

Other studies have noted the importance of race and ethnicity on the stability of relationships. Racial and ethnic variation among cohabiting couples who eventually separate suggests that blacks are more likely to dissolve their unions than are Hispanics and whites (Manning et al., 2004; Osborne et al., 2004). Black couples are also more likely to divorce than white couples during the first 14 years of marriage (Orbuch, Veroff, Hassan, & Horrocks, 2002) and are less likely to marry than whites at all socioeconomic levels (Lichter, Kephart, McLaughlin, & Landry, 1992). Asian and Latina women have lower odds of dissolving their relationships than white women (Lewin, 2005).

These findings are qualified, however, by a closer look at the details of couple relationships. Brown (2000) found that black couples were less likely to formalize their relationships through marriage than were whites, but were also more likely to maintain a cohabiting, stable relationship than white couples who transitioned into marriage more quickly. This may be an indication that cohabitation and other nonmarital relationship ties (e.g., serious dating), serve as an alternative to marriage for black couples more often than for whites who view it as a temporary relationship state (Manning & Landale, 1996).

Age acts as a protective factor against relationship and marital dissolution (Lewin, 2005; Lichter et al., 2006; Osborne et al., 2004; Upchurch et al., 2001). The older one is at the start of a cohabiting union for example, the less the risk of separation (Wu & Balakrishnan, 1995). Couples who marry early, for example, have less time to search for their best match and subsequently obtain less information about their partner. In turn, this increases the risk of future union dissolution (Becker, 1991; Teachman, Tedrow, & Hall, 2006).

Although religious involvement has been found to act as a protective mechanism against marital disruption and to increase the odds of marriage compared to staying single or cohabiting (Lehrer & Chiswick, 1993; Stewart, Manning, & Smock, 2003), more recent research on the role of religion in understanding union dissolution in unmarried relationships appears mixed. For example, several studies on union stability show that mothers' regular attendance at church or having a specific religious affiliation had no effect on rates of separation in cohabiting and dating relationships (Manning et al., 2004; Osborne, 2005; Wu & Balakrishnan, 1995). Osborne and colleagues (2004) found the opposite effect, with weekly attendance at religious services decreasing the odds of separation for cohabiting couples.

These contradictory findings may in part be explained by the lack of detailed information in data sets on the religiosity of both parents and on details of specific religious affiliation that can bear on family formation decisions (Lehrer, 2004). Information about the religious attendance of fathers is particularly important given recent findings that joint attendance and fathers' attendance alone (unlike mothers' attendance alone) are predictive of higher relationship quality in unmarried and married couples (Wilcox & Wolfinger, 2006). The findings may also be related more generally to the differences observed in the role that religion plays in marital versus nonmarital relationships. It is possible, for instance, that religion plays a smaller role in union outcomes among unmarried couples because men and women who select into cohabiting and dating relationships are less religious to start with and hold less traditional views about marriage and family (Thornton, Axinn, & Hill, 1992).

A history of incarceration has also been shown to be associated with unstable romantic relationships. Ex-offenders may be undesirable as marriage partners for various social and economic reasons and are less likely to be engaged in normative spousal and parenting roles (Lopoo & Western, 2005). Evidence suggests that a history of incarceration is strongly linked to being in a non-marital (and often unstable) co-residential relationship either with or without children (London & Parker, 2009).

Socioeconomic Factors

Men's earnings play an important role in predicting relationship stability. Low earnings ($10,000-$24,999) for example, are negatively related to maintaining a dating relationship (relative to breaking up) and higher earnings ($25,000 and up) are positively associated with marriage (M. Carlson et al., 2004). Research on the effects of income and employment stability on relationship outcomes demonstrates similar findings: the odds of union dissolution are higher in cases when the man has low earnings and high unemployment (Lewin, 2005).

This economic effect among men is supported by qualitative research that suggests women have little patience for men who are economically ill-equipped to support their family (Charles et al., 2006; Edin & Kefalas, 2005; Gibson, Edin, & McLanahan, 2003). This is particularly the case among black couples who highly value the traditional role of the male's breadwinner ability (Cutrona et al., 2003). The negative effect of low earnings does not appear, however, to operate the same among Hispanic couples. Mexican-American marriages are more similar in rates to whites and exceed those of blacks despite the relatively low levels of education and earnings that many Mexican-Americans experience (Rosenfeld, 2002).

Not all evidence, however, suggests that men's income has the only effect on union stability. Research by Osborne (2005) suggests that women's earnings actually play a more important role than men's earnings in predicting marriage and separation among unmarried couples. Specifically, she finds that women in a dating relationship who are higher earners have ten times the odds of marrying compared to women with no earnings. Even some earnings (less than $10,000) compared to zero earnings decrease the odds of union dissolution for both cohabiting and dating mothers by half. In Osborne's study, no association was found between men's earnings and separation or transition to marriage.

Education for both men and women also plays an important role in relationship stability. College education among women is associated with marriage among cohabiters but has been found to have no effect among dating couples (Osborne, 2005). Additional evidence suggests that college education for fathers significantly reduces the odds of union dissolution in married and cohabiting couples and that having the same education as the father acts as a protective effect against dissolution among mothers (Osborne et al., 2004). Despite the protective mechanism that educational homogamy plays in reducing union disruption, there has been a decreasing trend in marriage among couples with less education, a phenomenon indicative of a growing social divide between those with more and less education (Qian & Preston, 1993; Schwartz & Mare, 2005).

Homeownership, a measure of wealth, is another factor potentially associated with family structure and relationship stability. Prior studies have found that homeownership and assets were related to lower levels of risk for divorce in married couples (Bracher, Santow, Morgan, & Trussell, 1993; Dew, 2008). Because of the scant

research on this topic that includes unmarried couples, the way in which homeownership operates in unmarried samples is unknown. However, the assumption in the current study is that the processes that seem to exist for married couples might hold true for unmarried couples as well.

Relationship Characteristics

Prior research has found that the quality of a couple's relationship is linked to union outcomes: as anticipated, better relationship quality and lower conflict is associated with higher odds of marriage and lower odds of separation (Osborne, 2005). The odds of separation among cohabiting couples, for example, are higher when there is unhappiness in the relationship, disagreement, infrequent partner interaction, and poor conflict resolution skills (Brown, 2000). Analysis of data from the Fragile Families Study indicates that gender distrust and supportiveness are both significant predictors of transitions into cohabitation or marriage one year after a couple has a baby (M. Carlson et al., 2004). Qualitative research using a subset of respondents from the Fragile Families Study has been especially helpful in understanding issues related to trust. Hill (2007) found that distrust and sexual jealousy from incidents of infidelity were not only quite common but often signaled an imminent end to the relationship.

A father's physical violence toward the mother, frequent conflict, and paternal substance abuse have been found to be associated with a higher risk of separation (DeMaris, 2000). Leaving an abusive relationship because of domestic violence is a fairly consistent finding among samples of married and cohabiting women (Amato & Hohmann-Marriott, 2007; Zlotnick, Johnson, & Kohn, 2006). Not all aggression results in poor relationship outcomes, however. For example, DeMaris (2000) found no

significant impact on dissolution from verbal conflict or when the violence was perpetrated by the woman.

The length of time a couple knows each other prior to pregnancy is also predicted to influence the outcome of the relationship. Prior research has found that relationships of short duration are associated with unplanned pregnancies (Bouchard, 2005). Historically, unmarried couples who got pregnant would rush to marry to avoid the shame associated with having pre-marital sex (England & Edin, 2007). The frequency with which this happens today, however, is quite low and it is anticipated that short relationships, in combination with pregnancy (especially unplanned pregnancies), are more likely to be vulnerable to dissolution.

Finally, attitudes about marriage could play a role in the relationship outcomes of romantic couples since marriage is a social institution commonly associated with higher levels of relationship commitment (Riggio & Weiser, 2008). If a man or woman expresses strong feelings about the importance of marriage and the role it plays in children's lives, he or she might be less inclined to separate from her partner (even her unmarried partner) in hopes of reaping some of these rewards.

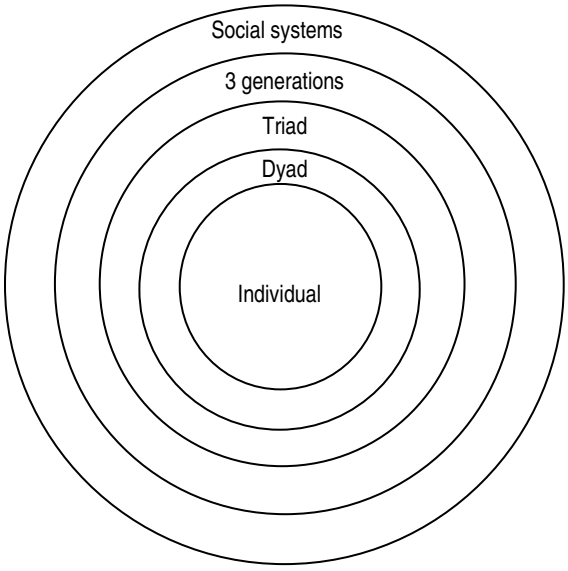
Theoretical Framework: Transition to Parenthood

Previous research has consistently demonstrated that the transition to parenthood for first-time parents is associated with negative effects on a couple's marital satisfaction (C. P. Cowan & Cowan, 2000; Hawkins, Fawcett, Carroll, & Gilliland, 2006; Twenge et al., 2003). The mechanisms underlying this process are not fully understood however, thus Cowan and Cowan (1988) argued for better comprehension of the development of relationship change that occurs when a baby is added to the family system. To address

this problem, they developed the five-domain structural model of marital and family adaptation to improve the understanding of the process of change that occurs in a couple's relationship after the birth of their baby.

The basis of Cowan and Cowan's model stems in part from Bronfenbrenner's ecological approach (1979), which suggests the need for a multilevel system of analysis in order to account for the full context in which individuals function and change. As seen in Figure 1, the five domains in the model include elements from different levels of family organization -- the individual, dyad, triad, three generations, and surrounding social systems.

Figure 1: Five-domain structural model of marital and family adaptation

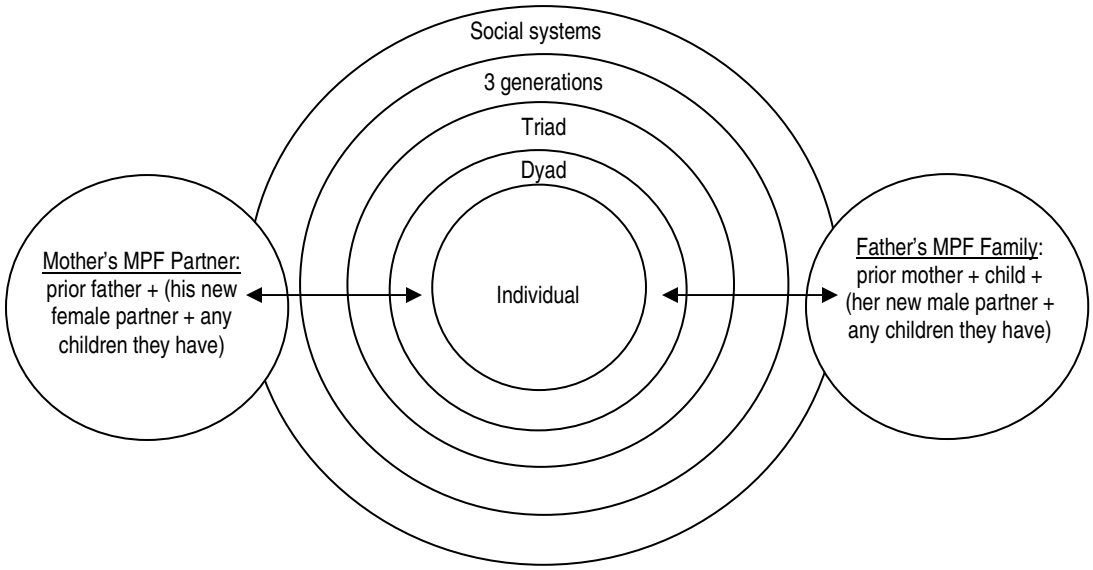


The focus is on the connection between the elements in each level. The elements include (a) the characteristics of each individual in the family, with emphasis on self-concept and self-esteem (individual), (b) the quality of the husband-wife or partner relationship, with special emphasis on their division of labor and patterns of

communication (dyad), (c) the relationship between each parent and the child (triad), (d) the connection between patterns in the new family system and the two families of origin (three generations), and (e) the balance between parents' external sources of stress and support, with special emphasis on social networks and jobs or careers (social system). The model is particularly useful because of its inclusion of different elements within the family system and the attention given to the interaction across these domains. "Our model suggests that what happens in each of the domains combines to influence satisfaction or dissatisfaction and adaptation or distress for the individuals, the marriage, or the family as a whole" (C. P. Cowan & Cowan, 2000, p. 123). The dynamic processes that occur between and within the internal and external elements of the model can help explain some aspects of the mechanism driving the effects of multipartnered fertility.

As depicted in Figure 2, if the model is modified to include "affiliate" individuals and families, i.e., partners and children from prior relationships (plus new partners and children that ex-partners currently have), in the outermost domain (social systems), then multipartnered fertility becomes a key element in the system of the focal family. Take for example, the case of a family in which the father has a child from a previous relationship and has limited education and employment skills. Poor job prospects and depressed wages will likely limit his ability to generate adequate income to support his current family and to pay child support to his previous family. The combined negative impact of the social system (work opportunities and multipartnered fertility) on both families, and in particular on the partner relationship, suggests that re-partnering puts some couples at a significant disadvantage for long-term stability.

Figure 2: Modified five-domain structural model of couple and family adaptation



Despite the fact that the model was originally intended for married couples with first-time births, it serves as a useful framework for conceptualizing how multipartnered fertility influences relationship stability in other couples as well, including unmarried low-income minority couples with previous children. An application of the model in this way has in fact been put to use in a recent intervention study testing the effectiveness of a couple-strengthening program for low-income couples (C. P. Cowan, Cowan, Pruett, & Pruett, 2007). Preliminary results indicate significant positive outcomes for participants compared to control group couples.

Under the condition of a modified framework, it becomes clearer how the relationship of the focal couple is subjected to significant stress when there are pre-existing parental, romantic, and various obligatory ties to other families and individuals. This is especially relevant when the couple has just had a baby and the father has

multipartnered fertility. Under these circumstances, the couple is likely to face significant challenges given the resource demands (e.g., time, money, emotion, physical presence) that exist across households. This can impart stress to all the children and partners involved, leaving the focal couple with the newborn baby at higher risk for union dissolution. The overall research question and hypotheses for this study were generated with this framework in mind, as well as an understanding of the correlates of relationship dissolution.

CHAPTER 3

RESEARCH METHODS

Research Aims and Hypotheses

The purpose of this study is to explore the timing of relationship dissolution and the factors associated with its occurrence among couples who just had a baby together. The primary research question is: "To what extent does multipartnered fertility influence whether and when a couple divorces or separates when they are married, cohabiting, or dating?" Several stages of analysis address the research question. First, the extent to which couples end their relationship in the period following the birth of their baby by initial relationship status is examined. Second, the pattern of leaving the relationship over time and tests of group differences according to multipartnered fertility history are explored. Third, survival analysis is employed to evaluate the association between union break up and multipartnered fertility by the father, mother, or both parents compared to neither one of them. Lastly, predicted probabilities are used to examine the pattern of relationship stability according to multipartnered fertility history and current relationship status with model-predicted survivor curves.

Within the framework of the primary research question, there are five hypotheses that will be tested in this study:

1. Couples with multipartnered fertility have a faster rate of separation than couples without multipartnered fertility.

2. Cohabiting and dating couples have a faster rate of separation than married couples.
3. Couples with multipartnered fertility from the father face greater risk for dissolution relative to couples with multipartnered fertility from the mother.
4. Economically disadvantaged couples are at a higher risk for relationship dissolution than couples who are more economically stable.
5. Couples with higher levels of relationship supportiveness and lower levels of violence and conflict face a reduced risk for dissolution relative to couples with poor relationship quality.

Hypothesis 1 will be tested using Kaplan-Meier estimates to obtain the survivor function of the sample according to respondents' multipartnered fertility status. Hypothesis 2 will also be tested using Kaplan-Meier estimates to examine the survivor function of respondents according to their relationship status at birth. After visual inspection of the survivor curves, both hypotheses will be further verified using the Generalized (Breslow Wilcoxon) Test to test for significant differences of the median survivor function. If this is not possible because more than 50% of the couples remain in their relationship by the end of the study window, then differences between groups at some other percentile (e.g., 75^{th}, 85^{th}, 90^{th}) will be tested instead. The last three hypotheses will be tested using discrete-time survival models examining the effect of multipartnered fertility and covariates on the risk of dissolution.

Data

This study uses data from the first three waves of the Fragile Families and Child Wellbeing Study to explore the timing of relationship instability among parents with a

newborn child. The Fragile Families Study is a longitudinal stratified random sample of hospital births in 20 large U.S. cities. The data were collected using a stratified multistage clustered sample design where respondents were not selected independently or with equal probability. Unmarried mothers were over-sampled to allow for a greater focus on births to vulnerable populations. The first stage of selection was the city, the second stage hospitals, and the third stage births. The sampling frame consisted of 77 cities with populations of more than 200,000 people. These cities were then grouped into 9 different strata according to their policy environments (i.e., generosity of welfare and child support enforcement) and local labor market conditions (Reichman, Teitler, Garfinkel, & McLanahan, 2001). One city was selected from the first 8 strata and 8 cities were selected from the 9^{th} strata, totaling 16 cities in the national sample. Four additional cities were selected for special reasons and cannot be included in analyses weighting back to the national sample. From within the national sample, one or more hospitals with high rates of nonmarital births were identified; a total of 75 hospitals were selected. Finally, births in these hospitals were selected until a certain sample size and sampling rate was met (about 75% for unmarried mothers and 25% for married mothers). When weighted, the data are representative of nonmarital births (and nearly representative of marital births) in U.S. cities with populations over 200,000 in 1999 (B. L. Carlson, 2008).

Between 1998 and 2000, approximately 3,500 unmarried mothers and 1,500 married mothers were interviewed in the hospital immediately following their child's birth. For the majority of births, both mothers and fathers were interviewed within three days of delivery. The Fragile Families study consists of interviews at birth in addition to

several follow-up waves. Interviews following the baseline survey were conducted in person and over the telephone.

The present study utilizes the baseline interview (i.e., wave 1), and two consecutive waves of data collected when the child was approximately one and three-years old (i.e., wave 2 and wave 3). The wave 2 and wave 3 interviews were conducted between 1999-2002 and 2001-2003 respectively (Center for Research on Child Wellbeing, 2008). The surveys cover topics in the following eight areas: child health and well-being, parent-child and mother-father relationships, demographic characteristics, marriage attitudes, family background, health, religion, and socioeconomic characteristics.

At baseline, response rates for eligible mothers and fathers approached in the hospital were 87% for unmarried mothers, 82% for married mothers, 75% for unmarried fathers, and 89% for married fathers. The baseline dataset included 4,898 completed mother and 3,830 completed father interviews. Across the three waves of the study, 86% of fathers were interviewed at least one time; 82% of mothers and 55% of fathers were interviewed at all three waves (Center for Research on Child Wellbeing, 2005a).

Sample

From the initial 4,898 interviews, this analysis is limited to the 4,245 mothers who were married or romantically involved at the baseline interview. In order to focus on couples in a romantic relationship, three categories of observations were omitted from the baseline sample: mothers who reported being friends with their partner or not talking to him, mothers whose child's father was unknown, or relationships for which union status was missing (N=653). Of these 4,245 cases, 396 mothers and fathers with missing

interviews at wave 3 were dropped, resulting in a sample of 3,849. The sample was further reduced to 3,819 when 30 observations with event dates before the start of the study were excluded[2]. Finally, due to missing values on the dependent and independent variables the analytic sample was reduced to 3,022 mothers. The sample includes 813 (27%) married mothers, 1,329 (44%) cohabiting mothers, and 880 (29%) dating mothers[3], (i.e., romantically involved with, but living apart from, the baby's father).

Missing values on the independent variables ranged from 0% to 7.04%. Bivariate tests (chi-square for categorical variables and Adjusted Wald Test for continuous variables) using the weighted data were conducted to determine whether excluded couples differed significantly from couples included in the analytic sample[4]. Fortunately, the included cases did not differ from the excluded cases on most variables except in three instances. The first was for fertility history (7.04% missing) where approximately 20% of fathers with multipartnered fertility were excluded compared to 15% when both parents had multipartnered fertility, 12% when mothers had multipartnered fertility, and 6% when neither had multipartnered fertility $F(2.41, 77.12) = 6.75$, $p < .01$. Second, mothers who reported substance abuse (.21% missing) were more likely to be missing than mothers who reported not having a substance abuse problem (48% vs. 15%) $F(1, 145) = 5.56$, $p < .05$. Third, mothers who were dropped from the sample had on average a shorter relationship prior to pregnancy than mothers not dropped from the sample (.79% missing) (5.4 years vs. 7.4 years) $F(1, 32) = 12.96$, $p < .01$. Some caution should be used

[2] These were omitted since event dates that precede the onset of the relationship would result in a "negative duration" of time to event.

[3] In other studies using Fragile Families data, researchers usually refer to this group as "visiting."

[4] When a test of independence is conducted in Stata using weighted data, the test is based on the usual Pearson χ^2 statistic for two-way tables. However, to account for the survey design, the statistic is converted into an F statistic with a correction.

when interpreting results from this study because of these differences. Specifically, the study sample's lower proportion of fathers with multipartnered fertility, mothers with a substance abuse problem, and couples with shorter relationship duration prior to pregnancy all need to be taken into account because of the limitation this may cause with regard to making generalizations about the study's findings.

Censoring

There are two types of censoring problems that occur in event history analysis – left and right censoring. Censoring occurs when the time to event is unknown for some portion of the sample. Guang Guo (1993) defines left-censoring in the following manner: "a left-censored subject is known to have experienced the event, but the exact failure time is unknown," (p. 220); in survival analysis, the event of interest occurs *before* the start of the observation period. Right-censoring occurs when the event of interest happens to a subject *after* the end of the observation period or because of a loss to follow-up during the study window, e.g., the subject drops out of the study for some reason (i.e., death, refusal to participate, or failure to locate the subject at follow-up interviews).

Censored cases (N=1,655) are defined in this study as those respondents whose exact time to event (relationship dissolution) is unknown because it did not occur during the study window. These are right-hand censored cases because we only know that the event has not occurred by the end of the study window and may or may not occur after the end of the observation period. All censored cases with a valid mother interview at wave 3 are assigned the interview date at wave 3 as the censoring date. If the mother's wave 3 interview is missing, I supplement with the father's interview date if available.

Random censored cases are defined as those study subjects whose starting and ending points are known but the ending date occurs *before* the end of the observation period for a reason other than the event of interest. There are two types of random censoring in this study; the first is when fathers die before the end of the study. For these cases, the month and year of the death was used as the censoring date because the censoring is noninformative and thus does not introduce serious bias into the model estimates (S. Guo, Forthcoming, p. 24). These cases are retained in the analytic data set (N = 27). The other form of random censoring is due to attrition, i.e., the mother and father have interviews at wave 1 and wave 2 (or just at wave 1) and then drop out of the study for an unknown reason before having a follow-up interview at wave 3 (N = 396). More specifically, there were 206 cases with missing interviews at waves 2 and 3, and 190 cases with missing interviews at wave 3 only. These cases are treated as missing and are dropped from the analytic sample because they run the risk of being informative; that is, there may be some systematic pattern to study subjects who drop out early that is related to relationship dissolution.

There is some portion of the Fragile Families sample that is left-censored; that is, they experienced a relationship change before coming under observation. For example, women in some of the couples reported not being in any relationship at all with the father of the baby at the time of the baseline survey (N = 653). These cases are considered left-censored because the relationship change (in this case separation) had already occurred. As recommended by Paul Allison (1984), these cases can be excluded without introducing significant bias and were omitted from the analytic data set.

Dependent Variable, Origin of Time, and Study Window

The event of interest in this study is whether the couple divorces or separates if married, cohabiting, or dating. The dependent variable was created with two pieces of information: the length of time or duration of the relationship and a dichotomous measure indicating whether the event occurred or the case was censored (1=divorced/separated, 0=censored). Censored cases are those respondents who sustained their relationship until the end of the study period.

The origin of time is determined by the date of the baseline interview for the mother. The interview date was selected as the origin of time for two reasons: 1) the real origin of time is unknown, and 2) the focus of the study is change in the relationship *following the transition to parenthood.* Since interviews typically occurred in the hospital within 24-48 hours of the birth of the baby, I use the interview as the origin of time and examine change in the relationship from that point forward. An alternative to using the interview date as the origin of time would be the use of a measure in the data set that indicates the length of time the couple knew each other *prior* to the pregnancy. However, this is used as a covariate instead of as a proxy for the relationship duration since it is not possible to verify that this time is the actual length of the romantic relationship.

The unit of time to relationship change is analyzed as a discrete-time measure calculated in the metric of months. Thus, the "duration" variable was created using the number of months from entry into the study to the point of relationship dissolution or censoring. The study window goes from the baseline interview for each study subject to wave 3 of the study. The study window is 50 months long. For descriptive purposes (e.g., survivor functions), only the first 47 months are utilized because the last event is

observed in month 47; all 50 months are used in the discrete-time models. Because time dummies for each month were necessary in the discrete-time models, the months were grouped into thirteen intervals of three months each, to avoid the use of 49 dummy variables (plus a reference group) in the discrete-time model. The choice of using 3-month intervals, plus one longer interval, was based on careful examination of the data and the distribution of the number of months contributed to the data set by respondents. Three months are included in each of the first 12 intervals (i.e., months 1-3 = interval 1, months 4-6 = interval 2, and so on,…months 37-50 = interval 13). The l3th interval includes months 37-50 because of the smaller number of observations in those months than in earlier months. This coarser way of categorizing the data serves to build a more parsimonious model while retaining the full range of requisite months. The first interval, months 1-3, is used as the reference group in the discrete-time models.

Independent Variables

The independent variables were selected on the basis of theoretical relevance, as well as previous research and include fertility history, demographic factors, socioeconomic characteristics, relationship status and quality.

Fertility History

Several questions about the parents' childbearing outside the relationship are used to determine multipartnered fertility. I use both mothers' and fathers' reports about fertility status and use mothers' reports about her partner's fertility history in cases where it is missing in order to preserve sample size since there are fewer fathers in the study. A multiple category variable is used to capture four types of multipartnered fertility cases: 1=no MPF (reference), 2=mother-only MPF, 3=father-only MPF, and 4=both MPF.

Demographic Factors

For all father variables, the father's information is used wherever possible and supplemented with mothers' reports about the father in order to maintain as large a sample as possible. The mother's race is specified as three categories: 1=White non-Hispanic (reference), 2=Black non-Hispanic, 3=Hispanic/other race. A dummy variable is used to indicate whether the father's race differs from the mother's race. Age of the mother at the time of the baseline interview is modeled as a continuous variable. A dummy variable is used to indicate if the father's age differs from the mother's age by 10 years or more because of the high correlation between mothers and fathers ages. Mothers' religious involvement is measured using a dichotomous variable indicating frequent or infrequent attendance at religious services. Frequent involvement was defined as attending religious services at least several times a month and infrequent as attending services several times per year or less. A dummy variable indicating whether the mother has a substance abuse problem is based on the question, "In the past year, has drinking or using drugs ever interfered with your work on a job or with your personal relationships?" For fathers, a dummy variable is used to indicate whether the mother reports that he was ever in jail. Family background is represented by a dichotomous variable indicating whether the mother lived with her biological parents at age 15.

Socioeconomic Characteristics

Maternal education was specified as four different categories: 1=less than high school, 2=high school or GED, 3=some college, or 4=college graduate (reference). Three dummy variables, with college graduate as the reference group, were used in the models. Due to high correlations between maternal and paternal education variables, only those

from the mother are included. Work status is measured with a dummy variable indicating 1 if the mother worked in the year before the birth and 0 otherwise. The father's version of this variable differs slightly; work status is defined by whether the father worked in the *week* prior to the birth, as opposed to the *year* before the birth. The welfare status of the mother is captured using a dummy variable if the respondent received income from public assistance, food stamps, or welfare in the previous year. Finally, a dichotomous variable indicates whether the mother or father owns versus rents the home they live in.

Relationship Status and Quality

A multiple category variable indicating whether the couple is married, cohabiting, or dating is used to capture the relationship status of the couple at the time of birth: 1=married (reference), 2=cohabiting, 3=dating. A continuous variable measured in years is used to capture the time that the couple knew one another prior to the birth of the baby. Relationship quality is based on a series of variables widely used by other researchers (M. Carlson et al., 2004; Osborne, 2005) to measure both negative and positive aspects of the relationship at the time of birth: emotional supportiveness, conflict, violence, distrust of the opposite sex, and attitudes about marriage. The measure of emotional support is a scale that was based on the mean of maternal reports of how frequently (1=often, 2=sometimes, 3=never) their partners: 1) were fair and willing to compromise (reversed), 2) expressed love and affection (reversed), 3) insulted and criticized them, and 4) encouraged and helped them (reversed) ($\alpha = .67$). Responses were recoded so that a high value indicates a high level of support. These are similar to items included in Straus' (1979) "Reasoning" and "Verbal Aggression" scales in the Conflict Tactics Scale.

Conflict is represented as the mean of a six-item scale regarding the frequency with which mothers disagreed with fathers in the last month before the birth about money, spending time together, sex, the pregnancy, drugs or alcohol, and being faithful (1=often, 2=sometimes, 3=never) ($\alpha = .64$). Responses were all reverse coded so that a high value indicates more frequent conflict.

Physical violence is based on how frequently both parents report being hit or slapped during their relationship prior to the birth of the baby (1=often, 2=sometimes, 3=never). Because even sometimes hitting or slapping a partner is significant, the variable is dichotomized to indicate any reported (i.e., often or sometimes) physical violence. Distrust of the opposite sex is measured using two items that women report on: 1) "Men cannot be trusted to be faithful," and 2) "In a dating relationship, a man is largely out to take advantage of a woman." Responses ranged from 1=strongly disagree to 4=strongly agree, with higher values reflective of a distrustful perspective. This measure was dichotomized so that responses of 3 or 4 (i.e., agree or strongly agree) indicated distrust of the opposite sex.

The measure of attitudes about marriage is based on two items that ask mothers about their level of agreement with the following statements: 1) "It is better for a couple to get married than just live together" and 2) "It is better for children if their parents are married." Responses ranged from a low of 1=strongly disagree to a high of 4=strongly agree, with higher values (3 or 4) indicative of a positive attitude toward marriage. This variable was also dichotomized so that responses of 3 or 4 reflected a pro-marriage attitude.

Data Management

Using information about the study window, the duration of the relationship, censoring, and the event, the original dataset which was in person-level format (one row of data per observation, N = 3,022) was converted into person-time format (multiple rows of data for each respondent, N = 106,293). For example, a couple who came under observation at wave 1 (month 1) and sustained their relationship until wave 3 (month 36) would contribute 36 rows of data. A couple whose relationship ended after one and a half years (or 18 months) would contribute 18 rows of data. The difference in these two cases is that the second couple experienced the event while first couple was censored.

The dependent variable (1=event, 0=censored) is structured such that it attributes the event to the respondent only in the period in which the event actually occurred. Using the 18-month case example, the dependent variable would be coded 0 for the first 17 months and then coded 1 (event) in the 18th month (or in the 18th row). For the couple whose relationship lasted 36 months (i.e., censored because they sustained their relationship for the entire study window), the dependent variable would be coded as 0 on all 36 rows of data.

Data Analysis

Descriptive Analyses

Univariate and bivariate analyses were conducted to describe the study sample. Variables reflecting fertility history, demographics, socioeconomic status, and relationship quality and characteristics are displayed in Table 1 using weighted percentages to reflect births to unmarried women in large U.S. cities. Because public use data files are utilized in this study, replicate weights provided in the data are used in place

of stratum and primary sample unit variables that would otherwise be used to estimate variances. Thus weights are used to account for attrition and for the fact that respondents were not selected independently or with equal probability. Adjustments were made for clustering using the *svy* commands in Stata.

Bivariate analyses on selected variables of importance are presented in Table 2 (in Chapter 4) using the 90^{th} percentile of the survivor function based on Kaplan-Meier estimates. The 90^{th} percentile was selected because more than 50% of the couples remained in their relationship by the end of the study window thus making the median survival time meaningless. The Breslow (Generalized Wilcoxon) Test was used to assess for statistically significant differences across groups. The *stci* procedure in Stata 10 was used to obtain the 90^{th} percentiles and the *sts test* with the *wilcoxon* option was used to test for group differences.

Kaplan-Meier estimates were used to describe and explore the events of interest by obtaining plots of the hazard functions, survivor functions, and by conducting tests of group differences. The following explanation of hazard and survival functions provides a formal description of these two important functions.

The study times for the subjects in the Fragile Families sample form a distribution, known as the survival distribution (S. Guo, Forthcoming). Various functions characterize survival distributions that serve as the basis for survival analysis. These include: the hazard function *h(t)*, probability density function (PDF) *f(t)*, cumulative distribution function (CDF) *F(f)*, and survivor function *S(t)* (Allison, 1995). If *T* denotes the time to the event (i.e., time when the couple "fails" or separates), these four functions describe the probability distribution for *T*. Given one of these four functions, the other

three can be determined (Cleves, Gould, & Gutierrez, 2004a), and thus for convenience purposes, the following description of the survival distribution focuses on the survivor *S(t)* and hazard *h(t)* functions only.

The hazard function, also referred to as a *rate*, is perhaps the most central concept in survival analysis and is defined as the instantaneous rate of failure or the instantaneous risk that an event will occur at time *t*. The hazard is a quantity that takes the form of the number of events per interval of time (similar to "miles per hour"), which is why it is referred to as a rate (Allison, 1995). It is expressed as the instantaneous probability that the event will occur in a specific and small interval of time, conditional upon the subject having survived up to the beginning of the interval, divided by the time interval:

$$h(t) = \lim_{\Delta t \to 0} \frac{\Pr\{t \le T < t + \Delta t \mid T \ge t\}}{\Delta t}$$

The numerator of the hazard function is the conditional probability of the event occurring at time $t + \Delta t$. In other words, assuming that the event has not yet occurred at time *t*, what is the probability of the event occurring in the time interval of $t + \Delta t$ (S. Guo, Forthcoming)? The hazard function can vary from zero (meaning no risk at all) to infinity (meaning the certainty of failure at that instant) (Cleves et al., 2004a). The hazard rate can exceed 1, although cannot be less than 0. Over the study window, the hazard function can increase, decrease, remain steady, or change shape. The risk of event occurrence follows the shape of the hazard function: when the risk is zero, the hazard is zero; as risk rises with time, so does the hazard; as risk decreases, the hazard drops; if the risk is constant, then the hazard for that particularly instant is the same.

The survivor function, *S(t)*, measures the probability of surviving beyond time *t*:

$$S(t) = \Pr\{T \ge t\} = 1 - F(t)$$

The survivor function is the reverse of the cumulative distribution function, i.e., $F(t) = \Pr(T \leq t)$. It provides the probability that there is no event prior to time *t*. The function is equal to one at $t = 0$ and decreases toward zero as *t* goes to infinity (Cleves et al., 2004a).

An illustration of the overall length of time couples "survive" in their relationship is presented in Figure 3 (in Chapter 4), as well as survivor curves according to multipartnered fertility history and relationship status at birth (Figure 5 and Figure 6 respectively in Chapter 4). The *sts graph* procedure was used to obtain these plots.

The estimated hazard function for the overall sample and by multipartnered fertility status is also presented. Note that the hazard functions were not estimated using Kaplan-Meier estimates, but rather the life-table method and a kernel smoothing procedure conducted within Stata (S. Guo, Forthcoming; StataCorp, 2007). The *sts graph, hazard* procedure was used to obtain the hazard curves.

Event History Analyses

Event history analysis, and specifically, discrete-time models (Allison, 1982) were then used to estimate the effects of multipartnered fertility history and a series of covariates on the relationship outcomes of married, cohabiting, and dating couples. Discrete-time survival analysis was selected to help answer the question of why relationships change at different times for different couples and specifically to answer: "What is the relationship between the risk of event occurrence in each time period and a set of predictors?"

The dependent variable of interest is the discrete-time hazard of divorce or separation for married, cohabiting, and dating couples. Couples that do not experience a change in the relationship by the end of the study window are considered censored. The

logistic procedure in Stata 10 was used for the binomial regression estimations. To address the research question, all changes to the relationship are treated the same. Hazards are calculated to express the relative risk of divorce/separation for each independent variable. For example, the hazard for welfare use is the relative risk of divorce/separation for mothers on welfare versus mothers not on welfare, controlling for all other covariates.

The discrete-time models use a binary logit model with pooled event histories, and the probability of event occurrence as a proxy for the hazard rate, to estimate the effect of predictor variables on the probability of relationship dissolution (Allison, 1982; S. Guo, Forthcoming). Study participants contribute person-months to the data until they experience the event or are censored. The model takes the following form:

$$\log\left(\frac{P_{it}}{1-P_{it}}\right) = \alpha_t + \beta_1' X_i + \beta_2' Z_i$$

where P is the probability of dissolution given that couple i has not separated prior to month t. α_t is a set of t-1 dummy variables used to control for time dependence. X_i is a vector of multipartnered fertility history variables, and Z_i is a vector of time-invariant control variables.

A total of four models were analyzed. The key predictor variable, multipartnered fertility, is included in all the models. Model 1 also includes relationship status and the time dummies. Model 2 adds a set of demographic control variables, and Model 3 adds variables related to socioeconomic status. The fourth and final model adds relationship characteristics. The selection of variables in Model 4 was based on several steps of model building, including careful examination of individual predictors and their contribution to

the model, strength of theoretical significance, and percentage of missing. The preferred model (Model 4) is the result of this process.

Finally, model-predicted survivor curves based on predicted probabilities are presented to summarize trends over time for values from multipartnered fertility history and relationship status at birth controlling for all other covariates at their mean. The model-predicted survivor curves are based on a slightly modified version of Model 4 from the discrete-time survival analysis. The primary predictor variable, multipartnered fertility, was re-categorized into a dummy variable (1=any multipartnered fertility, 0=none) in order to limit the number of curves that would be produced in the plot. In this way, only six curves are presented: married/no MPF, married/MPF, cohabitation/no MPF, cohabitation/MPF, dating/no MPF, dating/MPF.

The use of discrete-time survival analysis is particularly advantageous for a number of reasons. First, it is suitable for the analysis of data collected in settings where continuous data are not available because of cost and logistical restrictions. Second, discrete-time survival analysis does not require special software; estimations can be made using traditional software packages and relatively simple analysis techniques such as logistic regression. Finally, it is a relatively intuitive approach and lends itself to research with an application focus (Allison, 1982; Willett & Singer, 1993).

Model Evaluation and Diagnostic Procedures

Interaction Terms

Three sets of interaction terms were tested to evaluate improvement in model fit. The terms were selected based on substantive relevance: relationship status X multipartnered fertility, relationship status X race, welfare X multipartnered fertility. All

the interaction terms were non-significant at the $p < .05$ level. The interaction terms were tested one at a time in the preferred discrete-time model. Once it was determined that the term was non-significant, it was taken out and replaced with the next term, and so on until each of the three interaction terms was tested. Since inclusion of interaction terms in a model that is not significant at traditional levels of statistical significance tends to increase the standard errors without changing the point estimates, the terms were omitted (Hosmer & Lemeshow, 2000).

Multicollinearity

Once the final selection of independent variables was complete, a test for multicollinearity was conducted by examining the variance inflation factor (VIF). The *vif* procedure in Stata was used for this assessment. Because VIF was tested using ordinary least squares regression, the nature of censoring on the dependent variable was ignored in this procedure. None of the VIF values exceeded 10, suggesting that multicollinearity was unproblematic (Kutner, Nachtsheim, & Neter, 2004). The VIF values ranged from a low of 1.03 (mothers' substance abuse) to a high of 3.64 (less than a high school diploma for mothers) with an average VIF of 1.56.

Model Assessment

Three measures of model fit were used to evaluate the proposed models. As seen at the bottom of Table 3 (in Chapter 4), likelihood ratio tests were used for overall model evaluation and model chi-square and pseudo-R^2 were used for goodness-of-fit. Generally, a higher pseudo-R^2 suggests better model fit. Pseudo-R^2's, however, should only be used when predicting the same outcome on the same dataset with the same predictor variables (UCLA Academic Technology Services, 2008). Unfortunately, there are no available

corrective measures for these indices for use with survey data; thus, they should be interpreted with some caution.

Influential Observations

A graph of Cook's D was obtained for all the independent variables in order to assess the influence on parameter estimates of each individual observation. As seen in Appendix A, the plot indicates that only one or two cases are apart from the rest of the observations and thus their influence is likely to be minimal, so they were retained in the sample.

CHAPTER 4

RESULTS

Univariate and Bivariate Results

Descriptive statistics for the entire sample and separately by initial relationship status are reported in Table 1. Dating couples were much more likely than cohabiting and married couples to end their relationship, 70.4% versus 35.6% and 13.3% respectively. Cohabiting and dating couples have considerably higher rates of multipartnered fertility than married couples overall. Married mothers are more often white, whereas dating and cohabiting mothers are more often black and Hispanic/other race, respectively. In approximately 15% of the sample the father's race differs from the mother's race. Cohabiting mothers are the least religious among all couple types.

The mean age of mothers is 27 years old. The mean age of dating mothers (22.6) is lower than it is for cohabiting (24.6) and married (29.5) mothers. A small percentage (8.7%) of fathers differ in age from the mother by 10 or more years. Mothers who date have higher rates of substance abuse than cohabiting and married mothers. Overall, more than half the mothers (55%) lived with their own parents at age 15.

Approximately 23% of the mothers have less than a high school diploma whereas 30% have a high school diploma or GED. Seventy-three percent of all mothers worked in the year prior to the baby's birth while 90% of fathers worked in the week before the birth. Approximately 46% of dating mothers and 41% of cohabiting mothers received

Table 1. Descriptive Statistics for Couples by Relationship Status

	Total N=3,022 Percent / Mean (SD)	Married N=813 Percent / Mean (SD)	Cohabiting N=1,329 Percent / Mean (SD)	Dating N=880 Percent / Mean (SD)
Dependent Variable				
Relationship Dissolution				
Separation	24.9	13.3	35.6	70.4
No change (censored)	75.2	86.7	64.4	29.7
Independent Variables				
Multipartner Fertility History				
No MPF children	66.5	78.2	42.7	43.0
MPF (mother)	10.1	6.6	18.6	14.8
MPF (father)	13.4	10.4	20.2	18.4
MPF (both)	10.1	4.9	18.6	23.8
Demographics				
Mother's race				
White	42.7	51.9	28.6	16.3
Black	20.0	10.2	31.3	55.3
Hispanic/other	37.2	37.9	40.1	28.4
Father's race differs from mother	14.7	13.6	17.2	16.2
Mother's religiousness	40.0	43.4	29.0	40.0
Mother's age	27.6(5.9)	29.5(3.4)	24.6(7.6)	22.6(8.6)
Father is 10 years older/younger than mother	8.7	6.9	11.2	14.2
Mother's substance abuse problem	1.1	0.3	1.9	4.0
Mother lived with both parents at age 15	55.3	63.5	43.2	31.0
Father ever in jail (mother's report)	16.1	7.7	31.6	35.6
Socioeconomic Status				
Mother's education				
<High school	23.4	15.9	36.4	43.0
High school/GED	30.4	24.6	44.0	38.8
Some college	19.8	21.1	18.1	15.9
College or more	26.4	38.5	1.5	2.3
Mother worked in year before birth	73.0	74.7	73.4	62.7
Father worked in week before birth	90.4	95.8	84.0	71.6
Mother on welfare	22.0	11.9	40.6	45.7
Mother or father owns home	47.2	57.2	21.8	35.6
Relationship Characteristics				
Years known each other	7.4(5.6)	9.0(3.4)	4.3(6.0)	3.7(5.4)
Mother feels supported (1-3)	2.7(.3)	2.7(.2)	2.7(.4)	2.6 (.5)
Mother reports conflict (1-3)	1.4(.3)	1.3(.2)	1.4(.5)	1.5(.6)
Mother reports violence	1.6	1.8	1.2	1.5
Mother distrusts men	20.6	17.3	24.3	32.8
Mother has pro-marriage attitude	85.0	90.8	73.8	71.9

Note: N's are unweighted; percentages and means are weighted.

welfare assistance, compared to only 12% of married mothers. A considerable proportion of respondents also owned their own home (47.2%).

Table 1 shows that parents who live together or date have known each other much shorter periods of time than married parents (4.3% and 3.7% vs. 9%). Overall, mothers report high levels of support from the father (2.7 on a scale of 1-3) and low levels of conflict (1.4 on a scale of 1-3). Less than 2% of mothers reported physical violence perpetrated by the father. Dating mothers have higher rates of distrust toward men (33%) than cohabiting (24%) and married mothers (17%). Finally, all couple types tend to have rather high rates of pro-marriage attitudes ranging from a low of 72% among dating mothers to a high of 91% among married mothers.

Table 2 presents the 90^{th} percentiles of the survivor function for selected key variables, including multipartnered fertility, relationship status at birth, race, education, welfare, and violence. The 90^{th} percentiles for multipartnered fertility are 8 months for couples *without* MPF, 4 months for *mothers* with MPF, and 3 months each for *fathers* with MPF and for couples that *both* have MPF. The 90^{th} percentile can be interpreted as the length of time it takes for 10% of the couples to divorce or separate. For example, it takes longer (8 months) for couples without MPF children to end their relationship than for couples in which both the mother and father have MPF (3 months). This finding supports Hypothesis 1 by showing that couples with multipartnered fertility have faster rates of separation than those without multipartnered fertility. The Breslow Test shows that these differences in the survivor functions for MPF are significant, χ^2 (3, N = 1165) = 158.79, $p < .001$. Despite these initial findings, the bivariate tests do not control for other covariates as will be done in the multivariate modeling procedure.

Additional findings from the 90th percentile of the survivor function indicate that married couples sustain their relationship much longer than both cohabiting and dating mothers, χ^2 (2, N = 1165) = 569.05, $p < .001$. This supports Hypothesis 2, which predicted that non-married couples would have a faster rate of dissolution than married couples.

Table 2. 90th Percentile of the Survival Function of Selected Variables

Variable	Number of Months
Multipartner Fertility History	
No MPF children	9 ***
MPF (mother)	4 ***
MPF (father)	3 ***
MPF (both)	3 ***
Relationship Status at Child's Birth	
Married	33 ***
Cohabiting	6 ***
Dating	3 ***
Demographics	
Mother's race	
White	12 ***
Black	3 ***
Hispanic/other	5 ***
Socioeconomic Status	
Mother's education	
<High school	3 ***
High school/GED	3 ***
Some college	6 ***
College or more	30 ***
Mother on welfare	3 ***
Relationship Characteristics	
Mother reports violence	3 ***

***$p \leq .001$, Breslow (Generalized Wilcoxon) Test

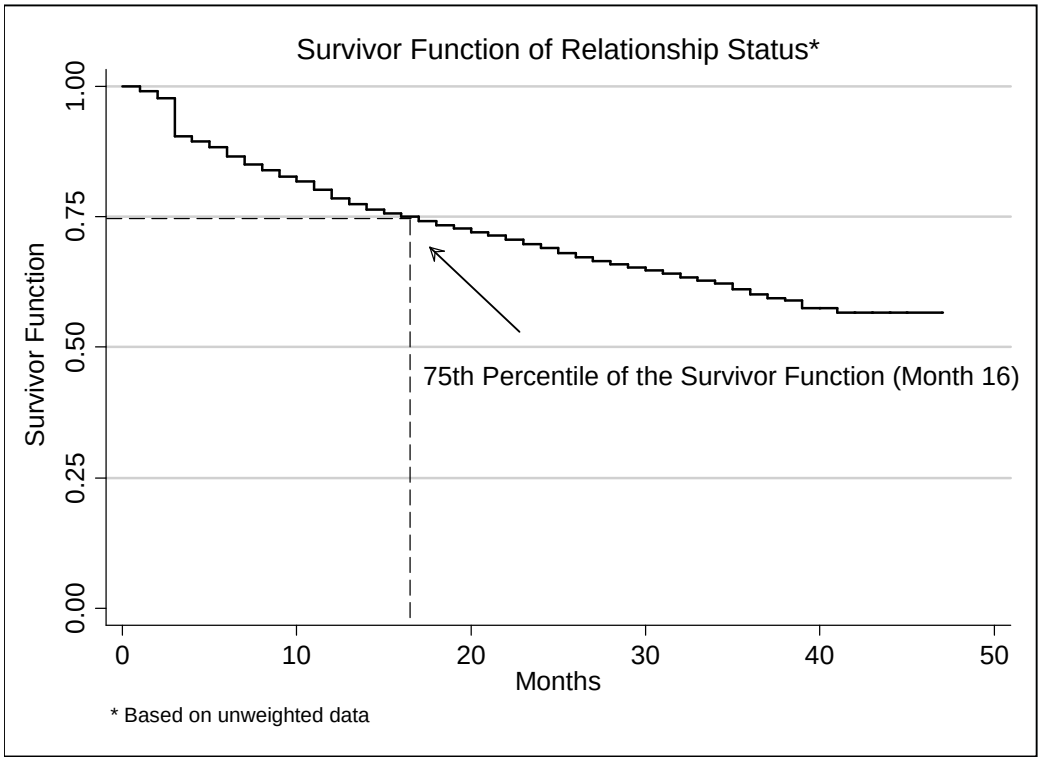
Additional results show that white mothers compared to minority mothers sustain their relationships longer (12 months versus 3 and 5 months for black and Hispanic/other race respectively) χ^2 (2, N = 1165) = 181.37, $p < .001$. Mothers with a college education tend

to sustain their relationships far longer than those with less education (31 months for college goers versus 3 or 4 months for every other category) χ^2 (3, N = 1165) = 150.38, p < .001. Relationships end earlier among mothers on welfare compared to those not needing assistance (3 months versus 5 months), χ^2 (1, N = 1165) = 88.3, p < .001. Finally, when violence is reported by the mother, the relationship tends to end sooner (3 months versus 4 months) χ^2 (1, N = 1165) = 15.3, p < .001.

Survivor and Hazard Functions

In Figure 3, we see the survivor function for the entire sample of couples. The survivor curve shows that at the start of the study window, or time 0, all couples are in their relationship with no events of dissolution. Over time, the estimates indicate a

Figure 3. Survivor function of relationship dissolution

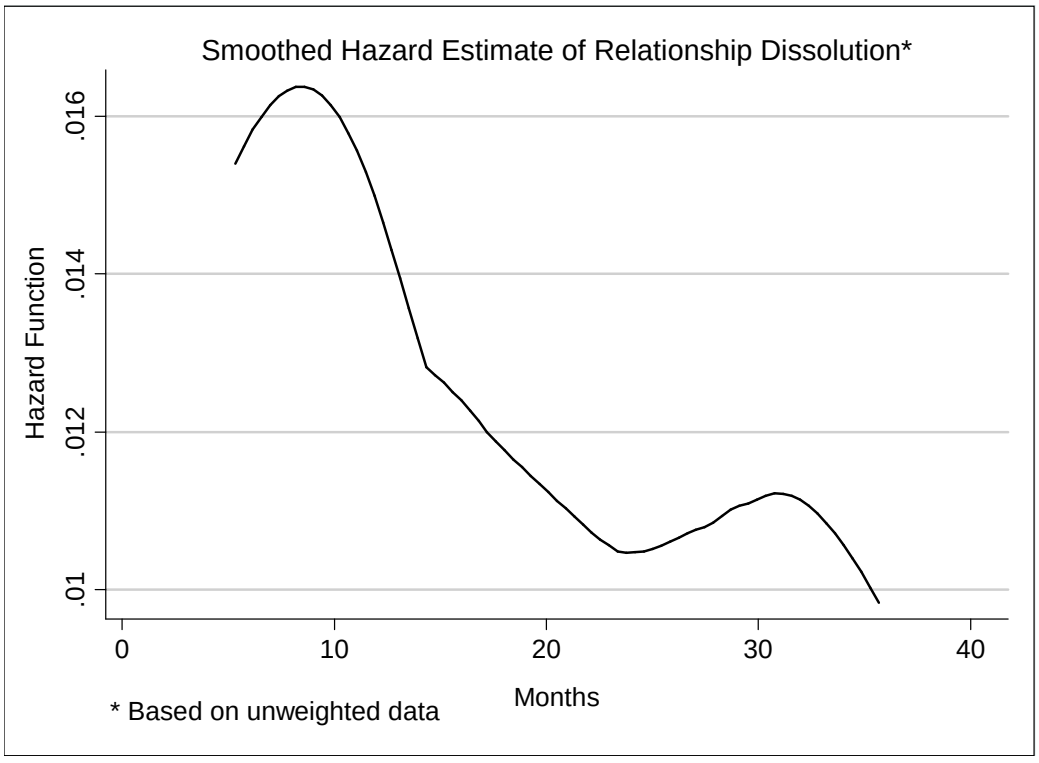


steadily decreasing rate of remaining in a relationship after having a child. In month 3, the estimated probability that a couple will remain in the relationship drops from .98 to .90, the largest decline observed within a one-month span.

As indicated earlier, the median survival time is not observable, meaning that more than 50% of the couples sustained their relationship by the end of the study window. In month 16, however, we observe the 75th percentile of the survivor function, indicating that three-fourths of the sample have "survived" or remained in the relationship up to that time.

Figure 4 presents the hazard plot of relationship dissolution for all couples in the study sample. The hazard function provides information about the speed or rate of change for the event of interest.

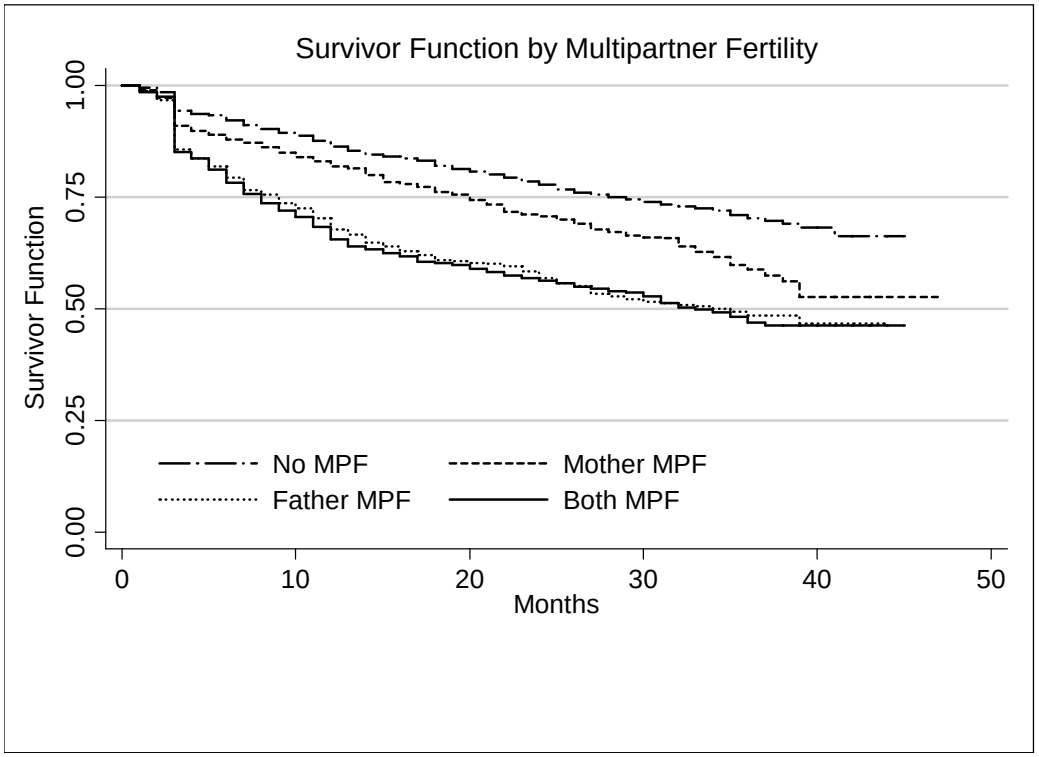
Figure 4. Hazard function of relationship dissolution



Notice the high spike at the beginning of the window; this indicates a fast speed of change at that time. This spike corresponds to the large drop observed in the survivor function around month three. Then as the risk of dissolution declines over time, the hazard drops. Starting at approximately month 24 or two years after birth, there is a slight increase in the hazard for six months, after which it declines again. While the hazard plot tells a similar story to the survivor function, it also suggests that the speed with which relationships change is not constant over the study period.

In Figures 5 and 6, we see the survivor function again but this time according to multipartnered fertility history and relationship status, respectively. Figure 5 presents survivor curves to provide a sense of the sustainability of relationships according to the study's primary predictor variable: multipartnered fertility history.

Figure 5. Survivor function by multipartnered fertility history

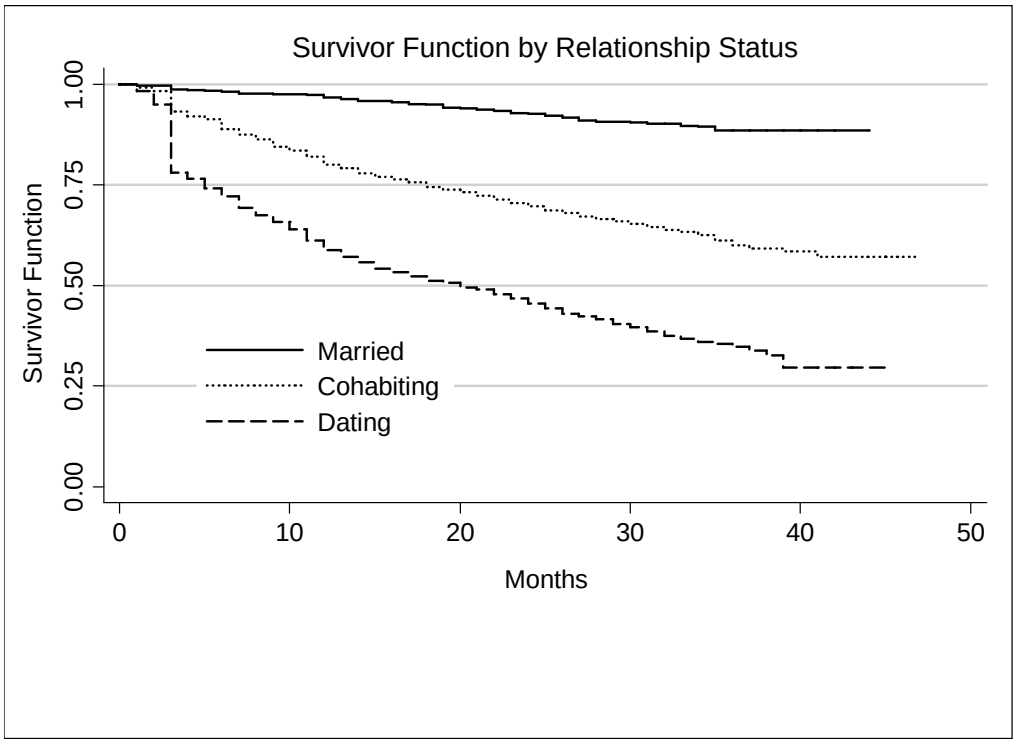


The curves are very similar in the first three months after birth followed by a decrease for couples when they both have MPF and when only the father has MPF. The survivor function for couples without MPF (the top curve) suggests that they maintain their relationship more than the other couple types. On the whole, those with children from previous relationships are most at risk for separation compared to those couples who share only biological children together, χ^2 (3, N = 1165) = 158.79, p < .001.

In Figure 6, the curve for married couples (top) reflects the slowest rate of change while the curves for cohabiting (middle) and dating (bottom) indicate faster speeds of change. Up to month three, the survivor curves appear similar with little evidence of difference by relationship status.

At month three, however, there is a significant drop in the survivor curve for dating couples. The median survival time for this group is month 20, meaning that 50% of the cases separated by month 20 and 50% sustained their relationship beyond this point. The plot clearly shows that the proportion of couples who successfully sustained their relationship the most are married, followed by cohabiting couples, and finally dating couples. The 90th percentile of the survivor function across these three groups differs significantly, χ^2 (2, N = 1165) = 569.05, p < .001. Visual inspection of the survivor curves in Figures 3 and 4 provide additional support for the first two hypotheses; that is, MPF couples appear to be at greater risk for dissolution relative to non-MPF couples (Hypothesis 1) and further, nonmarried couples are at greater risk for separation than married couples (Hypothesis 2).

Figure 6. Survivor function by relationship status



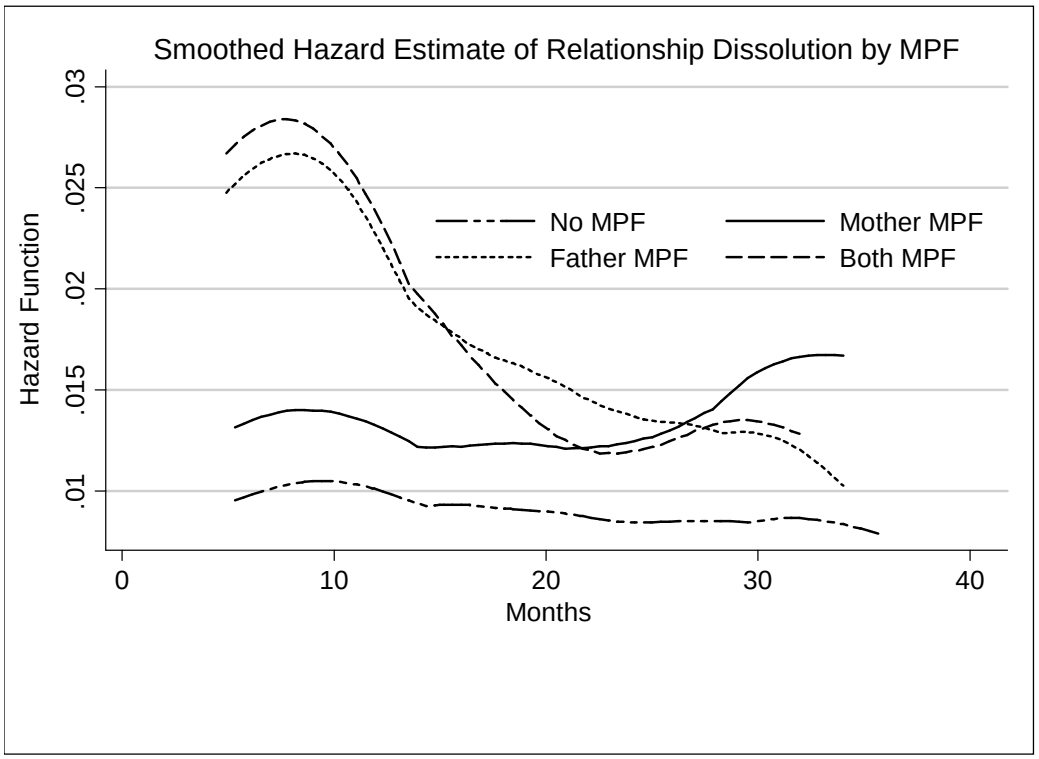
Finally, in Figure 7 the hazard function is revisited, this time by multipartnered fertility status. Of particular importance is the high hazard rate early on in the study window when both parents have multipartnered fertility and when only the father has multipartnered fertility. These compare to the hazard curve for mother-only multipartnered fertility cases, which has a low and fairly constant hazard until approximately 23 months when it starts to rise. The hazard is the lowest and most constant for cases in which neither parent has multipartnered fertility.

Multivariate Model Results

Event history models are used to better understand the risk of dissolution using multipartnered fertility and a variety of socioeconomic and demographic covariates. I

used binomial logistic regression to estimate the probability of breaking up relative to sustaining the relationship. Table 3 presents the odds ratios of dissolution relative to staying in the relationship for all couple types. The models are based on the weighted data since analyses not shown here indicated substantial differences between the weighted and unweighted results.

Figure 7. Hazard function of relationship dissolution by multipartnered fertility history



The analyses show that a couple's history of multipartnered fertility was consistently associated with the risk of relationship dissolution. Model 1 estimates the effects of multipartnered (father, mother, and both versus neither) on relationship dissolution controlling for relationship status. The first model shows that fathers with multipartnered

Table 3. Odds Ratios from Discrete-Time Event History Model Predicting Relationship Dissolution vs. Staying Together (N = 36,401 Person-Periods)

Variables	Model 1	Model 2	Model 3	Model 4
Multipartner Fertility History				
No MPF children (ref)				
MPF (mother)	1.287	1.581	1.724	1.687
MPF (father)	2.542 **	2.720 ***	3.084 ***	3.108 ***
MPF (both)	1.548 †	1.876 **	2.104 **	2.554 **
Relationship Status at Child's Birth				
Married (ref)				
Cohabiting	2.665 **	1.870 *	1.909 †	2.286 *
Dating	8.383 ***	5.101 ***	5.298 ***	5.970 ***
Demographics				
Mother's race				
White (ref)				
Black		1.321	1.353	1.178
Hispanic/Other race		0.779	0.719	0.713
Father's race differs from mother		0.910	0.926	1.070
Mother's religiousness		1.071	1.060	1.145
Mother's age		0.957 †	0.957 †	0.935 *
Father is 10 years older/younger than mother		0.739	0.674	0.695
Mother's substance abuse problem		1.046	1.016	0.849
Mother lived with both parents at age 15		1.466	1.507	1.536
Father ever in jail (mother's report)		1.680 **	1.690 *	1.544 †
Socioeconomic Status				
Mother's education				
<High school			0.984	0.881
High school/GED			0.719	0.616
Some college			0.711	0.629
College or more (ref)				
Mother worked in year before birth			0.697	0.705
Father worked in week before birth			1.160	1.149
Mother on welfare			0.854	0.766
Mother or father owns home			0.943	0.952
Relationship Characteristics				
Years known each other				1.031
Mother feels supported (1-3)				0.327 **
Mother reports conflict (1-3)				1.347
Mother reports violence				0.623
Mother distrusts men				0.859
Mother has pro-marriage attitude				1.118
Time Intervals				
Interval 1 (months 1-3) (ref)				
Interval 2 (months 4-6)	0.397 †	0.394 †	0.399 †	0.402 †
Interval 3 (months 7-9)	0.426 **	0.427 **	0.435 *	0.446 *
Interval 4 (months 10-12)	0.617	0.622	0.638	0.664
Interval 5 (months 13-15)	0.376 *	0.382 *	0.394 *	0.404 †
Interval 6 (months 16-18)	0.200 ***	0.203 ***	0.209 ***	0.215 ***
Interval 7 (months 19-21)	0.360 †	0.369 †	0.379	0.394
Interval 8 (months 22-24)	0.487 †	0.508 †	0.523 †	0.547
Interval 9 (months 25-27)	0.457	0.476	0.490	0.510
Interval 10 (months 28-30)	0.235 **	0.246 **	0.254 **	0.270 *
Interval 11 (months 31-33)	0.408	0.430	0.444	0.476
Interval 12 (months 34-36)	0.111 ***	0.115 ***	0.119 ***	0.128 ***
Interval 13 (months 37-50)	0.211 *	0.222 *	0.227 *	0.231 *
Model Chi-Square (df)	928.89(17) ***	1050.51(26) ***	1064.02(33) ***	1158.64(39) ***
Pseudo-R^2	0.095	0.107	0.108	0.118
Likelihood Ratio χ^2 (df)		121.62(9)***	13.50(7)†	102.57(9)***

Note: Estimates based on weighted data. Fit statistics based on unweighted data.

†$p \leq .10$, *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

fertility had more than two and a half times the risk of dissolution compared to cases without multipartnered fertility. Furthermore, although it only reached significance at the 10% level, couples who both had multipartnered fertility were 55% more likely to end their relationship than couples without children from a previous relationship. Model 1 also shows that a couple's relationship status at the time of birth is strongly associated with dissolution: cohabiting couples were more than two and a half times as likely to break up and dating couples eight times as likely to break up as their married counterparts.

Model 2 takes into account demographic features including race, religiosity, age, substance abuse of the mother, whether the mother lived her biological parents at age 15, and incarceration history of the father. Results show that fathers with multipartnered fertility and couples who both have multipartnered fertility are still at an increased risk for dissolution (2.7 times and 1.9 times respectively) compared to their counterparts without multipartnered fertility. These odds ratios are just slightly larger than in Model 1, and couples who both have multipartnered fertility now reach significance at the $p < .01$ level.

Relationship status continues to be associated with dissolution in Model 2 but with lower odds (5.1 for dating couples and 1.9 for cohabiters) once controlling for demographic characteristics. Two additional characteristics show evidence of being associated with dissolution: mother's age and father's incarceration history. Model 2 shows that as age increases the risk of dissolution decreases by 4.3%, and fathers with a history of incarceration are more than one and a half times as likely to end their relationship as their counterparts without any incarceration history.

In Model 3, socioeconomic characteristics are added to the model and include mother's education, work history for both parents, mother's welfare status, and whether the couple owns or rents their home. Similar to the effect observed from adding additional controls in Model 2, the odds of dissolution for fathers with multipartnered fertility and for couples who both have multipartnered fertility continues to rise. The risk of dissolution for fathers with multipartnered fertility is now more than three times that of couples without multipartnered fertility, and more than two times that of couples who both have multipartnered fertility children. Relationship status maintains significance (although only at the 10% level now for cohabiting couples) and the odds ratios remain approximately the same (2 times the risk of dissolution for cohabiters and more than 5 times the risk for dating couples compared to married couples). Mother's age and father's incarceration history go unchanged, and none of the socioeconomic characteristics appear to be associated with dissolution. Despite the fact that these variables do not make a statistical contribution to the model, they are kept in Model 3 and Model 4 as important control variables. The nonsignificant socioeconomic variables suggest that Hypothesis 4 should be rejected; economically disadvantaged couples *do not* appear to be at higher risk for dissolution relative to economically more stable couples all else being equal.

Finally, in Model 4 a set of variables that control for relationship characteristics are added. Continuing with the same pattern observed in Models 1-3, Model 4 increases the difference in the risk of dissolution between fathers and couples with multipartnered and nonmultipartnered fertility families. Fathers with children from previous relationships have over three times the risk of separation compared to their counterparts without multipartnered fertility, and couples who both have multipartnered fertility now

have over two and a half times the risk of dissolution. Similarly, Model 4 increases the difference in risk of dissolution between unmarried and married couples. The odds were 2.28 for cohabiters and 5.97 for dating couples.

Finally, relationship characteristics, with just one exception, explain very little of the risk of dissolution. The only significant variable was mother's feelings of support from the father, and as expected, every one-unit increase in feelings of support decreases the odds of dissolution by 67%. This finding lends only partial support to Hypothesis 5: couples with higher levels of relationship supportiveness and lower levels of violence and conflict have lower odds of dissolution than couples with poor relationship quality. As it turned out, violence and conflict were not associated with dissolution in this model with this sample.

In order to carry out the test for Hypothesis 3 (i.e., couples with multipartnered fertility from the father face greater risk of dissolution than couples with multipartnered fertility from the mother), Model 4 was re-analyzed using a different reference group for the multipartnered fertility variable. Model 4.1 in Table 4 includes all of the same variables as Model 4 but uses "father's multipartnered fertility" as the reference group instead of "no multipartnered fertility" in order to make a direct comparison between mothers and fathers with multipartnered fertility. Results show that couples in which both parents have multipartnered fertility, as well as couples where only the mother has multipartnered fertility, are *not* at higher risk for relationship dissolution than couples where only the father has multipartnered fertility, when controlling for all other covariates. This finding leads to a rejection of Hypothesis 3; there are, in fact, no apparent differences in the risk for dissolution between mothers and fathers with

Table 4. Odds Ratios from Discrete-Time Event History Model Using Alternative Reference Group for MPF (N = 36,401 Person-Periods)

Variables	Model 4.1
Multipartner Fertility History	
No MPF children	0.322 ***
MPF (mother)	0.543
MPF (father) (ref)	
MPF (both)	0.822
Relationship Status at Child's Birth	
Married (ref)	
Cohabiting	2.286 *
Dating	5.970 ***
Demographics	
Mother's race	
White (ref)	
Black	1.178
Hispanic/Other race	0.713
Father's race differs from mother	1.070
Mother's religiousness	1.145
Mother's age	0.935 *
Father is 10 years older/younger than mother	0.695
Mother's substance abuse problem	0.849
Mother lived with both parents at age 15	1.536
Father ever in jail (mother's report)	1.544 †
Socioeconomic Status	
Mother's education	
<High school	0.881
High school/GED	0.616
Some college	0.629
College or more (ref)	
Mother worked in year before birth	0.705
Father worked in week before birth	1.149
Mother on welfare	0.766
Mother or father owns home	0.952
Relationship Characteristics	
Years known each other	1.031
Mother feels supported (1-3)	0.327 **
Mother reports conflict (1-3)	1.347
Mother reports violence	0.623
Mother distrusts men	0.859
Mother has pro-marriage attitude	1.118
Time Intervals	
Interval 1 (months 1-3) (ref)	
Interval 2 (months 4-6)	0.402 †
Interval 3 (months 7-9)	0.446 *
Interval 4 (months 10-12)	0.664
Interval 5 (months 13-15)	0.404 †
Interval 6 (months 16-18)	0.215 ***
Interval 7 (months 19-21)	0.394
Interval 8 (months 22-24)	0.547
Interval 9 (months 25-27)	0.510
Interval 10 (months 28-30)	0.270 *
Interval 11 (months 31-33)	0.476
Interval 12 (months 34-36)	0.128 ***
Interval 13 (months 37-50)	0.231 *
Model Chi-Square (df)	1158.64(39) ***
Pseudo-R^2	0.118

Note: Estimates based on weighted data.
Fit statistics based on unweighted data.
†$p \leq .10$, *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

multipartnered fertility. As expected, however, couples without multipartnered fertility are 68% less likely to experience dissolution compared to fathers with multipartnered fertility.

In each of the four models, controls for time are included (Intervals 1-13). These dummy variables describe the shape of the baseline logit hazard function and indicate whether risk for relationship dissolution increases, decreases, or remains steady over time (Singer & Willett, 2003). In general, the odds ratios show that the risk of relationship dissolution decreases over time. There is a slight spike early on in Interval 4 and then the risk flattens out until the last two intervals (12 and 13) when the risk decreases.

Sensitivity Analyses

As discussed in the Methods section, there are 396 cases that were dropped from the analytic data set due to attrition (random censoring) at wave 2 or wave 3. Specifically, there were 206 cases with missing interviews at waves 2 and 3 and 190 cases with missing interviews at wave 3 only. All of these cases were initially dropped because they run the risk of being informative; that is there could be a systematic pattern to respondents who drop out early that is related to the event of relationship dissolution.

Because there is no formal way to test if these dropped cases are informative, a sensitivity analysis was conducted on the cases with missing at wave 3 only (N = 190). (The 206 cases with missing at waves 2 and 3 were still excluded.) In this way, the 190 cases are treated as censored because they did not experience the event and were no longer under observation by the end of the study period. The final model (Model 4) from the original set of discrete-time survival analyses was re-analyzed with these cases included. Results of the sensitivity analysis are presented in Appendix B, Table 5

(alongside the original Model 4 results) and indicate no substantive differences in *p* values and odds ratios, as would be expected since none of these cases experienced the event.

A second sensitivity analysis was conducted to assess for possible bias that might have been caused by including father information on certain variables when most of the data on the characteristics of the couples are derived from mother-provided information. These five variables included: multipartnered fertility, whether the mother and father differed in race, whether there was an age difference of more than ten years between the mother and father, whether the father worked, and whether the couple owned or rented a home. The discrete-time models were modified to exclude these variables.

The results of this modified model are presented in Appendix C, Table 6 (alongside the original Model 4 results). There are small differences between the original Model 4 results which included the father information and the modified model results without this information but no substantive changes in the interpretations of variables that contribute to the model. Thus, exclusion of this father information thus does not appear warranted.

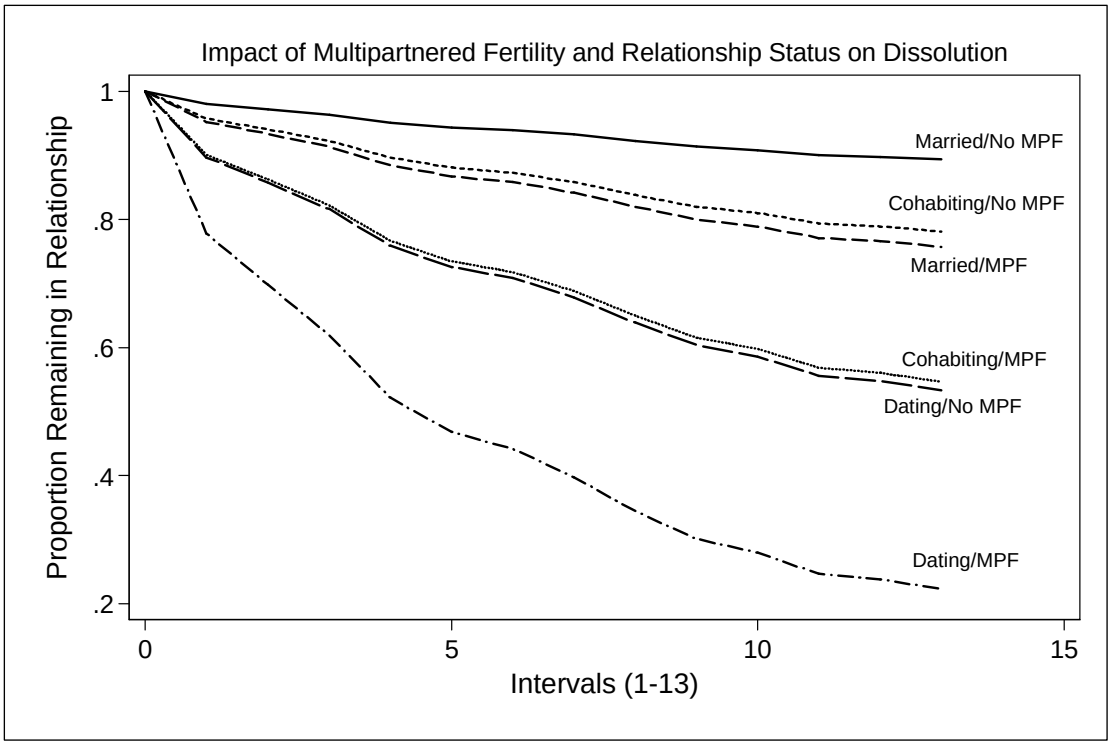
Model Predicted Survivor Curves

Next, model predicted survivor curves were generated to demonstrate graphically the relative risk of dissolution among couples that might be particularly disadvantaged; that is, those who are both unmarried *and* have multipartnered fertility. Using the parameter estimates from Model 4 for multipartnered fertility and relationship status,

while controlling for all other covariates at their mean, survivor curves for each combination of multipartnered fertility and relationship status were produced[5].

As seen in Figure 6, the risk of break-up among dating couples with multipartnered fertility far outweighs the risk of other combinations. In particular, married couples without multipartnered fertility appear to face the least risk among all groups, followed by cohabiting couples with multipartnered fertility, married couples without multipartnered fertility, cohabiting with multipartnered fertility, and finally, dating without multipartnered fertility.

Figure 6. Model predicted survivor curves



[5] Twelve curves would have been produced had the original form of MPF been used (four categories: neither-MPF, father-MPF, mother-MPF, both-MPF), along with relationship status (three categories: married, cohabiting, and dating). Instead, Model 4 from the multivariate results was re-analyzed using a collapsed (dummy) version of multipartnered fertility, i.e., 1 = any multipartnered fertility, 0 = no multipartnered fertility) thus producing only six curves.

CHAPTER 5

DISCUSSION AND CONCLUSION

This dissertation examined the timing and effects of multipartnered fertility on the relationship stability of married, cohabiting, and dating couples after the birth of a baby. While previous research has explored various aspects of the consequences and causes of relationship instability, the role that multipartnered fertility plays in destabilizing romantic unions is still an understudied area. Moreover, we know very little about the timing of relationship breakups in the context of the transition to parenthood, and virtually nothing about the timing of dissolution among dating couples bearing children. This study makes a contribution to the research literature in three ways: 1) it included not only married and cohabiting couples as is commonly done in relationship research, but dating couples as well; 2) it examined the timing of dissolution during the first three years after birth; and 3) it examined the role of multipartnered fertility in explaining relationship dissolution. To do this, the study utilized three waves of data from the Fragile Families and Child Wellbeing Study. Kaplan-Meier estimates and discrete-time event history models were used to explore the research questions of interest. In this chapter, the major findings of the study are summarized, a discussion of the study's strengths and limitations is presented, and, finally, implications for research, practice, and policy are discussed.

Summary of Major Findings

The Timing and Rate of Relationship Dissolution

Given that a limited number of studies have examined the timing of relationship dissolution among unmarried couples after childbirth, the current study began by examining the pattern of leaving the relationship during the first several years after having had a baby[6]. The estimates suggest a steadily decreasing rate of remaining in the relationship over the study period. In other words, during the first several years after having had a baby, the proportion of couples sustaining their relationship gradually decreases. By the end of the one-year mark, 22% of couples have ended their relationship, leaving 78% of the unions intact[7]. By the end of the study (47 months long), 43% of the couples have separated. This study found that romantic unions are not only vulnerable to dissolution over time, but are especially at risk of separation in the period *immediately* following birth, i.e., within the first several months. The high point in the hazard function (Figure 4) reflects a fast speed of change during this period.

As hypothesized, couples with multipartnered fertility are more at risk for separation than couples who share only biological children. This was specifically the case when the father and both the mother and father had children from previous relationships. An elevated risk of dissolution among fathers with children in other households seems quite plausible and is similar to what has been found in previous research (M. Carlson et al., 2004; Guzzo, 2009). The complexity that comes with sharing scarce resources with

[6] This study focused on literature using U.S. samples because family structure and family formation patterns in Western European and non-European English-speaking countries tend to differ from demographic changes in the United States due to cultural and social differences (Cherlin, 2009).

[7] Based on unweighted Kaplan-Meier estimates.

multiple families can cause considerable tension throughout the family system and especially within the mother-father dyad.

Multipartnered fertility burdens the father financially, making it difficult to meet child support obligations (Meyer et al., 2005). It also potentially undermines a father's investment in his current role as a partner and parent, which can act to exacerbate the problems in what is an already tenuous relationship (M. Carlson & Furstenberg, 2007). It intensifies mothers' sense of insecurity and jealousy because of possible romantic ties to prior partners (Edin & Kefalas, 2005). Finally, it negatively affects children's well-being. For the time that the father is present, his commitment to the children may be low and his attention splintered. He may also distract the mother and inadvertently take her time and energy away from child rearing (Cherlin, 2009). And finally, if the relationship ends (as this study indicates it might), the child must adjust to yet another transition when the father exits.

As hypothesized, the study also found that dating and cohabiting couples are at higher risk for separation than their married counterparts. This mirrors previous research that has found that the odds of family stability are considerably lower for cohabiting mothers than married mothers (Manning et al., 2004). The findings from this study differ from those of previous research, however, in that very few studies have included dating couples (for exceptions see M. Carlson et al., 2004; Hsueh, Morrison, & Doss, 2009). This is perhaps a reflection of their lower prevalence in the childbirth population or a limitation in availability of quality data on this group. Despite the possible data limitations, this is an important group to study. In some subgroups of the dating population, such as young, low-income African Americans, the fluid boundaries

characteristic of dating relationships often result in serial relationships and pregnancy with little long-term commitment from one or both partners, making this group especially vulnerable (Edin & Kefalas, 2005). If children were not involved, the effects of such courtships might be negligible. Unfortunately, this is rarely the case, and children raised without both parents are generally at a significant disadvantage (Amato & Booth, 1997; McLanahan & Sandefur, 1994; Wen, 2008). Dating couples with children warrant attention in the research, policy, and practice domains.

Discrete-Time Hazard Models

Findings from multivariate discrete-time hazard models suggest that an association between multipartnered fertility and relationship instability holds when other factors are taken into account: multipartnered fertility from the father and from both parents is associated with a higher risk of dissolution compared to couples without any children from previous relationships, all things being equal. Dating and cohabiting couples are also more vulnerable to separation than are married couples. Finally, younger mothers are more likely to separate, as are couples in which the father has a history of incarceration.

These findings are similar to those of a recent study by Guzzo (2009), in which she examined the effects of marital intentions and other covariates on the relationship outcomes of cohabiting couples. Although she analyzed models separately for men and women, she still found that when fathers had children from a prior relationship it significantly increased the odds of dissolution. Nevertheless, not all studies have found similar effects. Osborne et al.'s study (2007) found no effects of multipartnered fertility on separation regardless of the origin (mother or father). However, similar to this study,

Osborne found that cohabiting couples were at an increased risk for relationship dissolution relative to married couples. The difference in our findings may be driven by the fact that the present study's sample included dating couples, who while having similar rates of multipartnered fertility compared to cohabiting couples, have considerably higher rates of dissolution than cohabiting or married couples. It is feasible then that dating couples with multipartnered fertility are increasing the likelihood of dissolution compared to other relationship types.

Another key question of interest in this study was whether there are differences in relationship instability between fathers and mothers who have multipartnered fertility. In other words, is the risk of dissolution different when the father has had children with other mothers than when the mother has had children with other fathers? If couples face a higher risk of instability when they have children from previous romances generally, then knowing the answer to this question could have important implications for program developers and practitioners when structuring interventions for couples regarding what and who to target. The study hypothesized that fathers compared to mothers with multipartnered fertility (as opposed to fathers compared to couples *without* multipartnered fertility) pose a greater risk of separation. Such a finding would suggest that programs need to focus on fathers rather than mothers with children from prior relationships. As shown in Table 4, however, this is not the case. Although the odds are lower for mother-multipartnered fertility cases compared to father cases, the difference is not statistically significant and hence does not support the study's hypothesis regarding fathers versus mothers.

One possible explanation for the rejection of Hypothesis 3 is that the relationship between multipartnered fertility and dissolution is similar enough in mothers and fathers such that any actual difference cannot be observed. This does not in any way, however, minimize or run counter to this study's findings that father-only MPF and joint-MPF cases (i.e., both mother and father) have a significant positive effect on dissolution. This is a different research question and suggests that multipartnered fertility is a risk factor for dissolution compared to *not* having multipartnered fertility; instead, the rejection of Hypothesis 3 simply suggests that father-only MPF does not present a higher risk factor for dissolution compared to mother-only MPF.

Unexpectedly, this study found that socioeconomic variables did very little to explain relationship dissolution, thus rejecting the fourth hypothesis of the study: economically disadvantaged mothers *do not* appear to be at higher risk for dissolution than more advantaged mothers. This aligns with the findings from Orthner et al.'s (2004) cross-sectional research on low-income families who were determined to be as effective at building relationship strengths as middle income families and developed effective strategies to sustain their relationships and to meet their needs. While the study did not examine relationship dissolution specifically, it suggests that poverty does not necessarily drive all negative family outcomes, including relationship dissolution, and that low-income couples have great potential to build lasting relationships and cohesive families.

Another explanation for the non-significant findings is the specific selection of socioeconomic control variables. Previous quantitative and qualitative research has suggested that men's earnings play a crucial role in predicting relationship stability (M. Carlson et al., 2004; Charles et al., 2006; Edin & Kefalas, 2005; Lewin, 2005). However,

the current study did not include measures of income or education for men because of the large proportion of missing values on these variables. While this could possibly account for the study's findings, other research has found that women's earnings play a more important role in explaining separation among dating couples compared to men's earnings, thus suggesting that the selection of variables was appropriate. For example, Osborne (2005) found no effect on stability based on income from fathers but significant effects from mothers' incomes: higher levels of maternal income were associated with lower risks of dissolution.

The finding that welfare does not play a role in dissolution may also partially be explained by the definition of the variable in the Fragile Families study: a respondent was considered a welfare recipient if they received "public assistance, welfare, or food stamps." This broad interpretation of welfare use, as opposed to a measure that uses a more stringent definition based on TANF (cash assistance) alone, has more than likely captured couples with fewer risk factors than couples might otherwise have if the measure had been more narrowly defined. In other words, because of more lenient eligibility criteria for Food Stamps there may be couples included under welfare who are offsetting the negative effects of poverty that we would otherwise expect to find.

Another challenge in interpreting the lack of findings related to welfare participation is that the sample as a whole is of low-income. Thus, the non-welfare households are also at some risk of living at the economic margin, making them potentially more similar to the welfare using households compared to a sample that may have included more higher income families.

The study's finding that welfare is not associated with relationship dissolution may also be a reflection of previous research by Moffit (2000) on welfare and female headship. Using longitudinal data, he found little evidence of an association between welfare benefit levels and female headship, especially among black women, suggesting that welfare may not discourage the formation of two-parent families as previously thought. This combination of findings suggests that future research should attempt to clarify the relationship between men and women's socioeconomic status and relationship instability and should utilize other economic measures besides individual-level welfare, e.g., average state welfare payments, income.

Another noteworthy finding of the study is that mothers who reported feelings of support by the father had a lower risk of separation than their counterparts who did not share in this experience. This partially supports the study's final hypothesis that mothers with high levels of support and low levels of conflict and violence would be less likely to exit the relationship. Results indicate that while it is true that supportive relationships have higher chances of enduring, conflict and violence did not help explain the mechanism underlying relationship dissolution.

This coincides with research by Osborne et al. (2007), who found similar associations between support and violence and relationship dissolution. The lack of significance between violence and relationship stability is surprising but may be explained by the limited strategy used to capture this aspect of a relationship: the measure is based on a single question that asks whether the father hits or slaps the mother. The true nature of physically violent relationships can take many forms and so the actual effect of violence on the union may be biased downward. Furthermore, because mothers

are likely to underreport violence the parameter estimates may be biased thus reducing the ability to accurately assess its relationship with union stability. The influence of violence on relationship dissolution may have been different had a household-level of domestic violence that included fathers' experiences been included instead. Previous research using Fragile Families data indicates that fathers tend to report much higher levels of violence than mothers (8.2% compared to 1.7%) (Charles & Perreira, 2007). Once the missing values on this measure are imputed, it could be helpful in capturing potentially unobserved characteristics of the relationship.

Model-Predicted Survivor Curves

Finally, the study attempted to show what would happen in the population if the pattern of dissolution were to hold based on the model of independent and control variables. Model-predicted survivor curves for a combination of multipartnered fertility and baseline relationship status were generated holding all other covariates at their mean. The results indicate that dating couples with multipartnered fertility from the mother and/or the father are at a considerable disadvantage compared to all other types of couples, i.e., married/no MPF, married/MPF, cohabiting/MPF, cohabiting/no MPF, dating/no MPF. These model-predicted survivor curves depict how an average couple who is dating with *any* multipartnered fertility (mother, father, or both parents) is at a much higher risk of dissolution in each time period among the three groups of couples with and without multipartnered fertility. The predicted survivor curves suggest that dating parents with children from other relationships need especially strong support services and skills in order to sustain their relationship.

Transition to Parenthood

The theoretical framework for this study utilized a modified version of Cowan and Cowan's five-domain structural model of marital and family adaption to the birth of a baby. Using five elements within the family system (i.e., individual, couple, triad [mother, father, child], three generations [child, parents, and grandparents or other extended family], and the external social system), the purpose of the model is to enhance our understanding of the mechanisms at play *between* and *within* the five domains. The current study modified Cowan and Cowan's (2000) original model by specifying an interplay between "affiliate" individuals and families, e.g., partners and children from previous relationships, and the focal family. In this regard, multipartnered fertility becomes a key element in the system. As supported by the findings in this study, multipartnered fertility affects the family system, and specifically the couple dyad. Future research should expand our knowledge of the role that multipartnered fertility plays in affecting other domains in the model, e.g., child outcomes, social supports, kin networks, employment demands.

Despite the model's potential utility in offering a framework for understanding the impact that multipartnered fertility may have on relationship stability, it has limitations that warrant further reflection. First, the model does not explicitly indicate the direction of effects that may occur across the five domains. For example, as hypothesized in this study, the parents' work patterns and other measures of socioeconomic status (fifth and outermost level of the model) may influence the couple dyad (second level). On the other hand, the individual (first and innermost level) is likely to influence the overall parenting strategy and triadic relationship with the child (at third level). Identifying the

direction of hypothesized relationships like these between the five domains in the family system would be useful for further theory building and for testing this model specifically.

Second, the model fails to include any dimension of time. As suggested by this study, relationship stability among parents with a newborn baby is at risk of not being constant in the months and years after childbirth. A framework that includes some aspect of time with regard to relationship dissolution would be useful in improving our appreciation of how parenthood and childbirth, major life course events, influence whether and *when* a union dissolves.

Strengths and Limitations

This study contributes to extant research on union stability and multipartnered fertility history in a number of areas. The study provides important insight into the timing of relationship dissolution following the birth of a baby; it captures a fuller picture of instability than previous studies by including dating couples who bear children in addition to married and cohabiting couples; and it examines how a growing phenomenon – multipartnered fertility – affects union outcomes. Additionally, using model-predicted survivor curves, the study presents key findings in an efficient and clear method that is readily understood by most audiences. Finally, the findings are applicable to a nationally representative sample of non-marital births in large U.S. cities.

Despites the study's strengths, there are several limitations that warrant discussion. Several time-varying variables should be included in the discrete-time event history models in order to take full advantage of the longitudinal nature of the data and to accurately capture the effects of certain couple characteristics. These time-varying variables include: work experience and welfare status, as well as the relationship

characteristic variables, e.g., support, violence, distrust. The primary purpose of including time-varying covariates in a model is to connect the independent variable of interest at a specific time to the study time (S. Guo, Forthcoming) because the risk of hazard changes when the values of the variable change (Cleves, Gould, & Gutierrez, 2004b). Excluding a time-varying version of employment, for example, limits the ability to control for an anticipated event, such as unemployment, which may be negatively associated with relationship dissolution.

Future research should also take advantage of the availability of multiple imputation methods (Rose & Fraser, 2008) to impute missing data values instead of relying on listwise deletion (also known as case deletion or complete case analysis) (Schafer & Graham, 2002). Although the proportion of missing data was relatively small (no variable was missing more than 7% of its values), the ability to impute missing data would eliminate the need to delete observations which for several variables (i.e., multipartnered fertility, substance abuse, relationship time prior to pregnancy) that were shown to differ on the missing versus non-missing cases. These differences suggest that the missing data are "nonignorable" (Allison, 2002) or "missing not at random" (MNAR) (Schafer & Graham, 2002) and represent a threat to the validity of generalizing the study's findings. Alternative methods of handling missing data were considered, including dummy variable adjustment and mean substitution; however, both methods were described by Allison (2002) as even more biased and problematic than using listwise deletion. Thus, listwise deletion was ultimately selected as the least egregious of the available options. Multiple imputation, however, could go a long way in improving

this study's analysis and increasing its applicability and will be considered in future research.

Due to an empty interval problem with the married sample, i.e., no married couple experienced the event in the 13th and final interval, separate analyses of the model for each group (married, cohabiting, and dating) were not presented. Although the model for the married group converged, the 13th interval was dropped and the resulting estimates and standard errors appeared suspect (i.e., most of the significant estimates were in the opposite direction of what was expected and standard errors on the MPF variables were unusually large). However, a solution to this problem proposed by Allison (1995), in which the coefficient for the empty interval is constrained to be the same as that of the adjacent interval, should solve this problem in future analyses of this data.

A number of important variables were included in the multivariate models to capture characteristics of the relationship, e.g., support, conflict, distrust. The study lacks, however, potentially important variables that measure expectations that partners typically have in a relationship about the role that each person should play, e.g., child care, household tasks. Future waves of the Fragile Families study (or other studies) should include survey questions that address these aspects of the relationship. Additionally, this study's findings are limited to urban couples. Future research should be extended to include couples from rural environments as well.

A final limitation concerning the analytical method is worth noting. There is a potential disadvantage to using a discrete-time model because of the time metric used, e.g., month, quarter, year. As Guo (Forthcoming) points out, these relatively coarse measures of the change rate may result in a loss of information. When using quarters for

the time metric, for example, a couple whose relationship lasted 1 day is treated the same as a couple whose relationship lasted 90 days. This does not, however, seem to present a serious problem when using longitudinal data from multi-wave panel studies.

Implications

Research Implications

A key premise of this study was that transitions to parenthood present considerable challenges to most parents, and especially low-income parents who already face a host of disadvantages. To capture the effects of the transition to parenthood on couple outcomes requires that measures of relationship quality and other relevant variables be obtained *before* and after birth. The ideal data set would start at the initiation of a relationship and follow the couple through courtship, pregnancy and marriage (if applicable) or sustained co-parenting, and beyond for many years at regular intervals (Fein, Burstein, Fein, & Lindberg, 2003). The data would also include measures of other existing relationships in the immediate social system (i.e., those that resulted in multipartnered fertility). Data of this nature would allow for a fuller assessment of factors that affect the trajectories of couples' relationships and the outcomes of their children as well.

This study included several measures of relationship quality known to affect union outcomes; however, future research should consider how to improve the validity of such indicators. Violence is one such example. The reliability of accurately capturing violent behavior in this study is questionable because the measure was based on only one question ("How frequently did your partner hit or slap you?"). More precise measures of this behavior are especially needed because of its known effect on relationships around

the time of birth and because violence is more prevalent among low-income and unmarried couples (Saltzman, Johnson, Gilbert, & Goodwin, 2003). The National Institute for Justice recommends that violence be measured using five different categories: physical abuse, sexual violence, threats of sexual or physical violence, stalking, and psychological abuse (Centers for Disease Control and Prevention, 2000). Although inclusion of extraneous variables is never warranted, expanding the current mechanism for capturing the effects of violence on relationship stability should be considered. Following the work of Straus (1979), conflict as it is manifested across a broad continuum of aggression should continue to be used. In this study, several items that resembled questions from the "Reasoning" and "Verbal Aggression" scales of the Conflict Tactics Scale (Straus, 1979) were utilized and should also be considered in future research.

This study focused on one aspect of relationship stability among parents with newborn children – union dissolution. However, future research should consider other possible exits from the relationship, especially for dating parents, since this has not been widely explored. For instance, it would be useful to have an understanding of the timing of transitions into other relationship states, such as marriage and cohabitation, among parents who begin as "daters." Moreover, it could be beneficial to examine multiple or repeated events, i.e., when a parent exits from one relationship and enters into another. Serial relationships are bound to have significant effects on children; thus, extending our knowledge about the role of "serial fatherhood figures" in children's outcomes at different developmental stages could be informative for policy makers as well as practitioners.

Finally, the current study cannot make causal claims about multipartnered fertility and its effects on relationship outcomes. As with any data produced from observational studies as opposed to experimental studies, it is possible that the association between multipartnered fertility and dissolution is attributable to unobserved characteristics of parents who tend to have serial relationships with children. In other words, the effect of multipartnered fertility on relationship status is likely confounded with other factors, that is, those that led the parents to form previous partnerships (that included childbearing) to begin with.

Including a rich set of control variables that are confounders is one way of helping to reduce this bias. If possible, however, research efforts in the future should include other mechanisms to reduce these selection effects in order to move closer to establishing the causal relationship between multipartnered fertility and union instability. One method for achieving this would be to use a fixed effects estimation approach as conducted in previous studies on parental relationships (M. Carlson & Furstenberg, 2007; Foster & Kalil, 2007). Fixed-effects models would be used to compare the same couple at different points in time, holding constant all couple characteristics that are stable over time (or are time invariant). In non-mathematical terms, fixed-effects models can be thought of as regression models that include a dummy variable for each individual in the sample, thus controlling for their constant characteristics even when those characteristics have not been explicitly measured (c.f. Grogan-Kaylor, 2004).

Practice and Policy Implications

One of the more important findings of this study was that relationships among couples who recently had a child together are at significant risk of dissolution *very soon*

after the birth of the baby. It appears that dating couples and couples with multipartnered fertility from the father may be driving this effect. Several recently developed interventions to strengthen low-income couples' relationships were designed with this very problem in mind. For example, the Strong-Couples and Strong-Children program (Jones, 2008), and the Building Strong Families program, both projects of the federal Healthy Marriage Initiative, were designed to provide relationship skills and support services to low-income unwed expectant or new parents around the time of the "magic moment" (Dion et al., 2003). This is the period around the birth when couples are typically emotionally close from the pregnancy and birth and are potentially more open to interventions than at other times.

Waiting until the "magic moment" around the time of birth, however, may be too late. This raises an important timing question about when interventions should be delivered. Policy makers and program managers may need to target couples earlier at the "pre-contemplation" stage of parenting before couples actually get pregnant (but are romantically involved). A modification of this kind in relationship strengthening programs could prompt yet another difficult question: How should policies or programs be designed so that they target couples "far enough" along on the relationship timeline that it is advantageous to offer them an intervention but not so late that the couple is in imminent danger of separating. Program managers from existing interventions, such as Strong Couples-Strong Children, may be able to inform this policy and practice conundrum.

The second important finding from this study that has considerable policy and practice implications is the role that multipartnered fertility plays in relationship

instability and, subsequently, in decisions to marry (or not) among low-income African-American couples. Upon initial release of the Fragile Families data, policy makers were encouraged to find that while a considerable number of new parents with low-incomes were unmarried, they were still romantically involved at the time of birth and had high expectations for marriage with their partner. Approximately 74% of mothers and 90% of fathers reported that they had a 50-50 chance or better of marrying their partner (McLanahan et al., 2003). Furthermore, the majority of the mothers and fathers expressed a strong belief in marriage, indicating that marriage is good for themselves and their children.

With such high expectations for marriage among couples with nonmarital births, policy makers chose to commit considerable amounts of funding to marriage promotion and relationship stabilization programs using funds from the Temporary Assistance to Needy Families program. The hope was that these efforts would result in reduced poverty levels and improved child outcomes among the most vulnerable families, especially those consisting of unmarried mothers and children.

Despite the high hopes of both policy makers and the couples themselves for marriage, the effects of multipartnered fertility on relationship stability, and subsequently on marriage, was not fully considered. Having a child from a previous relationship lowers the probability that the current union will remain intact and that the couple will marry at all (Mincy, 2002). Both fathers and mothers are hesitant to make a serious, long-term, marital commitment to partners with children from other parents.

Mothers are reluctant to marry fathers because of financial obligations he has to other households, and because of fears about ongoing sexual ties to the previous

partner(s) (Monte, 2007). Fathers avoid transitioning to marriage because they are hesitant to take on the financial responsibility of another man's child (Lichter & Graefe, 2001) in addition to the child support obligations they may already have to other families. Further, welfare policies still penalize families by reducing or eliminating their benefits once couples have married (Orthner et al., 2004). Under these conditions, social policy efforts to promote marriage as a poverty reduction strategy will more than likely be ineffective.

Instead, policy makers should consider alternative and complementary measures that have the potential to serve the same purpose, that is, to reduce poverty levels among unmarried couples and improve the well-being of their children. Research suggests that poor labor market opportunities and incarceration are associated with decreased child support payments among unmarried fathers (Magnuson & Gibson-Davis, 2007). Strengthening workforce development efforts to help fathers find and sustain stable employment could help them more easily provide for *all* of their children (Mincy, 2002).

Specific clinical strategies that help parents co-parent across households are also warranted. Evidence suggests that fathers' apparent disengagement from their children who live in multiple households has as much to do with their inability to provide financial support as it does with their incapacity to coparent effectively (M. Carlson & Furstenberg, 2007). Interventions to strengthen couple relationships with specific attention to fostering positive father involvement are crucial to the success of any family-focused social policy efforts (C. P. Cowan et al., 2007).

Conclusion

Many couples in America today will partner and re-partner multiple times before making the final commitment to marriage (Cherlin, 2009). These cycles of re-partnering raise an important policy question: Would it be more effective to help couples avoid pregnancy altogether while they complete or reach a more mature point in their courtship process than to help them sustain their relationship once they have a child? Is waiting until they are pregnant or have a child too late? Cherlin (2009) addresses this social policy question by going a step further. He suggests that couples not only be encouraged to hold off on childbearing, but to slow down the entire courtship process to begin with.

> I suggest that we advise lone parents to take their time in finding partners and to be confident that a relationship will last before they bring a stepparent into their home. We should urge them to choose carefully and deliberately so that their subsequent partnerships, if any, have the greatest chance of enduring. (pp. 196-197).

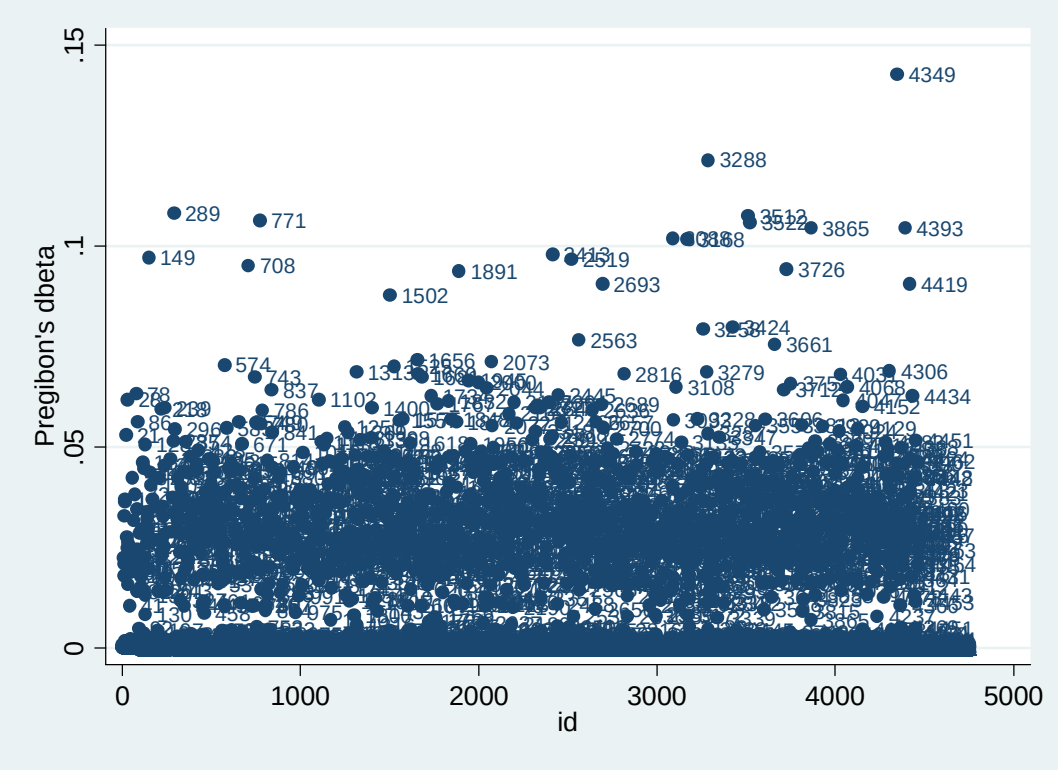
Since there are no indications that nonmarital childbearing is currently slowing down, efforts to strengthen parental relationships outside the institution of marriage should continue. This is certainly the case among unmarried couples with children. The key question raised in this study was whether having children with multiple partners increased the risk of relationship dissolution. The answer is yes, and knowing this should potentially enable practitioners and policy makers to improve the designs of existing and forthcoming programs aimed at reducing poverty through marriage and relationship strengthening efforts.

The results of this study suggest that multipartnered fertility, especially when the father has children from previous partners, has the potential to play a critical role in the outcome of couple relationships. Findings suggest that programs and policies need to

help fathers navigate the complexities that come with children born in serial relationships if marriage promotion efforts are to succeed in increasing family unity. This could possibly be achieved by offering father-specific groups that focus on co-parenting, increasing men's ability to pay child support across households, and structuring family-centered services so that the needs of multiple families with shared biological ties can be met. In this way, mothers and fathers with shared children in multiple families can be supported in their effort to raise strong children and live productive lives.

APPENDIX A

Cook's D Plot



APPENDIX B

Table 5. Odds Ratios from Discrete-Time Event History Model Including Cases with Missing Interviews at Wave 3 (Sensitivity Analysis 1)

Variable	Original Model 4 (from Table 3)	Model 4.2 (from sensitivity analysis 1)
Multipartner Fertility History		
No MPF children (ref)		
MPF (mother)	1.687	1.647
MPF (father)	3.108 ***	3.073 **
MPF (both)	2.554 **	2.525 **
Relationship Status at Child's Birth		
Married (ref)		
Cohabiting	2.286 *	2.316 *
Dating	5.970 ***	6.233 ***
Demographics		
Mother's race		
White (ref)		
Black	1.178	1.167
Hispanic/Other race	0.713	0.709
Father's race differs from mother	1.070	1.088
Mother's religiousness	1.145	1.132
Mother's age	0.935 *	0.936 *
Father is 10 years older/younger than mother	0.695	0.709
Mother's substance abuse problem	0.849	0.846
Mother lived with both parents at age 15	1.536	1.534
Father ever in jail (mother's report)	1.544 †	1.503 †
Socioeconomic Status		
Mother's education		
<High school	0.881	0.901
High school/GED	0.616	0.626
Some college	0.629	0.632
College or more (ref)		
Mother worked in year before birth	0.705	0.712
Father worked in week before birth	1.149	1.155
Mother on welfare	0.766	0.769
Mother or father owns home	0.952	0.946
Relationship Characteristics		
Years known each other	1.031	1.031
Mother feels supported (1-3)	0.327 **	0.326 **
Mother reports conflict (1-3)	1.347	1.350
Mother reports violence	0.623	0.610
Mother distrusts men	0.859	0.867
Mother has pro-marriage attitude	1.118	1.150
Time Intervals		
Interval 1 (months 1-3) (ref)		
Interval 2 (months 4-6)	0.402 †	0.426 †
Interval 3 (months 7-9)	0.446 *	0.455 *
Interval 4 (months 10-12)	0.664	0.679
Interval 5 (months 13-15)	0.404 †	0.413 †
Interval 6 (months 16-18)	0.215 ***	0.220 ***
Interval 7 (months 19-21)	0.394	0.403
Interval 8 (months 22-24)	0.547	0.559
Interval 9 (months 25-27)	0.510	0.521
Interval 10 (months 28-30)	0.270 *	0.276 *
Interval 11 (months 31-33)	0.476	0.486
Interval 12 (months 34-36)	0.128 ***	0.131 ***
Interval 13 (months 37-50)	0.231 *	0.235 *
Model Chi-Square (df)	1158.64(39) ***	1177.58(42) ***
Pseudo-R^2	0.118	0.119

Note: Estimates based on weighted data. Fit statistics based on unweighted data.

†$p \leq .10$, *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

APPENDIX C

Table 6. Odds Ratios from Discrete-Time Event History Model Excluding all Father Information (Sensitivity Analysis 2)

Variable	Original Model 4 (from Table 3)	Model 4.3 (from sensitivity analysis 2)
Multipartner Fertility History		
No MPF children (ref)		
MPF (mother)	1.687	1.803
MPF (father)	3.108 ***	2.754 **
MPF (both)	2.554 **	2.200 **
Relationship Status at Child's Birth		
Married (ref)		
Cohabiting	2.286 *	2.212 *
Dating	5.970 ***	4.773 ***
Demographics		
Mother's race		
White (ref)		
Black	1.178	1.363
Hispanic/Other race	0.713	0.832
Father's race differs from mother	1.070	0.732
Mother's religiousness	1.145	1.153
Mother's age	0.935 *	0.940 *
Father is 10 years older/younger than mother	0.695	0.734
Mother's substance abuse problem	0.849	1.204
Mother lived with both parents at age 15	1.536	1.361
Father ever in jail (mother's report)	1.544 †	1.663 †
Socioeconomic Status		
Mother's education		
<High school	0.881	0.753
High school/GED	0.616	0.632
Some college	0.629	0.647
College or more (ref)		
Mother worked in year before birth	0.705	0.693
Mother on welfare	0.766	0.715
Mother (or father) owns home^	0.952	1.040
Relationship Characteristics		
Years known each other	1.031	1.022
Mother feels supported (1-3)	0.327 **	0.364 **
Mother reports conflict (1-3)	1.347	1.119
Mother reports violence	0.623	0.623
Mother distrusts men	0.859	0.992
Mother has pro-marriage attitude	1.118	1.031
Time Intervals		
Interval 1 (months 1-3) (ref)		
Interval 2 (months 4-6)	0.402 †	0.388 †
Interval 3 (months 7-9)	0.446 *	0.421 *
Interval 4 (months 10-12)	0.664	0.640
Interval 5 (months 13-15)	0.404 †	0.384 *
Interval 6 (months 16-18)	0.215 ***	0.219 ***
Interval 7 (months 19-21)	0.394	0.376
Interval 8 (months 22-24)	0.547	0.513
Interval 9 (months 25-27)	0.510	0.476
Interval 10 (months 28-30)	0.270 *	0.251 **
Interval 11 (months 31-33)	0.476	0.439
Interval 12 (months 34-36)	0.128 ***	0.116 ***
Interval 13 (months 37-50)	0.231 *	0.190 *
Model Chi-Square (df)	1158.64(39) ***	1133.78(41) ***
Pseudo-R^2	0.118	0.116

Note: Estimates based on weighted data. Fit statistics based on unweighted data. ^ Only mothers are included in Model 4.3.

†$p \leq .10$, *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

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