

## **Trajectories of Couple Relationship Quality after Childbirth: Does Marriage Matter?**

Marcia J. Carlson  
Columbia University

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\*Marcia Carlson ([mjc2001@columbia.edu](mailto:mjc2001@columbia.edu)) is Associate Professor of Social Work and Sociology at Columbia University. I am grateful to Barb Devaney and Paul Amato for useful comments and to Sarah Meadows for helpful methodological advice. I appreciate research assistance provided by Brendan Kelly in the early stages of this project. I am grateful for support for this research from NICHD (#K01HD042776) and from the Administration for Children and Families, Department of Health and Human Services (via subcontract from Mathematica Policy Research, Inc.). The Fragile Families and Child Wellbeing Study is funded by a grant from NICHD (#R01HD36916) and a consortium of private foundations and other government agencies.

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### Abstract

Marital quality typically declines following the birth of a (first) child, as parenthood brings new identities and responsibilities for mothers and fathers. Yet, it is unclear whether nonmarital relationship quality follows a similar trajectory. This paper uses data from the Fragile Families and Child Wellbeing Study ( $N=2,500$ ) with latent growth curve and difference-in-difference models to examine relationship quality for co-resident couples over five years after a child's birth. Findings suggest that marriage at the time of the birth is protective for couple relationship quality, net of various individual characteristics associated with marriage. Among cohabiting couples at birth, those who subsequently marry have better relationship quality compared to all who do not marry, though not compared to stably cohabiting couples.

The transition to parenthood represents a major life event in which a couple must—both individually and together—negotiate extensive personal, familial, social, and often professional changes. Since the publication of LeMasters’ article entitled “Parenthood As Crisis” (LeMasters, 1957), a vast literature has documented how having a baby changes the lives of married couples—typically, a decrease in positive marital interchange, an increase in marital conflict, and a decline in marital satisfaction (Belsky & Kelly, 1994; Cowan & Cowan, 1992; Glenn & McLanahan, 1982; Gottman & Notarius, 2000; Michaels & Goldberg, 1988). This occurs because of the strains, stresses, and sources of conflict as parents adjust to their new caregiving roles, responsibilities, and routines—and the gender differentiation therein—amidst depleted resources of time and energy (Cowan & Cowan, 1992; Cowan et al., 1985). Some research has tempered the findings about the decline in marital quality after childbirth, suggesting that such decline is not unique to the transition to parenthood (McHale & Huston, 1985; Umberson, Williams, Powers, Chen, & Campbell, 2005) and that the consequences may depend on the extent to which spouses can renegotiate their roles (MacDermid, Huston, & McHale, 1990). Yet, it remains clear that childbirth represents a significant change in the lives and relationships of married couples.

Today, more than one third of all births occur outside of marriage (Martin et al., 2006). Over four-fifths of unwed couples are in a romantic relationship at the time of the baby’s birth, and half are living together (McLanahan et al., 2003). While many unwed couples break up within a few years of the baby’s birth, a non-trivial subset of couples remain in a romantic relationship and continue to live together while raising their child. Yet, there has been limited attention to the trajectories in relationship quality for unmarried couples who have a child together and whether/how they may differ from those of married couples. This topic is important

because it sheds light on the nature of marriage as an institution and the extent to which marriage may strengthen couple relationships and ultimately increase family stability and the wellbeing of children. Also, understanding how marriage matters for couple relationships can provide information salient to current public policy initiatives.

Policymakers now intend to encourage and strengthen marriage among low-income couples with children, since living with two married biological parents has been consistently linked with positive outcomes for children and adolescents (Amato, 2005; McLanahan & Sandefur, 1994; Sigle-Rushton & McLanahan, 2004). The Deficit Reduction Act of 2005 (P.L. 109-362) allocated \$150 million per year for research and demonstration programs related to healthy marriage promotion and responsible fatherhood through the Healthy Marriage Initiative. Yet, there remains much to learn about the promise of marriage for low-income couples, especially given the vast social and economic differences between couples who have children within versus outside of marriage. In particular, it is important to understand how couple relationship quality unfolds over time following a nonmarital birth, whether and how the patterns may differ from marital births, and whether getting married subsequent to the birth is associated with improved relationship quality among unwed couples with at least one common biological child. Understanding more about factors that affect (and link) relationship quality and marriage among low-income and unwed couples with children can facilitate the development of sound and effective interventions for this population (Cowan, Cowan, Pruett, & Pruett, 2007; Dion, 2005).

This paper uses new data from the Fragile Families and Child Wellbeing Study to examine the level and change in couple relationship quality subsequent to births in large U.S. cities between 1998 and 2000. Using latent growth curve and difference-in-difference models, I explore how marriage matters for relationships among co-resident (legally married and

unmarried cohabiting) couples at the time of birth. I examine the following two research questions: First, do trajectories of couple relationship quality after childbirth differ by marital status at the time of birth? Second, for cohabiting parents at birth, does getting married within five years after the birth change (or reflect change in) couple relationship quality? To my knowledge, no nationally representative study has examined the trajectories of relationship quality among married versus unmarried parents subsequent to childbirth.

#### PREVIOUS RESEARCH

##### *Marital Status and Couple Relationship Quality after Childbirth*

Among family ties, the marital relationship has historically been viewed as central to nuclear family dynamics (Cummings & O'Reilly, 1997). As noted above, an extensive literature has documented that marital quality typically declines with the transition to parenthood (Belsky & Hsieh, 1998; Belsky & Rovine, 1990; Cowan & Cowan, 1992; MacDermid et al., 1990; Shapiro, Gottman, & Carrère, 2000). Despite this typical average decline, not all couples become less satisfied with their marriages during the transition to parenthood, and significant variability in patterns of change underlies the overall average decline (Belsky, 1986; Belsky & Rovine, 1990). Also, while one could expect the initial transition to parenthood to yield the greatest change in the couple relationship, higher-order births also create new demands on parents' time and economic resources which, in turn, affect the couple relationship (O'Brien & Peyton, 2002); couples with a greater number of children are shown to experience a steeper decline in marital quality over time (Kurdek, 1999).

Research in this area has typically pointed to individual personality traits and dynamic couple processes as factors predicting patterns of change in marital quality among couples with

young children (Belsky & Hsieh, 1998), as well as married couples overall (B. Karney & Bradbury, 1997). Also, there is some evidence that family-of-origin experiences (particularly of wives) affect marital trajectories following childbirth (Sabatelli & Bartle-Haring, 2003) and that the pregnancy being unplanned and spousal depressive symptoms are associated with less positive marital interactions in the transition to parenthood (Cox, Paley, Burchinal, & Payne, 1999). In one study of 128 white middle- and working-class families, parental age, education and income were linked to improvement in at least one aspect of marital quality (Belsky & Rovine, 1990). However, little is known overall about socio-demographic factors that may affect couple relationship quality over time in part because the majority of studies of marital quality are based on small and unrepresentative samples of disproportionately white, and/or middle-income couples, with little investigation of minority or low-income couples (Erel & Burman, 1995; B. R. Karney & Bradbury, 1995b). As Gottmann and Notarius note in their decade review, many studies of marital interaction have relied on convenience samples with limited generalizability (Gottman & Notarius, 2000).

We might expect even greater declines in relationship quality after childbirth for unmarried (cohabiting) couples compared to married couples. Marriage represents a significant legal and personal commitment between two persons and has historically been highly ‘institutionalized’ as the primary context for childrearing (Cherlin, 2004, 2005). The legal status, more clear norms and expectations about family roles and responsibilities (within both nuclear and extended families), as well as the “enforced intimacy” (Nock) or “enforceable trust” (Cherlin) within marriage circumscribe the roles of partner and parent (Cherlin, 2004; Nock, 1995). Also, the nature of the marriage ‘contract’ facilitates a higher degree of specialization (between market and household labor) of husbands and wives, decreases uncertainty about the

future, and encourages couple-specific investments, compared to cohabiting couples where equality—but uncertainty—prevails (Brines & Joyner, 1999; England & Farkas, 1986; Oppenheimer, 2000). With respect to couple relationship quality after childbirth, we might expect that the more ‘institutionalized’ nature of married relationships would help protect relationship quality from declining as much or as rapidly amidst the strains and stresses of caring for a new child compared to unmarried couples.

Cross-sectional research comparing the quality of relationships for married and cohabiting couples in general (regardless of the presence of children) suggests that cohabiting couples have lower quality relationships than married couples: Cohabitors report lower levels of happiness, lower levels of interpersonal commitment, and greater levels of conflict (Brown & Booth, 1996; Nock, 1995; Stanley, Whitton, & Markman, 2004), although such differences are not observed between the subset of cohabitators who plan to marry their partner versus married couples (Brown, 2004; Brown & Booth, 1996). Some longitudinal research on change in relationship quality over time also suggests that the levels of happiness and fairness are higher among married couples compared to cohabiting couples (generally—not just those with children) (Brown, 2003; Skinner, Bahr, Crane, & Call, 2002). Yet, married and cohabiting couples experience a similar pattern of relationship quality decline over time, and the presence of children is shown to diminish relationship quality for both (Brown, 2003). To my knowledge, no study has explicitly compared the level and change in relationship quality among married and cohabiting couples who have recently had a child together.

### *The Transition to Marriage and Couple Relationship Quality*

Beyond the differences in how marital status differentiates trajectories in couple relationship quality subsequent to childbirth, there is reason to believe that for unmarried couples, *getting* married after childbirth may be associated with improved couple relationship quality. This could reflect selection and/or causation. Certainly, cohabiting couples with the most healthy and positive relationships would be expected to select into marriage—although some evidence suggests that positive relationship quality deters separation but does not, in fact, predict marriage (Brown, 2000). But beyond the selection factors, marriage may also have a causal effect improving future relationship quality through precisely the elements of ‘institutionalization’ within marriage described above (Cherlin, 2004, 2005; Nock, 1995). In other words, living in the *state* of being married would be expected to improve the relationship quality beyond whatever quality the same couple experienced as cohabitators.

Despite the significant interest in cohabitation as a union status in general and as compared to marriage, there has been only limited research using longitudinal data on how the transition to marriage affects couple relationship quality. Using data from the National Survey of Families and Households (NSFH), Brown finds that cohabitators who get married report more happiness in their relationship, more effective conflict resolution, fewer disagreements, and lower levels of instability, compared to cohabitators who do not marry (Brown, 2004); at the same time, this research finds that cohabitators who plan to marry have relationships that do not differ from those who actually married, suggesting that marriage itself may not have a causal effect. Also using the NSFH, Musick and Bumpass find that cohabitators’ getting married is associated with spending more time together, fewer heated fights, and less favorable attitudes toward separation (with no differences observed in global quality or frequency of disagreements about

topics such as money or spending time together) (Musick & Bumpass, 2006). Neither of these studies is focused on couples with children, especially couples with young children following a nonmarital birth that are the target of current Federal marriage promotion initiatives.

### *Defining the Appropriate Comparison Group*

An important consideration with respect to this research area is how to define the appropriate comparison group, particularly since unmarried couples are much more likely to break up than married couples within only a few years of the birth. Hence, cohabiting couples who continue living together (whether they choose to marry over time or not) are a much more select group of all unmarried couples than are married couples who stay together of all married couples. This paper focuses on couples living together at the time of their child's birth, since relationships are different in content and structure, and much more unstable, among couples living apart. Even focusing on cohabitators—the subset of unmarried parents with the 'best' relationships—the union dissolution rates are dramatically different by marital status. One study in the late 1980s showed that 29 percent of all cohabiting relationships ended their relationship within 2 years, compared to 9 percent of married couples (L. L. Bumpass & Sweet, 1989); similar analysis in 2000 suggested that cohabiting unions had become even less stable, primarily because of the decline in the proportion of cohabiting couples who would eventually marry each other (L. Bumpass & Lu, 2000). Some evidence suggests that cohabitators are less likely to break up if they have children while cohabiting (Wu & Balakrishnan, 1995), and they are more likely to marry if the woman becomes pregnant (Manning, 1995) or if they already have children (either together or by other partners) (Manning & Smock, 1995). Still, a notable gap in union dissolution by marital status persists.

To the extent that marriage has a causal effect that decreases the likelihood of breaking up in the first place (in addition to affecting relationship quality), comparing relationship quality between only married and unmarried couples that stay together over time may underestimate the true effect of marriage. For this reason, I conduct each set of multivariate analyses in two ways – first, comparing the relationship quality of all couples by marital status (including those who broke up—assigning their relationship quality the lowest score on the scale), and second, comparing the relationship quality by marital status of only those couples that remain in a co-resident relationship through the 5-year survey. To the extent that the link between marriage and union *status* reflects both causation and selection, the true effect of marriage on relationship quality likely falls somewhere between results obtained with the two different comparison groups.

### *Control Variables*

In order to eliminate spurious correlation in the effect of marriage on couple relationship quality, it is important to control for a number of individual and couple characteristics associated with marriage. With respect to demographic characteristics, educational attainment (Goldstein & Kenney, 2001; Lichter, McLaughlin, Kephart, & Landry, 1992), better physical health (Lillard & Panis, 1996), and older age (Lichter & Graefe, 2001) are associated with a greater likelihood of marriage, while being African American (Lichter, LeClare, & McLaughlin, 1991) and having grown up without both biological parents (South, 2001) are associated with a reduced probability of marriage. Among parents with young children, being/getting married is associated with more favorable attitudes toward marriage and lower levels of distrust (by mothers but not fathers) of the opposite gender (McLanahan, 2004), as well as greater religiosity (Wilcox & Wolfinger,

2007). With respect to socio-behavioral characteristics, married parents are less likely to have substance problems than unmarried parents, and married fathers are less likely to be physically violent or to have been incarcerated (DeKlyen, Brooks-Gunn, McLanahan, & Knab, 2006). Also, married mothers and fathers are less likely to have had children by more than one partner than their unmarried counterparts (Carlson & Furstenberg, 2006).

## METHOD

The data come from the Fragile Families and Child Wellbeing Study, a longitudinal, urban birth cohort survey designed to track the conditions and capabilities of unmarried parents—along with a comparison group of married parents—and their children over time (Reichman, Teitler, Garfinkel, & McLanahan, 2001). The study follows a cohort of 4,898 children and their parents in 20 U.S. cities from birth (1998-2000) until the child is about five years old. The survey over-samples unmarried parents and includes 3,712 nonmarital births and 1,186 marital births. When weighted, the data are representative of all births to parents in cities with populations of 200,000 or more. New mothers are interviewed in person at the hospital within 48 hours of having given birth, and fathers are interviewed in person either in the hospital or are located as soon as possible thereafter. Follow-up interviews occurred by phone when the child was about 1, 3 and 5 years old.

In this paper, I use data from the baseline, 1-, 3- and 5-year surveys. I use information reported by mothers and fathers on their own characteristics, and mothers' reports about the quality of the couple relationship. Response rates for the baseline survey are 87 percent for unmarried mothers and 82 percent for married mothers. Fathers were also interviewed in 88 percent of cases for married fathers and 75 percent for unmarried fathers. At the 1-year (3-year)

follow-up, 90 percent (87 percent) of unmarried mothers, 91 percent (89 percent) of married mothers, 70 percent (67 percent) of unmarried fathers, and 82 percent (82 percent) of married fathers who were eligible (i.e., had a completed baseline mother interview) were interviewed again. At the 5-year survey, 84 percent (85 percent) of eligible unmarried (married) mothers were interviewed again (the father data have just recently been completed). Response rates among unmarried fathers vary greatly by the fathers' relationship status with the mothers at the time of birth, so the father sample is more representative of fathers who are closely connected to the mothers of their children than those who are no longer romantically involved.

The full sample for this research includes 2,500 couples that were co-resident at the time of the baby's birth (1,011 married and 1,489 cohabiting couples) where the mother was interviewed at the 5-year follow-up survey (to report on the status and quality of the relationship). I also focus on the subset of 1,325 couples who were stably co-resident over the 5-year time period (752 married and 573 cohabiting at the time of birth).

### *Measures*

*Couple relationship quality.* The quality of the parents' relationship is measured by mothers' reports about the level of supportiveness and understanding in the couple relationship at each survey wave; I use mothers' reports in order to include a larger fraction of all couples, since fewer fathers were interviewed. Mothers are asked about the frequency that the father displays the following six types of behavior in the relationship: 1) "is fair and willing to compromise when [they] have a disagreement," 2) "expresses affection or love toward [her]," 3) "insults or criticizes [her] or [her] ideas" (coding reversed), 4) "encourages or helps [her] to do things that are important to [her]," 5) "listens to [her] when [she] needs someone to talk to," and 6) "really

understands [her] hurts and joys.” Response options are 1 (*never*), 2 (*sometimes*), and 3 (*often*). Mothers provide reports to these questions if they are in a romantic relationship with the father at the time of the survey or if the relationship broke up since the previous survey, in which case they are asked about “the last month of [their] relationship.”

The baseline survey only includes the first four items; I use all 6 items available at each (but results do not change if I limit the later waves to the same 4 items asked at baseline; the correlations between the 6-item and 4-item measures across the 1-, 3- and 5-year surveys are  $r=.94$ ,  $.93$ , and  $.94$ , respectively). For all four waves, factor analysis (with varimax rotation) yields a single factor across items, so the items were averaged to obtain an overall relationship quality score, with higher scores indicating a higher level of quality; alpha reliabilities for baseline, 1 year, 3 years, and 5 years are  $\alpha=.56$ ,  $.83$ ,  $.86$  and  $.87$ , respectively.

*Parents’ characteristics.* All control variables are reported at the baseline survey unless indicated otherwise. Mothers’ race/ethnicity includes four categories of white non-Hispanic, black non-Hispanic (reference), Hispanic, and other non-Hispanic. A dummy variable indicates whether the father’s race ethnicity differs from that of the mother. Educational attainment for both mothers and fathers is measured in three categories—less than high school (reference), high school degree, some college, and bachelor’s degree or higher (the latter two are combined in the regression models); for fathers, I use their own report if interviewed and mothers’ report if not interviewed. Each parent reports their age at the time of the baby’s birth measured in years, as well as whether they lived with both parents at age 15 (again, I fill in with mother’s report if father’s is missing).

Physical health is self-reported by mothers and fathers, ranging from 1 (*poor*) to 5 (*excellent*). I use mothers’ reports about whether they or the father have a problem with

substances that interfered with their work or personal relationships. Mothers' and fathers' traditional attitudes toward gender roles are measured by the average of two questions with four response choices ranging from 1 (*strongly disagree*) to 4 (*strongly agree*): 1) "The important decisions in the family should be made by the man of the house," and 2) "It is much better for everyone if the man earns the main living and the woman takes care of the home and family" ( $r=.41$ ). Parents' distrust of the opposite gender is represented by their responses to two statements: 1) "Men (women) cannot be trusted to be faithful," and 2) "In a dating relationship, a man (woman) is largely out to take advantage of a woman (man)." Response choices range from 1 (*strongly disagree*) to 4 (*strongly agree*), and the two items are averaged into a single measure ( $r=.47$ ). The frequency of religious attendance reflects how often mothers and fathers attend religious services, ranging from 1 (*not at all*) to 5 (*once a week or more*). Mothers report at baseline whether the father is physically violent toward her (*sometimes* or *often* hits or slaps), and mothers report (at the 1-year survey) whether the father has ever been in jail or prison.

Couple fertility history reflects both the mother's and the father's previous childbearing, based on several questions reported by mothers at the 1-year survey about whether they've had children together and/or by other partners. The information is combined into categories of: couple first birth, couple had two or more previous children together and no children by other partners (reference), father only had one or more children by a previous partner, mother only had a child by a previous partner, and both parents had a child by a previous partner. Two time-varying covariates related to changes in the couple relationship are included—for unmarried couples, whether the couple got married by the 1-, 3-, or 5-year survey, and for all couples, whether they had a new baby between the 1- and 3-year surveys, or between the 3- and 5-year surveys.

As with all surveys, attrition and missing data are an important concern. Of the 2,971 co-resident couples included in the baseline survey (1,186 married and 1,785 cohabiting), 471 mothers were not interviewed at the 5-year survey, and hence there is no information about the couple's relationship status or quality at that wave. Couples lost to attrition are disproportionately Hispanic (but not white or black), have lower maternal education, have more traditional gender role attitudes, and higher levels of gender distrust but otherwise do not significantly differ on the characteristics examined here (including initial relationship quality). For the full sample, only two variables have more than 10 percent missing of interviewed cases—father's report of gender distrust (10.1 percent missing), and whether parents have a new child together between 1 and 3 years (10.7 percent). In the latent growth model estimation, full information maximum likelihood (FIML) is used to fill in the missing values on all covariates. FIML estimates models that include all cases using all available data and has been shown to yield less biased and more efficient estimates than other missing data treatments such as listwise deletion and mean imputation (Wothke, 1998).

### *Sample Description*

Table 1 shows descriptive information about the full sample of co-resident parents at birth, by marital status at birth. Married mothers are more likely to be non-Hispanic white and less likely to be non-Hispanic black or Hispanic. Married mothers were age 29 and married fathers age 32, on average, at the birth of their child compared to cohabiting mothers with an average age of 24 and cohabiting fathers of 27. Married mothers and fathers are also much more likely to have some college or a bachelor's degree, compared to cohabiting parents, of which

three-fourths have a high school degree or less. Married parents are much more likely to have lived with both parents at age 15.

Married parents are in slightly better physical health than cohabiting parents and slightly less likely to report a substance problem. Married mothers report slightly more traditional attitudes toward gender roles than cohabiting mothers, but there is no difference among fathers by marital status; cohabiting parents have slightly higher levels of distrust of the opposite gender. Married mothers and fathers are notably more religious than cohabiting mothers and fathers, respectively. Cohabiting fathers are only slightly more likely to be physically violent but are much more likely to have some history of incarceration (32 percent) compared to married fathers (8 percent).

With respect to fertility history, for about 29 percent of married couples and 24 percent of cohabiting couples, the focal child is the first birth (for both the mother and father). Married couples are much more likely to have only had previous children together (43 percent) compared to cohabiting couples (17 percent), while cohabiting couples are much more likely to have had a child by a previous partner—either by the mother, the father or both. Finally, there is little difference by marital status at birth in the proportions of couples that go on to have another child between the 1- and 3-year surveys, but married couples at birth are more likely to have a child between the 3- and 5-year surveys.

### *Analytic Strategy*

After presenting unadjusted mean scores on relationship quality from the baseline, 1-, 3- and 5-year surveys, I use latent growth curve modeling to examine trajectories in relationship quality over time; growth curve models have been identified as particularly instructive for

examining change in relationship quality among couples over time (B. R. Karney & Bradbury, 1995a). I focus on the role of marital status in two ways. First, I compare trajectories of relationship quality among couples married at birth to those cohabiting at birth, controlling for covariates associated with marriage; this analysis sheds light on the selectivity of marriage and the extent to which married relationships may differ over and above the characteristics of those who enter such. Second, among cohabiting couples at birth, I compare the trajectories in relationship quality for those who get married subsequent to the birth to those who do not; this analysis points to the potential benefits of marriage for unwed parents. For each question, analyses are conducted first for all couples (that are co-resident at birth and with a completed mother 5-year interview) and then for only the subset of couples who continued to stably co-reside over the 5 years subsequent to the birth.

I focus on couples living together at the time of birth, since the dynamics and expectations may differ for couples living apart; homogeneity along key dimensions is important when conducting research on couple relationship quality (B. R. Karney & Bradbury, 1995a). Since stable co-residence is far less common among unmarried couples compared to married couples (Osborne & McLanahan, 2007), the sample of unwed parents living together over five years following the child's birth is a much more select group (of all unwed births) than are the stably co-resident married couples (of all married births). To provide some perspective on this, Figure 1 shows the frequency of co-residence in each survey year after birth for the full sample of married and unmarried births (i.e. not limited to co-resident couples at birth as is the rest of the paper). By the 5-year follow-up, 82 percent of couples married at the birth are still living together (and have been doing so stably). By contrast, only 34 percent of unmarried couples are living together at the 5-year survey, and only 21 percent having been co-resident at each survey

wave from birth through 5 years. Therefore, comparisons between stably co-resident married versus cohabiting couples involves comparing the majority of the former to a small minority of the latter.

[Figure 1 about here]

Growth curve models allow estimation of trajectories to capture both within-couple and between-couple change over time. Within-couple differences, specified in a so-called Level 1 model, reflect the pattern of couple relationship quality trajectories, as follows:

$$Y_{it} = \alpha_{0i} + \beta_{1i}X_{it} + \varepsilon_{it} \quad [1]$$

where  $Y_{it}$  represents relationship quality for the  $i$ th child at time  $t$ ,  $X_{it}$  represents time at each measurement for the  $i$ th couple,  $\alpha_{0i}$  is the intercept of the underlying (latent) trajectory for the  $i$ th couple,  $\beta_{1i}$  is the slope of the underlying trajectory of the  $i$ th couple, and  $\varepsilon_{it}$  represents measurement error for the  $i$ th couple at time  $t$ . In this analysis, time is given a value of 0 at the time of birth and is reported in years since birth for each survey wave thereafter (1, 3 and 5 years). The intercept value ( $\alpha$ ) represents the level of couple relationship quality at the initial (time-of-birth) interview, and the slope ( $\beta$ ) represents the couple's linear rate of change over the time period.

Between-couple differences are estimated by treating the intercept and slope parameters as dependent variables in a so-called Level 2 model, estimated as a function of variables that differ between individuals but not across time as follows:

$$\alpha_i = \alpha_0 + \mu_0 w_i + \varepsilon_{0i} \quad [2]$$

$$\beta_i = \beta_0 + \mu_1 w_i + \varepsilon_{1i} \quad [3]$$

where  $\mu_0$  and  $\mu_1$  represent couple-specific deviations from the average initial relationship quality score (intercept) and average rate of change (slope), respectively,  $w_i$  represents a series of covariates measured at the baseline survey, and  $\varepsilon$  represents measurement error.

The conceptual model is shown in Figure 2. The parameters from the intercept to the relationship quality measures are fixed at 1 (as is typically standard in this type of model). The slope parameters are fixed according to the time since the baseline interview (0) in years (1, 3 and 5). For the cohabiting-at-birth sub-sample, getting married before a given survey wave may affect both the relationship quality at that survey and at any subsequent survey(s). For all couples, having a new baby before a given survey wave may also affect relationship quality at the time and in the future (not shown in figure).

[Figure 2 about here]

A series of nested latent growth models are first estimated for all co-resident couples at birth (Table 3) using MPlus software, Version 4.1 (Muthén & Muthén, 2006). Model fit is evaluated by the Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA); good fit is indicated by a CFI greater than .95 and an RMSEA less than .06 (Hu & Bentler, 1999), although a CFI of .90 is also considered acceptable (Raykov & Marcoulides, 2000). First an unconditional model (with no covariates) is estimated to evaluate overall differences in relationship quality trajectories between co-resident couples who were married at birth versus cohabiting at birth. Then, covariates are included in stages to examine the extent to which differences by marital status persist when adjusting for baseline characteristics associated with marriage. Model 2 adds demographic characteristics (age, race/ethnicity, education, family background) that are presumed to be exogenous to marriage; Model 3 adds couple health, social-psychological characteristics (substance problem, gender role attitudes,

gender distrust, religious attendance, father physical violence, and father incarceration history), and fertility history that could potentially be endogenous to marriage. Model 4 adds time-varying covariates for whether the couple had another birth between years 1 and 3, and years 3 and 5. This event may represent a ‘shock’ to the underlying trajectory. All estimates are standardized on the dependent variable (but not the independent variable); hence, each coefficient can be interpreted as the standard-deviation change in relationship quality with a one-unit change in the independent variable.

In order to address the second research question of how marriage changes (or reflects change in) unmarried parents’ relationship trajectories, the next set of latent growth models focuses on unmarried (cohabiting) couples at birth (shown in Table 4). Here, two models are estimated that include the full set of baseline covariates, while Model 1 also includes whether the couple got married between birth and 1 year, 1 year and 3 years, or 3 years and 5 years, and Model 2 adds variables for whether the couple had any new children together. These estimates provide information about how becoming married after a nonmarital birth affects couples’ relationship trajectories during the first five years of their child’s life.

In addition, to address the second research question, I also estimate difference-in-difference models. While latent growth models parse the variation across groups into starting level (intercept) and rate of change (slope), difference-in-difference estimation techniques allow one to evaluate whether the overall gap in relationship quality between those who do—and do not—get married grows over time. To the extent that marriage has a causal effect on relationship quality, we would expect that the difference in relationship quality between parents cohabiting at birth that will, in fact, go on to marry over the next five years and parents cohabiting at birth that will not marry will be greater after the marriage occurs as compared to before.

Difference-in-difference models endeavor to approximate an experimental design, where change in an outcome variable for a treatment group ( $T$ ) is compared to change in the outcome for a control group ( $C$ ). The difference in the difference for the two groups pre- and post-treatment is presumed to be the treatment effect,  $(T_2-T_1)-(C_2-C_1)$ . The statistical significance of the difference in the difference can be tested in a regression framework (which allows controls to be added) based on the following equation:

$$Y_i = \beta_0 + \beta_1 treat_i + \beta_2 post_i + \beta_3 treat_i * post_i + \varepsilon_i \quad [4]$$

where  $treat$  is 1 if the couple is in the treatment group (i.e., gets married) and 0 if in the control group (i.e., does not get married), and  $post$  is 1 when observed after treatment and 0 when observed before treatment. The coefficient on the interaction term ( $\beta_3$ ) indicates whether the difference in the difference due to the ‘treatment’ is statistically significant, in other words whether the gap in relationship quality is significantly greater after couples that will go on to marry actually get married as compared to before they were married. By using only within-group variation, this approach is similar to a fixed effects model that eliminates bias due to unobserved heterogeneity between groups.

## RESULTS

Means on couple relationship quality across survey waves from birth through the 5-year survey are shown in Table 2. Two sets of means are presented—first, for all co-resident couples at birth, where couples that break up before the 1- or 3-year survey (and hence have no report at the 3- and/or 5-year surveys) are assigned the lowest score on the relationship quality measure (1 on the 1-to-3 scale), and second for couples that are stably co-resident from birth through the 5-year survey. On average, mothers living with the child’s biological father report quite high

relationship quality right after their baby's birth (2.71 on the 1-to-3 scale). Average quality drops by about two-thirds of a baseline standard deviation (to 2.51) during the year subsequent to the birth and continues to decline thereafter through the fifth year (to 2.23).

Comparing married and cohabiting couples at birth, married couples start out 0.05 points higher (about one-sixth of a standard deviation), and the gap continues to grow over time. The average decline in relationship quality across the 5-year period is 0.28 for married couples and 0.62 for unmarried (cohabiting) couples. The magnitude of the gap is largely driven by the greater fraction of unmarried-at-birth couples that break up (and hence in later waves are assigned the lowest score on the scale). As shown in the next set of rows in Table 2, 82 percent of married couples that were co-resident at the time of birth are still together at the 5-year survey (as shown in Figure 1), while 50 percent of cohabiting couples at birth are still living together (and may have gotten legally married).

The proportion of couples that was stably co-resident (i.e., reported being co-resident at all of the 1-, 3- and 5-year surveys) is lower than the fraction that reported being co-resident at 5 years; 81.7 percent of married-at-birth couples are stably co-resident, compared to 43.8 percent for cohabiting-at-birth couples. When average relationship quality scores are examined only among these stably co-resident couples in the next set of rows, the differences by time-of-birth marital status are much smaller (though still statistically significant), ranging from 0.03 to 0.07 in each year, or about one-seventh to one-fifth of a standard deviation.

As shown in the bottom row of Table 2, over the post-birth period, an increasing fraction of unmarried couples who stay together get married, from 23 percent by year 1, 39 percent by year 3, and fully 50 percent by year 5. (The reader should keep in mind that these numbers are high because the sample is limited to couples that are co-resident over the entire period; the

proportions married among *all* unmarried couples at birth in the Fragile Families Study interviewed at each wave are much lower—9, 13 and 15 percent at 1, 3 and 5 years, respectively.) When relationship quality means are calculated by current marital status instead of fixing marital status at birth (figures not shown), the differences between married and unmarried couples diminish over time; this is because unmarried couples who marry later have relationships that are of better quality than those who remain unmarried—but not as good as those who were married before the baby's birth.

Turning to the latent growth curve models, the first (unconditional) model in Table 3 for all co-resident couples at birth (regardless of later relationship status) suggests that when no other factors are considered, couples married at the time of the baby's birth have a significantly higher initial level of relationship quality than couples cohabiting (but not married) at the baby's birth—0.24 standard deviation units higher. Also, the slope coefficient—which represents average change over time in couple relationship quality—is large and significant, indicating that marriage appears to be protective for couple relationships following a child's birth; the average decline in marital quality is .60 standard deviation units higher (i.e. slower rate of decline) than the average decline in cohabiting relationship quality. The fit of this initial model is quite poor, particularly with respect to the RMSEA, although this is not surprising, since there is only one predictor variable (marital status) in the model.

When basic demographic characteristics (age, race, education, and family background at age 15) are controlled in Model 2, the difference in the intercept becomes much smaller in magnitude and is no longer statistically significant; this is primarily due to the fact that married mothers are more likely to be white and to have some college education, and these characteristics are associated with a higher initial level of relationship quality. The slope parameter remains

large and significant, indicating that relationship quality among married couples declines more slowly than that for unmarried couples at birth, even holding constant the demographic characteristics of those who marry.

Adding couple fertility history and social-psychological characteristics in Model 3 yields only a modest decrease in the magnitude (but not the significance) of marriage on the slope coefficient. Similarly, the marriage coefficient declines only moderately but remains highly significant when variables are added indicating new childbearing subsequent to the focal birth. In other words, marriage at the time of the focal child's birth is positively associated with relationship trajectories net of social-psychological attributes of those who marry and regardless of whether couples go on to have future children.

The estimates in the lower panel of Table 3 repeat the results above but are limited to couples who are stably co-resident over the 5-year period following the baby's birth. This represents a stronger test of whether and how marriage matters for couple relationships because the comparison group is limited to couples that are also living together over the entire time period—but that started off unmarried, controlling for a host of covariates associated with marriage. As shown in Model 1, there is a marginally significant positive association between marriage and both the intercept and the slope coefficient, indicating that couples married at the baby's birth have a higher initial level of relationship quality and experience slower average decline in that quality over time compared to their stably cohabiting counterparts. Controlling for demographic characteristics in Model 2 eliminates the positive association of marriage with the initial level, because white parents and those with higher education report higher levels of relationship quality. Also, the slope coefficient becomes strong and statistically significant. This is because white parents, older fathers, and more highly-educated parents report larger declines

in relationship quality over time, so net of race, age and education, marriage appears to be protective of relationship quality. (The education coefficient on the slope is not statistically significant, but models [not shown] run separately with race and then with education show a similar pattern of results vis-à-vis the unconditional model.) Controlling for social-psychological characteristics and couple fertility history in Model 3 only modestly diminishes the marriage coefficient, as does controlling for the couple's new births in Model 4.

Turning to the effects of the other independent variables on the level and change in relationship quality after the birth of a child, being white or Hispanic, and having some college education, are associated with a higher initial starting level, although the education coefficients are no longer significant once the social-psychological characteristics are controlled in Model 3. Mothers in better health also report better-quality relationships, while mothers with substance problems, higher levels of distrust of men, whose partners are physically violent, or have been in jail or prison (marginally significant) report lower initial relationship quality. In addition, fathers' more traditional attitudes toward gender roles are inversely related to couple relationship quality. There are notable differences in initial relationship quality by couple fertility history. Compared to couples who have had two or more children only together, couples having their first birth have relationship quality scores that are 27 percent of a standard deviation higher. When the mother has a child by a previous partner—or when both partners have a child by a previous partner—the mother also reports higher initial relationship quality.

With respect to how the independent variables are linked to the slope—or rate of change over time—in couple relationship quality, many of the predictors of a higher level are also predictive of a faster decline; presumably, those who start higher have 'farther to fall.' Net of other characteristics, white mothers report a greater decline in relationship quality over time, and

fathers' older age is linked to slightly more rapid decline. Also, couples having their first birth report much greater declines in relationship quality, as do mothers who have a child by a previous partner. None of the social-psychological variables appears to have any significant effect on the slope of couple relationship quality over time, except a marginally significant coefficient on fathers' violence: the positive sign is surprising, but combined with the extremely low starting value, this indicates that relationship quality appears to level off over time for the very small number of couples (24, or 2 percent of the sub-sample) where the father has a violence problem yet they remain co-resident. With respect to new children born after the focal birth, having a new baby between the 3- and 5-year surveys is associated with slightly higher relationship quality scores; this could reflect selection in that couples with the best relationships will choose to continue bearing children together.

The next set of results is intended to answer the question of whether *entering* a marriage subsequent to a nonmarital birth is associated with positive change in relationship quality. Table 4 shows latent growth model estimates for unmarried (cohabiting) couples at the time of the focal child's birth. As with the previous estimates for all couples, separate models are estimated for all cohabiting couples at birth (regardless of subsequent relationship status) and then limited to couples that are co-resident over all five years observed. As shown in the top panel of Table 4, although these models do not appear to fit the data very well, couples who get married after the birth—regardless of timing of the marriage—have significantly better quality relationships than couples who do not. Further, the higher quality associated with marriage appears to increase over time; this could indicate that the benefits of marriage accrue over time, but it is also important to recall that an increasing share of couples break up over time, so the relationship quality of the reference group becomes increasingly worse; mothers provide a relationship quality score in the

wave after they broke up (with respect to when they were together) but for subsequent waves are assigned to the lowest value on the measure. Having another child together is (not surprisingly) associated with having a higher quality relationship.

When the sample is limited to only couples that were unmarried (cohabiting) at birth and continued to live together over the next five years, there are no observed differences in relationship quality between the subset of couples that marry (50 percent by the 5-year survey) versus those that remain unmarried and cohabiting; also, having subsequent children does not appear to be linked to couple relationship quality when stable cohabitators are the reference group. While all coefficients (except for getting married between year 1 and year 3) are in a positive direction, none is statistically significant. With respect to the covariates (not shown in table), a similar pattern is found to that for the models for both married and unmarried couples shown in Table 3, although fewer coefficients are statistically significant.

Turning to the difference-in-difference estimates, the first panel of Table 5 shows mean differences in relationship quality over time for unmarried (cohabiting) couples at birth who get married within five years after the birth, compared to all those that do not (and may in fact break up). Pooling observations across waves before couples have married, the average relationship quality score for couples who will eventually marry is 2.69 compared to 2.42 for those who will not, yielding a mean difference of .27. Pooling observations across waves at the 5-year follow-up survey, the average relationship quality score for couples who got married is 2.55 compared to 1.91 for those who did not, yielding a mean difference of .64. The difference in these two mean differences is .37 (which is by definition the same as the difference in the average decline in couple relationship quality over time for those who do versus do not marry).

The regression estimate shown in the next row indicates whether this difference is statistically significant. I limit the number of cases to those not missing on all covariates (in order to compare to the next estimate that controls for all covariates); for this reason the ‘unadjusted’ regression estimate does not precisely match the calculated difference in means. The unadjusted mean difference in difference (.34) is highly significant, indicating that the gap in relationship quality between couples who marry and those who do not grows before and after marriage (when couples who break up are assigned the lowest value on the relationship quality score). Controlling for all fixed demographic, economic and social-psychological characteristics does not change the mean difference in difference.

The second panel repeats the estimates above for unmarried couples at birth that remain stably co-resident over the five years after the baby’s birth, comparing those that will at some point marry to those that will not. For this group of couples that live together over the entire time period, as would be expected, the differences by marital status are smaller—both before and after marriage. The initial difference in relationship quality between those that will (versus will not) marry is .10, rising only slightly to .11 after any marriages occur—with a very small difference in difference of only .01. Regression estimates show that the difference in difference (limited to cases with non-missing values on covariates) is not statistically significant whether unadjusted (.03) or adjusted for the full set of control variables (.02). These results suggest that for couples that would otherwise continue living together over five years after a nonmarital birth, getting married does not appear to significantly affect the quality of their relationship.

## DISCUSSION

This paper uses data from the Fragile Families and Child Wellbeing Study to provide new information about how marriage matters for trajectories of co-resident couple relationships subsequent to the birth of a child in large U.S. cities in the late 1990s. The analysis explores whether there are differences in relationship quality over time by initial marital status at the child's birth as well as whether unwed couples' getting married before their child's fifth birthday is linked with improved relationship quality. Given the large and growing numbers of births that occur outside marriage—and the hope by policymakers that these couples will stay together and provide a positive family environment for their children—this research sheds light on the promise of interventions that may facilitate marriage by strengthening couple relationships.

An important consideration in this analysis is what should be the appropriate group to whom married couples should be compared: As would be expected, comparing couples who start out as married—or unwed couples who get married—to all couples who start out cohabiting (including those who break up) yields much stronger differences by marital status than do comparisons to couples whose relationship is structurally the same (two biological parents stably living with their common child) except for the legal bond of marriage. In this paper, I conduct analyses using both comparison groups in order to evaluate the consistency of results.

With respect to the first research question—whether trajectories of couple relationship quality differ by marital status at the time of a new child's birth, the answer appears to be yes. The initial higher level of relationship quality for married couples is attributable to the demographic characteristics of those who get married. However, couples married at the time of their baby's birth do experience a significantly slower decline in relationship quality over time, net of a host of demographic, economic, and social-behavioral characteristics. In other words,

marriage appears to be protective for couple relationship quality in the first five years after a baby's birth, even holding constant the many observed individual and couple factors with which marriage is correlated (and that have been little examined in previous research). These results could suggest either that being married has a causal effect on sustaining relationship quality, or that the association is due to some other unmeasured characteristic(s) that differentiate couples who bear children within versus outside of marriage. Although this investigation utilizes longitudinal panel data following the same couples over multiple waves, one cannot be certain which is true, and as with family structure effects more broadly (Cherlin, 1999), both causation and selection are likely operative.

With respect to the second question—whether getting married post-birth changes couple relationship quality, the answer depends on what is the reference group. Among all cohabiting couples at birth, couples who go on to get married clearly have higher relationship quality than the entire group that starts out cohabiting but does not go on to marry. At the same time, the subset of couples who get married does not have relationship quality trajectories that significantly differ from their unmarried counterparts who remain in long-term cohabiting (unmarried) relationships. This is consistent with related research using the NSFH, suggesting that while married couples have better quality relationships than cohabitators overall, there is no difference observed between married couples and the subset of cohabitators that plan to marry in the future (Brown, 2004; Brown & Booth, 1996). At the same time, in difference-in-difference results not shown, stably co-resident couples with below-median relationship quality at the time of birth are shown to gain more in relationship quality from getting married compared to those with above-median quality at the birth; the small cell sizes warrant caution, but this result suggests there may be important heterogeneity across couples that merits further investigation.

While the present analysis has focused on couples who start out in a co-resident relationship at the time of the baby's birth (and hence measuring relationship quality—and making comparisons by marital status—is salient), it is important to recall that of all nonmarital births, couples who go on to live together over the subsequent five years (whether they later marry or not) represent a very select group of couples. Overall (as shown in Figure 1), only about one-third of couples who have an unwed birth in the Fragile Families Study are living together at the 5-year survey, and only one-fifth of all unwed couples were stably co-residing over all five years post birth. Therefore, the couples analyzed in this paper clearly represent the 'best' relationships of all unmarried couples. As such, the couples that start out cohabiting (and especially those that cohabit long-term) could be the most likely to get and stay married, and hence if getting married doesn't improve *their* relationships, there could be little promise of marriage for the other unwed couples. On the other hand, the opposite could be true: Since these couples are effectively living in 'marriage-like' relationships already, marriage may do the least to change their circumstances. It could be that non-resident couples—whose relationships are less strong and secure—are exactly the couples for whom a marital commitment might make more of an early difference in strengthening their union. The stronger results when all couples are included—even those that broke up—are not inconsistent with this interpretation, although clearly a host of other (observed and unobserved) factors beyond marriage predict both relationship dissolution and quality.

Taken together, the findings about being married and getting married present an interesting puzzle: Marriage at the time of a baby's birth appears to be protective against rapid decline in relationship quality, and yet, getting married after the birth does not significantly improve relationship quality for those who were co-resident anyway. These results are not

necessarily inconsistent. First, they may underscore the concern about whether the findings are simply due to unobserved heterogeneity: Marriage is the same legal status for all couples, but it may in fact be a very different institution—and have a differential effect on relationship quality—depending on the characteristics of those individuals in it; indeed, heterogeneity across individuals presents a serious challenge for appropriately inferring causal effects (Xie, 2007). Second, the benefits of marriage may take time to accrue. Marriage may be protective for couples who have been married for some time (at least five years for the Fragile Families married-at-birth couples) because it takes time to develop the shared history and ‘marriage-specific capital’ (including children) that positively affect the couple relationship trajectory (England & Farkas, 1986). In other words, the ‘institutionalization’ of marriage—recognized as a key aspect of being in the married state (Cherlin, 2004)—may not happen immediately with entry into the legal status. While not statistically significant, the increasing coefficient size for getting married between 1 and 3 years after the baby’s birth on relationship quality at 3 years and then 5 years (with the latter approaching marginal statistical significance) suggests that this could potentially be the case.

With respect to policy implications vis-à-vis unwed parents, whether the benefits of marriage accrue over time is a crucial question. If so, it could indeed be useful to encourage marriage by enhancing couple relationship skills, particularly if marriage has a causal effect on the longevity of the relationship, given the importance of family stability for children (Fomby & Cherlin, 2007; Osborne & McLanahan, 2007). Ultimately, relationship skills program designed to promote and strengthen marriage may not be well-suited for all unmarried couples with children. Instead, such programs may be particularly appropriate for a subset of all unwed couples with children, particularly those for whom the key barriers to marriage—relationship

standards and financial stability (Edin & Kefalas, 2005; Gibson-Davis, Edin, & McLanahan, 2005)—can most readily be overcome. Experimental programs underway that are designed to enhance relationship skills and encourage marriage among couples who so choose will be instructive for deciphering the extent to which strengthening couple relationships may facilitate marriage and/or whether getting married may facilitate the development of strong family relationships.

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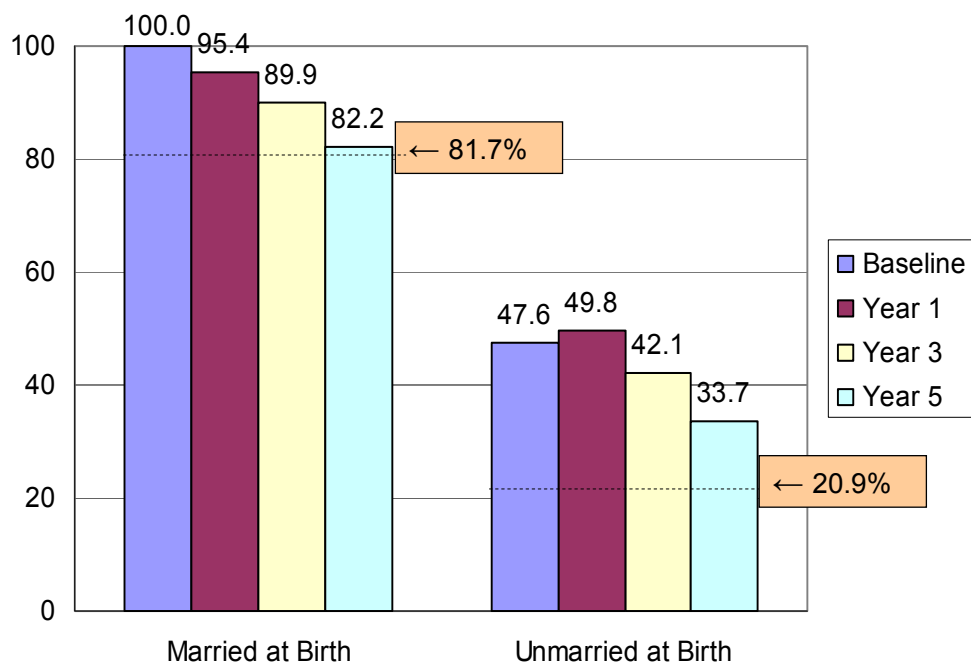
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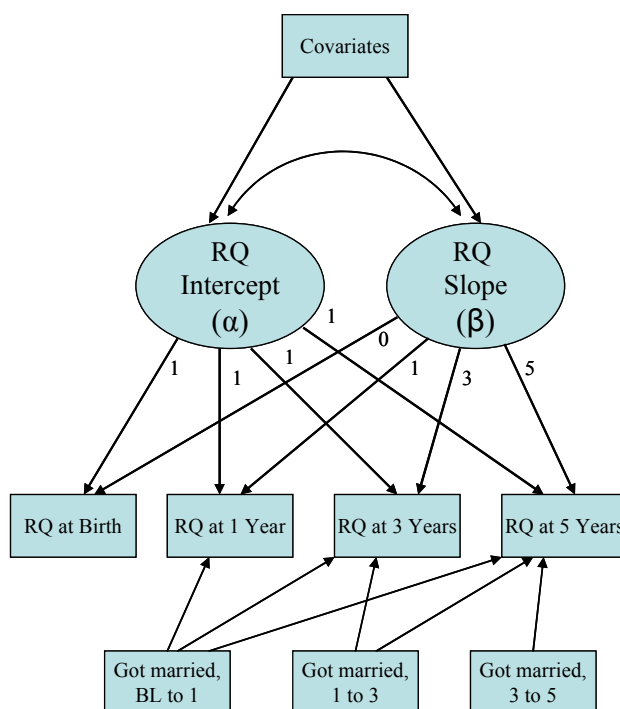
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Figure 1. Proportion of Couples Co-Resident at Each Wave, by Marital Status at Birth among all Fragile Families Births



Note: Dotted lines indicates proportion of couples co-resident at all survey waves from birth through the 5-year survey.

Figure 2. Latent Growth Model of Couple Relationship Quality (RQ) over Time



**Table 1. Sample Descriptives for Co-Resident Couples at Time of Birth,  
by Marital Status (% or *M*)**

	Married	Unmarried (cohabiting)
<i>Demographic characteristics</i>		
Mother's race/ethnicity (ref=black non-Hispanic)		
White non-Hispanic	43.6	17.6
Black non-Hispanic	25.0	46.1
Hispanic	24.7	33.9
Other non-Hispanic	6.83	2.5
Father's race differs	12.4	13.2
Age at child's birth (years)		
Mother	29.34 (5.70)	24.15 (5.39)
Father	31.77 (6.39)	26.71 (6.69)
Mother's education		
Less than high school	15.5	38.6
High school degree	20.2	34.5
Some college or higher	64.3	26.9
Father's education		
Less than high school	16.4	38.9
High school degree	24.1	35.6
Some college or higher	59.5	25.5
Lived with both parents at age 15		
Mother	65.0	39.3
Father	65.5	41.4
<i>Health and social-psychological characteristics</i>		
Self-rated health (range=1-5)		
Mother	4.07 (.87)	3.83 (.96)
Father	4.07 (.89)	3.93 (.94)
Substance problem		
Mother	1.3	2.8
Father	2.3	3.9
Traditional gender role attitudes (range=1-4)		
Mother	2.11 (.69)	2.06 (.60)
Father	2.34 (.67)	2.35 (.62)
Distrust of other gender (range=1-4)		
Mother	1.81 (.65)	2.05 (.67)
Father	1.70 (.61)	1.92 (.63)

(table continued next page)

**Table 1 (cont.). Sample Descriptives for Co-Resident Couples at Time of Birth,  
by Marital Status (% or *M*)**

	Married	Unmarried (cohabiting)
<i>Health and social-psychological characteristics (cont.)</i>		
Religious attendance (range=1-5)		
Mother	3.52 (1.32)	2.80 (1.30)
Father	3.36 (1.35)	2.62 (1.28)
Father is physically violent	2.0	2.9
Father ever in jail	7.8	31.7
<i>Couple fertility history</i>		
Couple first birth	28.9	24.4
Couple 2+ births together (no other births)	43.4	17.4
Father only child by other partner	11.7	16.9
Mother only child by other partner	9.2	21.2
Both parents child by other partner	6.8	20.0
<i>Time-varying variables</i>		
Married post birth		
At 1 year	NA	14.4
At 3 years	NA	21.0
At 5 years	NA	23.7
Couple has new baby		
Between 1- and 3-year surveys	28.9	27.5
Between 3- and 5-year surveys	20.5	14.7
Number of cases ( <i>n</i> )	1,011	1,489

**Table 2. Relationship Quality Mean Scores for Co-Resident Couples at Birth,  
by Marital Status at Birth**

	Birth <i>M</i> ( <i>SD</i> )	Year 1 <i>M</i> ( <i>SD</i> )	Year 3 <i>M</i> ( <i>SD</i> )	Year 5 <i>M</i> ( <i>SD</i> )	Change, Birth to 5 Yrs
All ( <i>n</i> =2,500)	2.71 (.32)	2.51 (.52)	2.43 (.55)	2.23 (.71)	-.49 (.70)
Married at birth ( <i>n</i> =1,011)	2.75 (.31)	2.61 (.44)	2.55 (.47)	2.46 (.57)	-.28 (.53)
Unmarried (cohabiting) at birth ( <i>n</i> =1,489)	2.70 (.33)	2.44 (.56)	2.34 (.59)	2.08 (.76)	-.62 (.76)
Signif. difference (one-tailed <i>t</i> -test)	<i>p</i> <.01	<i>p</i> <.01	<i>p</i> <.01	<i>p</i> <.01	<i>p</i> <.01
Percent co-resident at wave					<u>Stable to 5 Yrs</u>
Married at birth	100.0	95.4	89.9	82.2	81.7
Unmarried (cohabiting) at birth	100.0	74.2	61.5	49.7	43.8
Stably co-resident, birth to 5 years ( <i>n</i> =1,325)	2.76 (.29)	2.67 (.34)	2.66 (.34)	2.62 (.38)	-.14 (.38)
Married at birth ( <i>n</i> =752)	2.78 (.27)	2.69 (.33)	2.67 (.33)	2.65 (.36)	-.13 (.34)
Unmarried (cohabiting) at birth ( <i>n</i> =573)	2.74 (.31)	2.64 (.35)	2.64 (.36)	2.58 (.39)	-.16 (.41)
Signif. difference (one-tailed <i>t</i> -test)	<i>p</i> = .014	<i>p</i> = .014	<i>p</i> =.048	<i>p</i> <.01	<i>p</i> =.081
Percent of unmarried at birth, stably co-resident couples married at wave ( <i>n</i> =573)	0.0	23.4	38.9	49.9	49.9 % pts.

Note: Relationship quality score represents the average of 6 items (4 at time of birth) about supportiveness in the couple relationship, reported by mothers; range=1 (*never*) to 3 (*often*).

**Table 3. Standardized Coefficients from Latent Growth Models Estimating Couple Relationship Quality among Co-Resident Couples at Child's Birth**

	Model 1		Model 2		Model 3		Model 4	
	Intercept	Slope	Intercept	Slope	Intercept	Slope	Intercept	Slope
<b>All co-resident couples at birth (n=2,500)</b>								
Married at child's birth	.236 **	.602 **	.081	.497 **	-.046	.443 **	-.065	.382 **
Model fit								
CFI		.892		.897		.902		.905
RMSEA		.139		.062		.044		.043
<b>Stably co-resident couples from birth through 5-year survey (n=1,325)</b>								
<b>Fixed characteristics (Level 2 variables)</b>								
Married at child's birth	.128 +	.173 +	-.003	.376 **	-.044	.356 **	-.040	.339 **
<i>Demographic characteristics</i>								
Mother's race/ethnicity (ref=black non-Hispanic)								
White non-Hispanic			.325 **	-.339 *	.266 **	-.342 *	.267 **	-.350 *
Hispanic			.217 *	-.215	.260 *	-.139	.262 *	-.143
Other non-Hispanic			-.105	-.090	-.067	-.006	-.066	-.024
Father's race differs			-.041	-.159	-.011	-.196	-.011	-.192
Age at child's birth (years)								
Mother			-.010	.006	-.013	.005	-.013	.008
Father			-.009	-.027 *	-.004	-.034 *	-.004	-.033 **
Mother's education (ref=less than high school)								
High school degree			.131	.226	-.008	.224	-.009	.236
Some college or higher			.295 *	-.131	.081	-.126	.080	-.117
Father's education (ref=less than high school)								
High school degree			.169	-.151	.008	-.153	.008	-.135
Some college or higher			.313 **	-.057	.158	-.045	.158	-.042
Lived with both parents at age 15								
Mother			.077	.090	.032	.122	.031	.116
Father			-.070	.091	-.083	.120	-.081	.117
<i>Health and social-psychological characteristics</i>								
Self-rated health (range=1-5)								
Mother					.131 **	.009	.131 **	.006
Father					.021	.041	.020	.043
Substance problem								
Mother					-.688 *	.417	-.681 *	.394
Father					-.191	.133	-.189	.102

(table continued next page)

**Table 3 (cont.). Standardized Coefficients from Latent Growth Models Estimating Couple Relationship Quality among Co-Resident Couples at Child's Birth**

	Model 1		Model 2		Model 3		Model 4	
	Intercept	Slope	Intercept	Slope	Intercept	Slope	Intercept	Slope
<i>Health and social-psychological characteristics (cont.)</i>								
Traditional gender role attitudes (range=1-4)								
Mother					.085	-.007	.086	-.012
Father					-.163 **	-.016	-.163 **	-.018
Distrust of other gender (range=1-4)								
Mother					-.254 **	-.078	-.253 **	-.076
Father					.062	-.090	.061	-.083
Religious attendance (range=1-5)								
Mother					.071 *	-.033	.072 *	-.030
Father					.019	-.014	.018	-.021
Father is physically violent								
Father ever in jail					-1.714 **	.601 +	-1.704 **	.649 +
Couple fertility history (ref=Couple 2+ births together)								
Couple first birth					.267 **	-.353 **	.272 **	-.399 **
Father only child by other partner					.019	.026	.023	-.013
Mother only child by other partner					.333 **	-.331 *	.338 **	-.373 *
Both parents child by other partner					.326 *	.193	.332 *	.145
<b>Time-varying characteristics (Level 1 variables)</b>							<u>RQ3</u>	<u>RQ5</u>
Couple has new baby								
Between 1- and 3-year surveys							.006	.027
Between 3- and 5-year surveys								.039 *
Model fit								
CFI		.934		.941		.940		.942
RMSEA		.111		.048		.035		.033

† $p < .10$  \* $p < .05$  \*\* $p < .01$

Note: All estimates are standardized on the dependent variable (but not the independent variable); hence, each coefficient can be interpreted as the standard-deviation change in relationship quality with a one-unit change in the independent variable. Missing data on covariates are estimated using full information maximum likelihood.

**Table 4. Standardized Coefficients from Latent Growth Models Estimating Couple Relationship Quality among Unmarried Cohabiting Couples at Child's Birth**

	Model 1			Model 2		
	<u>RQ1</u>	<u>RQ3</u>	<u>RQ5</u>	<u>RQ1</u>	<u>RQ3</u>	<u>RQ5</u>
<b>Cohabiting at birth (n=1,489)</b>						
Couple got married						
Between baseline and 1-year waves	.072 +	.225 **	.326 **	.083 *	.181 **	.288 **
Between 1- and 3-year waves		.323 **	.421 **		.289 **	.387 **
Between 3- and 5-year waves			.453 **			.448 **
Couple has new baby						
Between 1- and 3-year waves					.203 **	.186 **
Between 3- and 5-year waves						.107 *
Model fit						
CFI			.852			.848
RMSEA			.049			.049
<b>Stably co-resident through 5-year survey (n=573)</b>						
Couple got married						
Between baseline and 1-year waves	-.037	.007	.016	-.036	.010	.009
Between 1- and 3-year waves		.035	.063		.038	.057
Between 3- and 5-year waves			.041			.034
Couple has new baby						
Between 1- and 3-year waves					.001	.022
Between 3- and 5-year waves						.016
Model fit						
CFI			.940			.942
RMSEA			.033			.031

† $p < .10$  \* $p < .05$  \*\* $p < .01$ ; RQ=relationship quality; 1, 3 and 5 indicate survey year.

Note: All estimates are standardized on the dependent variable (but not the independent variable); hence, each coefficient can be interpreted as the standard-deviation change in relationship quality with a one-unit change in the independent variable. Missing data on covariates are estimated using full information maximum likelihood.

**Table 5. Difference-in-Difference Estimates for Relationship Quality among Unmarried Cohabiting Couples by Whether Got Married after the Birth**

	Pre Marriage	Post Marriage	Change
<b>Cohabiting at birth (n=1,489)</b>			
Got married	2.690	2.546	-.144
Never married	2.424	1.911	-.513
Differences	.266	.635	.369
Difference-in-difference regression estimates			
Unadjusted (limited to cases with valid values on all covariates)			.341 **
Adjusted for all controls <sup>1</sup>			.341 **
<b>Stably co-resident through 5-year survey (n=573)</b>			
Got married	2.730	2.656	-.074
Never married	2.632	2.546	-.086
Differences by marital status	.098	.110	.012
Difference-in-difference regression estimates			
Unadjusted (limited to cases with valid values on all covariates)			.033
Adjusted for all controls <sup>1</sup>			.023

† $p < .10$  \* $p < .05$  \*\* $p < .01$

<sup>1</sup>Includes all fixed demographic, economic, and social-behavioral covariates shown in Table 3; missing data are eliminated using listwise deletion.