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Kelly Musick
Katherine Michelmore

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Kelly Musick

Department of Policy Analysis and Management and Cornell Population Center

Cornell University

Katherine Michelmore

Ford School of Public Policy

University of Michigan

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Direct correspondence to: Kelly Musick at the Department of Policy Analysis and

Management, Cornell University, 254 MVR, Ithaca, NY 14853. E-mail: musick@cornell.edu;

Phone: (607) 255-6077; Fax: (607) 255-4071.

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Abstract. The share of births to cohabiting couples has increased dramatically in recent decades. How we evaluate the implications of these increases depends critically on change in the stability of cohabiting families. This study examines change over time in the stability of couples who have had a child together, drawing on data from the 1995 and 2006-2010 National Survey of Family Growth (NSFG). We parse out the extent to which change in the stability of cohabiting and married families reflects change in couples' behavior versus shifts in the characteristics of those who cohabit, carefully accounting for trajectories of cohabitation and marriage around the couple's first birth. Multivariate event history models provide evidence of a weakening association between cohabitation and instability, given marriage occurs at some point *before or after* the couple's first birth. The more recent data show statistically indistinguishable separation risks for couples who have a birth in marriage without ever cohabiting, who cohabit and then have a birth in marriage, and who have a birth in cohabitation and then marry. Cohabiting unions with children are significantly less stable when de-coupled from marriage, although the parents in this group also differ most from others on observed (and likely, unobserved) characteristics.

The share of births to unmarried women has almost doubled over the past 25 years: from 22% in 1985 to 41% in 2010 (Martin et al. 2012). The shift from marital to cohabiting births accounts for much of the increase over this period, particularly in the past decade (Kennedy and Bumpass 2011; Martinez, Daniels, and Chandra 2012; Raley 2001). As of the mid-2000s, 59% of nonmarital births—or 21% of all births—were to cohabiting parents (Lichter 2012). From the perspective of children, living with two cohabiting parents in many ways resembles living with two married parents, with two potential earners and care-takers in the household. But couples who have a child within cohabitation are more likely to separate than those who are married at the time of birth (Manning, Smock, and Majumdar 2004; Raley and Wildsmith 2004; Tach and Edin 2013; Wu and Musick 2008), and a growing body of research has demonstrated negative associations between family transitions and child well-being (Cavanagh and Huston 2006; Craigie, Brooks-Gunn, and Waldfogel 2010; Fomby and Cherlin 2007; Fomby and Sennott 2013; Magnuson and Berger 2009; Osborne and McLanahan 2007; Wu 1996; Wu and Martinson 1993). How we evaluate the implications of increases in childbearing within cohabitation thus depends critically on trends in the stability of cohabiting families.

The second demographic transition theory posits that cohabitation should become more normative and look increasingly like marriage over time, namely that childrearing in cohabitation should become more common and cohabiting families more stable over time (Kiernan 2000; van de Kaa 1987). A contrasting view points to the increasingly privileged position of marriage relative to cohabitation, both in terms of who selects in and the social status accorded to married couples (Cherlin 2009; Furstenberg 1996), suggesting growing differences in the stability of married and cohabiting families. There has been no empirical work to date directly assessing change over time in the stability of couples following the birth of a child. Prior

studies on change in the stability of cohabitation have relied on broad samples of cohabitors, including childless cohabitors, those with children from prior relationships, and those with biological children (e.g., Kennedy and Ruggles 2013; Lichter, Turner, and Sassler 2010)—groups that vary in their reasons for cohabiting and commitment to the relationship (Reed 2006).

We limit our analysis to couples who have had a child together, who arguably have the most at stake in staying together. Cohabiting couples with children express high hopes that their relationships will last (Gibson-Davis, Edin, and McLanahan 2005; Waller 2001) and experience higher emotional distress following separation than those without children (Tavares and Aassve 2013). Further, couples with children are of particular concern from a policy perspective, as parental separation directly affects children's living arrangements and often the resources available to them (Tach, Mincy, and Edin 2010). Our analysis draws on data from the 1995 and 2006-2010 National Survey of Family Growth (NSFG) to assess change in the stability of couples who had a first birth together within 10 years of the survey (born in 1990 vs. 2003 at the median). Using discrete-time event history analysis, we parse out the extent to which change in the stability of cohabiting and married families reflects change in couples' behavior versus shifts in the characteristics of those who cohabit, carefully accounting for trajectories of cohabitation and marriage around the couple's first birth. The paper illustrates change in patterns of stability using simple simulations, generating predicted probabilities of union dissolution altering assumptions about union formation and the composition of unions over time.

Background

Change in the Stability of Cohabiting Families over Time

Conceptual models of family change provide contrasting views on how we might expect the stability of cohabiting families to change over time. Drawing on the second demographic

transition theory, Kiernan (2000) posited a series of stages in which cohabitation emerges as a marginalized behavior and gradually becomes an accepted family form. Along the way, distinctions between cohabitation and marriage fade, and cohabitation transitions from a short-term and largely childless state to a much more stable arrangement in which having and raising children is commonplace. Consistent with this notion, childbearing within cohabitation has increased across Europe over the past 30 years, as has the share of couples still cohabiting three years after conceiving a child (Perelli-Harris et al. 2012, Table 3). Cherlin's (2004) deinstitutionalization hypothesis also predicts fading distinctions between cohabitation and marriage over time, as social norms defining partners' behavior in marriage grow weaker (e.g., less rigidity in gendered family roles) and norms defining cohabitation grow stronger (e.g., greater legal recognition). As with the second demographic transition theory, deinstitutionalization points to growing similarity in the childbearing behavior and relationship stability of marriage and cohabitation.

An alternative view suggests persistent differences and potentially divergence in the experiences of marriage and cohabitation. These forecasts draw on ideas emphasizing the growing symbolic significance of marriage as a marker of prestige (Cherlin 2009; Furstenberg 1996) and accounts that men and women of all education levels place a high value on marriage but perceive substantial economic prerequisites (Carlson, McLanahan, and England 2004; Edin and Kefalas 2005; Gibson-Davis 2009; Gibson-Davis et al. 2005; Smock, Manning, and Porter, 2005). Short of these prerequisites, couples forego marriage and opt into cohabitation as a "budget" route to family formation (Furstenberg 1996). The increasing social value of marriage relative to cohabitation is consistent with McLanahan's (2004) discussion of the differential impact of the second demographic transition on women, with associated economic and ideational

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changes undermining stable relationships for women at the bottom of the education distribution and strengthening them for women at the top. It is also consistent with Perelli-Harris et al. (2010)'s cross-national investigation of cohabiting fertility, which emphasized the link between economic instability and the impermanence of cohabitation. Together, these strands of research suggest that despite increases in cohabiting fertility, the experiences of marital and cohabiting families may remain distinct—and potentially diverge over time. In particular, cohabitation may remain a less stable union form, and grow less stable over time relative to marriage.

In assessing change in the nature of cohabitation over time, prior U.S. work has typically analyzed heterogeneous groups of cohabitors at various life stages. To our knowledge, there has been no prior work looking specifically at change in the stability of couples who have had a child together, despite what would seem a quite different process with greater costs to those involved. The broader assessments of cohabitation available in the literature show that dissolution risks from a first cohabitation have levelled off if not declined since the early 1980s (Bumpass and Lu 2000; Kennedy and Bumpass 2008, 2011; Kennedy and Ruggles 2013). Transitions to marriage among cohabitors have also declined (Bumpass and Lu 2000; Kennedy and Bumpass 2008, 2011; Lichter, Qian, and Mellott 2006), and among the most recent cohorts, the longstanding link between premarital cohabitation and marital instability has disappeared (Manning and Cohen 2012; Reinhold 2010). It is unclear whether to expect similar trends among cohabiting couples with children, as both norms about having and raising children in cohabitation and the characteristics of cohabiting parents may be changing in ways that differentially play into their risks of dissolution.

Change in the Characteristics of Cohabiting Families

Cohabitation—particularly as a context for having children—has always been more common among the least advantaged men and women (Bumpass and Lu 2000; Kennedy and Bumpass 2008). In recent years, education differences in childbearing within cohabitation have blurred along the lower end of the education distribution but not at the top: between 1997-2001 and 2002-2007, there was a 40% increase in the proportion of births within cohabitation among moderately educated women (with a high school degree or some college), in contrast to little or no change among women with the lowest and highest levels of education (Kennedy and Bumpass 2011, Table 6). In both periods, just 3% of all births to college graduates were to cohabiting women (Kennedy and Bumpass 2011). The implications of changes in education patterns for the stability of families are not entirely straightforward. College graduates are increasingly distinct in their hold on childbearing in marriage, and the association between college and marital stability has strengthened over time (Martin 2006; Raley and Bumpass 2003). Yet relative to women who do not complete high school, those with a high school degree or some college should have more stable unions, and cohabiting family formation has moved especially rapidly into these educational ranks. Higher average levels of education among cohabiting parents may promote stability, although perhaps not relative to married parents, who are increasingly selected on college graduation.

Changes in the composition of cohabitors on the basis of union and childbearing histories may also factor into changes in the relative stability of cohabiting and married families. The share of men and women reporting multiple premarital cohabitations (or "serial cohabitation") has risen over time (Cohen and Manning 2010; Lichter, Turner, and Sassler 2010). A history of prior cohabitation is more common among cohabiting versus married parents (Osborne,

Manning, and Smock 2007) and is associated with lower marriage expectations and chances (Cohen and Manning 2010; Lichter and Qian 2008). The presence of children from another relationship (or "multipartnered fertility") has also risen and is more prevalent among unmarried parents (Carlson and Furstenberg 2006; Guzzo and Furstenberg 2007a, 2007b; Tach and Edin 2013; Thomson, Lappegård, Carlson, Evans and Gray 2014). Research on marital dissolution has consistently linked prior union and childbearing experiences to increased instability (e.g., Lichter and Qian 2008; Martin and Bumpass 1989; Sweeney 2010; Teachman 2002, 2003), and a growing body of work has found these factors to be associated with union dissolution among unmarried parents (Carlson et al. 2004; Lichter, Qian, and Mellot 2006; Manlove et al. 2012; Osborne, Manning, and Smock 2007; Tach and Edin 2013). Evidence thus suggests that growing family complexity may lead to greater instability among cohabiting versus married-parent families.

Beyond education and family complexity, the characteristics of cohabiting parents may be changing in other ways that could account for change in the stability of cohabiting families relative to married-parent families. These include observable characteristics like race and ethnicity, family background, age at birth, the intendedness of the couple's first birth together, and subsequent fertility within the union—factors associated (albeit in different ways) with both union stability (Carlson et al. 2004; Guzzo and Hayford 2012; Manlove et al. 2012; Osborne et al. 2007; Phillips and Sweeney 2006; Teachman 2002) and cohabitors' transitions to marriage (Carlson, McLanahan, and England 2004; Lichter and Qian 2008; Lichter, Qian, and Mellott 2006; Manlove et al. 2012). Accounting for a detailed set of observable characteristics helps control for the compositional changes that may drive change in union stability over time.

Unobservable correlates of parents' union status and transitions, however, may still confound efforts to separate compositional and behavioral components of change.

Transitions from Cohabitation to Marriage Around the Time of a Birth

Many cohabiting couples marry at some point before or after having a child, further complicating how we assess the stability of cohabiting families. Key to our analysis of childbearing unions, a handful of studies have investigated the (point-in-time) association between relationship stability and union transitions around the time of a birth. Data from the 1995 NSFG showed that couples who were cohabiting at birth and subsequently married were more stable than those who remained cohabiting (Manning et al. 2004; Wu and Musick 2008). Wu and Musick (2008) further disaggregated union trajectories and estimated the lowest odds of instability among couples with no cohabitation experience, somewhat higher odds among cohabitors transitioning to marriage before or after the birth, and the highest odds among cohabitors who never transitioned to marriage. Notably, among cohabitors who married, there was no association between the timing of marriage relative to childbirth and union stability. Using data from the 1997 National Longitudinal Survey of Youth, Rackin and Gibson-Davis (2012) similarly found little difference in stability between couples entering marriage before and after conceiving their first child.

Thus, in studies that carefully account for union transitions around a couple's first birth, ever cohabiting is associated with greater instability and ever marrying with less, but the precise ordering of marriage and parenthood among cohabitors who marry matters little for subsequent stability. If cohabitors' decisions to marry were driven primarily by accidental pregnancies and practical issues around coparenting, the ordering of marriage and childbirth would presumably matter more (e.g., Reed 2006). It appears instead that cohabiting couples may be jointly planning

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marriage and childbirth as the quality and commitment of their relationship grows, with little

regard to which comes first. We build on this attention to the ordering of union transitions and

childbirth, expanding on prior work by exploring changes in these relationships over time.

Our analysis focuses on how the stability of union-birth trajectories has changed over

time, using an event history framework and simple simulations to assess whether there has been

a convergence or divergence in the stability of relationship trajectories involving cohabitation

and marriage. In particular, we address the following questions: Has the role of cohabitation in

family formation evolved such that cohabiting is now a weaker marker of *instability*, and

marrying a weaker marker of *stability*? Or should we expect the opposite based on accounts of

marriage's rising social status? Further, as cohabiting fertility increases, are more cohabiting

parents compelled to marry at lower levels of commitment, suggesting sharper differences in the

stability of cohabitors who transition to marriage before versus after a birth? Or conversely, in

the context of waning pressure to formalize relationships prior to a child's birth, are committed

couples increasingly planning families without regard to when in the process marriage occurs?

We describe below the details of our approach.

Data and Method

NSFG Samples

We use data from the 1995 and 2006-2010 NSFG, nationally representative fertility

surveys of reproductive-age women 15–44 (Abma et al. 1997; NCHS 2011). The NSFG is a

repeated cross section and has been conducted six times between 1973 and 2002; in 2006, the

National Center for Health Statistics moved to continuous interviewing, spreading data collection

over time rather than collecting it in cycles (for a discussion of this innovation, see Lepkowski et

al. 2010).[1] Interviews are in-person and include complete fertility, marriage, and (as of 1995) cohabitation histories. In 1995, 10,847 women were interviewed (79% response rate), and the 2006-2010 NSFG includes 12,279 women (78% response rate). The 1995 NSFG oversampled Hispanics and blacks, and in addition to these groups, the 2006-2010 NSFG oversampled respondents ages 15–24. Sampling weights adjust for differences in sampling rates, response rates, and coverage rates and are applied in all analyses (using the *SVY* commands in STATA 12.0).

Our analysis includes all marital and cohabiting unions bearing a child within 10 years of the 1995 and 2006-2010 interviews (i.e., between 1985-1995 and 1997-2010, respectively). Restricting births to a ten-year window limits retrospection bias in union histories (Hayford and Morgan 2008) and includes women up to age 35 in the first year of observation (and age 44 by the last year of observation), beyond which a relatively small share of women go on to have a first child (Martinez, Chandra, and Daniels 2012). Our union sample includes 2,656 unions from the 1995 survey (2,562 women) and 3,046 unions (2,907 women) from 2006-2010. Although uncommon, women may contribute more than one union to the analysis file (models account for clustering, as described below).

To explore change in union stability, we transform our union-level file into a union-month file. We assess union duration in units of a month to allow for relative precision in the timing of transitions into marriage and separation, which commonly occur at short durations among cohabitors. The risk of separation is clocked from childbirth to reflect our interest in the stability of couples who have had a child together, a group of significance from scientific and

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[1] The NSFG has historically been a survey of women, but men were added as of 2002. Unfortunately for our purposes, the 2002 round (men and women) contained an error in skip patterns resulting in substantial missing data on dates of marital separation (Kennedy and Bumpass 2008). We thus rely on data on women from 1995 and the most recent NSFG's, which span rapid increases in cohabiting fertility.

policy perspectives. Our union-month file thus includes one record for every month at risk of union dissolution from the time of birth until separation or censoring at interview, for up to 120 months (or 10 years). The final sample totals 136,955 months from the 1995 survey and 145,434 months from the 2006-2010 survey.

Modeling Union-Birth Trajectories

Following the strategy of Wu and Musick (2008), we model four union-birth trajectories: 1) married at union start and birth (M→B); 2) cohabiting at union start and married at birth (C→M→B); 3) cohabiting at birth and married at some time t following the birth (C→B→M); and 4) cohabiting at birth without ever marrying (C→B).[2] To examine the link between these trajectories and union stability, we run discrete-time event history models of the general form:

(1) $\log [P_t / (1 - P_t)] = \alpha_1 + \alpha_2\, dur_t + \beta_1\, x_1 + \beta_2\, x_2 + \beta_3\, x_{3t}$ + socio-demographic characteristics

where the log odds or logit of separation is an additive function of covariates and t indexes union duration in months from a first birth. The parameters α_1 and α_2 represent the baseline hazard, or the value of the log odds of separation at duration t when all other covariates are zero. The x's are union status indicators constructed from the union and fertility histories. Two are duration invariant and the third varies with union duration: $x_1 = 1$ if cohabiting at union start (0 if married at union start); $x_2 = 1$ if cohabiting at birth (0 if married at birth); and $x_3 = 1$ if married in month t following birth (0 if cohabiting). Net of socio-demographic characteristics, this model yields the following parameters for our four union-birth trajectories and selected contrasts among them:

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[2] We focus on union status transitions around the time of *birth*, without accounting separately for transitions during pregnancy. Most transitions during pregnancy now involve cohabitation as opposed to marriage, and couples cohabiting at birth differ little in their subsequent relationship stability and demographic characteristics by whether they transitioned into cohabitation before or after conception (Rackin and Gibson-Davis 2012).

Trajectories	Parameters	Selected contrasts
1) M$\rightarrow$B	β_3	2 vs. 1: β_1
2) C$\rightarrow$M$\rightarrow$B	$\beta_1 + \beta_3$	3 vs. 2: β_2
3) C$\rightarrow$B$\rightarrow$M	$\beta_1 + \beta_2 + \beta_3$	4 vs. 3: β_3
4) C$\rightarrow$B	$\beta_1 + \beta_2$	4 vs. 1: $(\beta_1 + \beta_2) - \beta_3$

Models are run separately for our 1995 and 2006-2010 samples. We test the statistical significance of contrasts (across union-birth trajectories and over time) using the Wald test, which is computed based on the estimated coefficients and covariance matrix and is asymptotically equivalent to the likelihood-ratio test. Model estimates are clustered at the individual-level to account for correlation in error terms among women contributing more than one union (in results not shown, main findings are insensitive to the inclusion of multiple unions). To aid in the interpretation of results, we transform our discrete-time logits into monthly predicted probabilities of separation, varying key characteristics and holding others at their weighted mean values. We then multiply the monthly predicted probabilities (i.e., *conditional* predicted probabilities) to generate the probability of separation within 5 years of birth—a more intuitive measure than either an estimated odds ratio or predicted monthly probability. Finally, we illustrate the substantive implications of our findings by altering assumptions about the changing distribution and characteristics of unions over time.

Education, Family Complexity, and Controls

Education. The 1995 NSFG contains complete education histories, making it possible to map transitions into and out of schooling onto first birth and union transitions. Considerably less information on education is available in 2006-2010 (only the date of high school graduation and, for the later years of interviewing, college graduation), precluding the possibility of precisely dating births relative to schooling transitions. We thus rely on education at interview, which

potentially overstates to some degree education at birth by including educational upgrading between birth and interview.

Family complexity. Relying on complete cohabitation and marriage histories, we construct indicators for whether the respondent was previously married and whether she ever lived with another partner outside of marriage. We also compare union and fertility histories to generate an indicator for whether the respondent had any children prior to moving in with or marrying her partner. For women with children born prior to the current cohabitation or marriage, we indicate whether she had a child less than a year old at union start, 1-2 years old, or older than 2. Because the NSFG has no information on non-coresidential relationship histories for our sample, we cannot be sure that children born outside a *coresidential* relationship are actually children from a *prior* relationship, i.e., they could be joint children born prior to coresidence. That scenario would be more likely among children born shortly before a cohabitation or marriage start date versus children born much earlier. Family complexity is measured from the perspective of the respondent, as the NSFG includes limited information on partners' union and birth histories, particularly in 1995.[3]

Controls. We control for several background characteristics of the respondent, including race and ethnicity, her mother's and father's educational attainment, whether she grew up with both biological parents, and whether she grew up attending church on a weekly basis. We include the respondent's and partner's age at first birth in the union, whether the pregnancy leading to birth was mistimed or unwanted, and the duration in cohabitation or marriage at the time of birth. Finally, we include a time-varying indicator for whether the couple had a second child together. Whereas the respondent reports on the father's age at birth for each of her

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[3] In 1995, partners' prior marriages are ascertained only for a subset of unions, and there is no information on partners' children from prior relationships or past cohabitations. In 2006-2010, women are asked about partners' previous marriages and children from prior relationships, but not about past cohabitations.

pregnancies, other information on fathers is generally limited, as noted above (e.g., race and education are not collected in the context of pregnancy histories and are not available for all prior partners). Appendix Table 1A provides descriptives on key covariates and controls.

Results

Describing Patterns of Change

The first panel of Table 1 presents means on our union status indicators: cohabiting at union start and birth are invariant within unions; cohabiting in month t following birth varies with union duration. Data show a striking shift from marriage to cohabitation between the 1995 and 2006-2010 surveys. Among couples with a child together, the share cohabiting at union start increased from half to 70%, and the share cohabiting at birth increased two-fold, from 17% to 35%. The proportion of all months spent married declined from 93% to 81% from the time of the couple's first birth to separation or censoring (at interview or 10 years duration). This figure includes both continuously married couples and cohabiting couples marrying after childbirth. To give a better indication of change in the share transitioning from cohabitation to marriage, the second panel of Table 1 shows life table estimates of marriage among those cohabiting at birth. Here, we see a marked decline in marriage among cohabitors within 1, 2, and 5 years of birth, for example, a decline from about 60% to just under half marrying within 5 years of birth.

< Table 1 about here >

Table 2 presents change in the characteristics of couples with children, separately for those cohabiting versus married at union start and birth, focusing in particular on shifts in the distributions of education and family complexity. Changes in education in part reflect educational upgrading in the overall population: over time, there were increases in the shares college-educated among both those cohabiting and married at union start. But change was much

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less even among those cohabiting versus married at birth, with cohabiting mothers making gains entirely in some college, and married mothers moving rapidly into the ranks of college completers. Just 4 to 5% of all cohabiting mothers in both periods had a college degree; this is compared to an increase from 28% to 49% of married mothers with a college degree in the 1995 and 2006-2010 samples. Gaps in education by union status are much wider when measured at the couple's first birth than at the start of their union.

< Table 2 about here >

Changes in prior union and childbearing experiences appear less important, to the extent we are able to capture them from the mother's perspective only. Consistent with prior literature, we see evidence of increasing serial cohabitation; less discussed, however, we also see evidence of *declining* serial marriage (changes statistically significant among all but those married at union start). For example, among those cohabiting at birth, the share who previously cohabited increased from 16% to 23% over time—a change almost completely offset by declines in the share previously married (13% in the 1995 survey vs. 7% in 2006-2010). Patterns of change were similar for those married at birth, although a history of prior unions was not as common, particularly prior cohabitation. Unexpectedly, data show stability or *declines* in the share of mothers with a child from a prior relationship. Among cohabiting mothers, for example, the share with a child from a previous relationship declined from 27% to 21%; this is compared to 7% and 5% among married mothers in 1995 and 2006-2010 (decline not statistically significant). Point-in-time differences between cohabiting and married mothers (as well as between those cohabiting and married at union start) are more striking than change over time.

Event History Analysis

Table 3 presents results from discrete-time event history models of separation within 10 years of a couple's first birth together. Model 1 includes only our union status indicators, and Model 2 adds education, family complexity, and all controls. We describe results of our event history models as presented in Table 3 and then go on to flesh out comparisons of our four union-birth trajectories in Tables 4 and 5.

< Table 3 about here >

Table 3 shows that marriage is associated with greater stability and cohabitation with less, although estimates of cohabitation are sensitive to controls and period. In 1995, the odds of separation among those cohabiting versus married at union start were 52% higher in Model 1 (without controls) and 42% higher in Model 2 (with controls). The estimated coefficient on cohabitation at union start declined significantly over time, such that in the later period, the odds of separation among those cohabiting at union start are statistically indistinguishable from those of couples marrying directly (Models 1 and 2, with and without controls). This is consistent with recent work (Manning and Cohen 2012; Reinhold 2010) finding a decline over time in the association between living together prior to marriage and subsequent divorce.

Cohabiting at birth is associated with over a doubling of the odds of separation relative to married at birth in Model 1, in both time periods. Odds ratios become smaller (close to one) and statistically insignificant when the full set of controls is added in Model 2. The time-varying indicator for marriage is also large in magnitude and statistically significant in Model 1. In contrast to the coefficient on cohabiting at birth, the time-varying marriage indicator changes little with the addition of controls, suggesting a reduction in the odds of separation upon marriage of about 40% in 1995 and 60% in 2006-2010. In the later period, marriage in month t is

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the only union status indicator that is associated with stability net of controls, pointing to the importance of ever-marrying over its timing relative to childbirth.

Education and family complexity are associated with union disruption in much the same way in the 1995 and 2006-2010 periods; we find no statistically significant differences in Model 2 coefficients tested across models run separately by survey year. Having a college degree is associated with substantially lower odds of separation—35% to 46% lower in the earlier and later periods, respectively—relative to having a high school degree. The protective effect of education appears limited to a college degree, with small and statistically insignificant differences in stability across other educational statuses.

We find some evidence that mothers with a history of prior unions or children from past relationships have less stable unions, although estimated associations are weaker than expected. Whether the respondent had a previous cohabiting partner was associated with a 40% higher odds of separation in the earlier period only (no statistically significant association in the later period); whether she was previously married is not statistically significant in either time period. Having a child from a prior relationship is associated with a higher odds of separation (marginally significant 44% higher in the earlier period and 71% higher in the later period), but only when the child is two or older at the time of the couple's first birth together.[4]

Other covariates are largely associated with union dissolution in expected ways. African Americans have a higher odds of union dissolution than Whites (although differentials are significantly smaller in the more recent period); Hispanics have a lower odds. An additional year of mother's age at birth is associated with a 6-9% reduction in the monthly odds of dissolution; father's age at birth appears to provide no additional protection above and beyond mother's age.

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[4] In supplementary models run on the 2006-2010 data only (available upon request), we found that additional measures of partners' prior marriages and children were not statistically significant and did not change the estimated coefficients on marriage and cohabitation.

Births that came earlier than intended or were unwanted at the time of pregnancy are associated with higher risks of separation in the later time period only (53% and 58% higher odds, respectively). Also associated with reductions in the odds of disruption are growing up with both parents (statistically significant in the later period only), church attendance, and having another child with the current partner.

Comparisons Across Union-Birth Trajectories

Table 4 shows the odds ratios of separation for our four union-birth trajectories estimated from models presented in Table 3. For Models 1 and 2 in each time period, coefficients are combined (as shown for selected contrasts in the methods section) and exponentiated to represent odds ratios. We shift the contrast category down the rows of the table to show comparisons across all four trajectories: 1) married at union start and birth (M→B); 2) cohabiting at union start and married at birth (C→M→B); 3) cohabiting at birth and married at some time t following the birth (C→B→M); and 4) cohabiting at birth without ever marrying (C→B).

< Table 4 about here >

The second column of Table 4 compares the odds of separation of those cohabiting premaritally and then having a child (C→M→B) to those marrying directly (M→B) (which are simply the odds ratios associated with cohabiting at union start, as shown in Table 3). In the bottom panel (Model 2, 2006-2010), the odds ratio of 1.00 indicates that the odds of separation for the two trajectories are indistinguishable, and the underscore represents a significant change from 1995. Odds ratios in the next column compare cohabitors who married after a birth (C→B→M) to those who married prior to a birth, whether directly (M→B) or after having cohabited (C→M→B). In Model 1, the odds of separation in both periods are 2 to 3 times higher for this group than for those marrying prior to a birth. With controls (Model 2), those marrying

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after a birth had a higher odds of separation (1.74) relative to those who married directly in 1995 but not in 2006-2010. The odds of separation for cohabitors who married after a birth declined significantly from the earlier to the later period relative to those who married directly; odds ratios in the later period are close to 1 and statistically insignificant. The final column of Table 3 compares the odds of separation of cohabitors who never marry (within 10 years of a birth, C→B) to those who married at some point, whether directly (M→B), before a birth (C→M→B), or after a birth (C→B→M). Odds ratios are substantially smaller in models with controls (Model 2) than without (Model 1); nonetheless, net of controls, those who never marry have an odds of separation nearly 2 to 3 times higher (in both periods) than those who married at some point.

Table 5 shows predicted probabilities of separation within 5 years—a more intuitive measure than monthly odds ratios—estimated from the same discrete-time event history models (Models 1 and 2, Table 3). These vary union status indicators and set controls in Model 2 to their weighted sample means (shown in Appendix Table A1). The table underscores a few key points. First, dissolution rates are high among cohabiting parents who never marry relative to all other groups, although substantially reduced in models accounting for their relatively disadvantaged status. In both periods, estimates from models with no controls (Model 1) show over half of the cohabiting parents (C→B) separating within five years of a birth, over 4 times the share among those who married directly (M→B). Including controls (Model 2), predicted probabilities of separation drop to about a third within 5 years, or about 2 to 2.5 times the share separating among those who married directly.

< Table 5 about here >

Second, Table 4 illustrates the growing similarity over time in union-birth trajectories involving marriage, irrespective of its timing relative to childbirth. In the 1995 period, couples

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marrying directly (M→B) were significantly more stable than all other union-birth trajectories net of controls, with an estimated 14% separating after 5 years compared to 19% and 23% among those premaritally cohabiting (C→M→B) and marrying after a cohabiting birth (C→B→M), respectively. In the 2006-2010 period, estimated differences were negligible and not statistically significant (as shown in Table 3). In the later period, the *only* union-birth trajectory that is statistically distinct from the others is cohabiting without marriage.

Finally, predicted probabilities show that offsetting factors play into overall change in the stability of couples with children over time. The composition of couples with children has shifted to cohabiting parents who never marry (and tend to have the least stable unions), but there has also been an uptick in the stability of cohabiting couples who transition to marriage, whether before or after a birth. These factors have translated into no discernible change in the stability of unions with children between the 1995 and 2006-2010 periods (first row, second panel, Table 5): Overall, estimated proportions separating within five years were 17% and 16% for the earlier and later periods, respectively (differences statistically insignificant based on pooled models interacting survey year and duration).

The last rows of Table 5 address what the overall stability of unions with children might have looked like in 2006-2010 had there been no change in the distribution of unions over time. We generated predicted probabilities derived from models using the 2006-2010 data, setting union status indicators to their 1995 levels and holding all other covariates constant at their 2006-2010 levels. Had union status remained unchanged from 1995, an estimated 15% of all unions with children would have separated within five years in the 2006-2010 period, as opposed to 16% based on the distribution of unions actually observed in 2006-2010 (almost a 10%

reduction). An estimated 14% would have separated if all covariates (union status indicators plus education, family complexity, and controls) were held to their 1995 levels.

Discussion

We examined change in the stability of cohabiting and married couples with children together, combining information on the couple's union status at the start of the union, time of the birth, and up to ten years following the birth to account for trajectories couples follow through cohabitation and marriage around the time of their first birth. Using event history models and other descriptive tools, ours is the first analysis to our knowledge to examine change in stability among couples who have had a child together—a group of particular concern to social scientists and policy makers. Other work to date has either focused on point-in-time comparisons of married and cohabiting parents or examined change among heterogeneous groups of cohabitors, potentially confounding our understanding of trends in the stability of cohabiting families and implications for well-being.

We documented a sharper divide in college attainment among cohabiting versus married mothers over time, with the share of college graduates remaining a small fraction (5%) of those cohabiting at birth but growing substantially among those married at birth (to fully half, whether married directly or after cohabiting). In our fully controlled models, only a college degree appeared to have any protective effect on union stability, nearly halving the odds of separation relative to a high school degree. Thus although cohabiting mothers moved up the educational ranks from high school to some college over the period under investigation, there was nothing in our models to suggest that this educational upgrading increased union stability.

We found weak evidence for the importance of growing family complexity to changes over time in the stability of unions with children. We reported increases in serial cohabitation of

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about the same magnitude as decreases in serial marriage, such that about 20% of our sample reported a prior coresidential union in both the 1995 and 2006-2010 periods. Reports highlighting increases in serial cohabitation (Cohen and Manning 2010; Lichter et al. 2010) have not accounted for the shift from prior marriage to cohabitation, and they include cohabitors with and without children—a broader sample likely to capture a greater share of couples who enter cohabitation out of short-term convenience and exit at relatively low cost. We found stable or *declining* shares of women with a child from a previous relationship. Associations were generally modest between our indicators of family complexity and union instability, in all suggesting a small role of family complexity in accounting for changes in union stability over time—smaller than we expected based on recent attention to family complexity and its potential link to the subsequent life course (e.g., Carlson and Furstenberg 2006; Guzzo and Furstenberg 2007a, 2007b; Lichter and Qian 2008; but see Manning, Brown, and Stykes 2014).

Our model estimates pointed to no change in the overall stability of unions with children between the 1995 and 2006-2010 periods, with an estimated 16-17% of all couples with children separated within five years. This echoes recent descriptives from Kennedy and Bumpass (2011), who find a stalling of increases in family transitions among children. Underlying this overall lack of change, we documented a substantial shift into cohabiting unions and important changes in patterns of stability among union-birth trajectories. In the 1995 period, accounting for observed differences in couples' characteristics, those who married directly had significantly lower odds of separation than any of the other union-birth trajectories we examined. That is, any cohabiting experience—whether or not followed by marriage—was associated with increased instability relative to direct marriage. By the 2006-2010 period, again net of controls, the odds of separation for those who married directly were statistically indistinguishable from those who cohabited

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premaritally and those who married after a cohabiting birth (both of which became more stable over time); only the higher dissolution rates of the never-married cohabiting parents stood out as distinct from the others. Cohabiting experience was no longer associated with increased instability, as long as marriage followed either before or after the birth of a child. These findings point to an evolution in the process of jointly planned marriage and childbirth as suggested in Wu and Musick (2008).

Results support the notion that cohabitation has become a more normative part of the family formation process. Cohabiting as a precursor to marriage and childbirth involves little selection on socioeconomic status and no discernible risk to stability. Those cohabiting at birth who subsequently marry are on average much less advantaged, but after accounting for observed sociodemographic differences, they too are similar in their risks of instability relative to those who marry directly. If cohabiting parents who married after a birth experienced less stability than those who married before, it might suggest that marriages following childbirth were largely in response to unplanned or ambivalently timed pregnancies. The increasing stability of trajectories involving cohabitation and the declining importance of marriage timing relative to parenthood suggests instead that many parents may be jointly planning marriage and childbirth as the quality and commitment of their relationships grow, with little regard to which comes first. This is consistent with waning societal pressure to marry and the blurring of boundaries between marriage and cohabitation (e.g., Cherlin 2004; van de Kaa 1987).

We also showed, however, that cohabitation de-coupled from marriage has remained relatively unstable—a finding more in line with notions of marriage as an increasingly privileged status and cohabitation as a second-best alternative (e.g., Cherlin 2009; Furstenberg 1996). In both periods, about half of never-married cohabiting parents separated within five years; these

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estimates were reduced to about a third in models accounting for the relatively disadvantaged

status of cohabiting parents, yet remained much higher than among couples who married. The

NSFG includes information on family background and other indicators of socioeconomic status,

prior union and birth histories, and the respondent's age and feelings about the pregnancy. But it

has no data on partners' economic prospects or the quality of relationships—factors intimately

tied to differences in the stability of cohabiting and married parents (Tach and Edin 2013)—

limiting our ability to account for remaining gaps in stability. Qualitative work shows that many

disadvantaged women have children in nonmarital relationships that are strained by poor

economic conditions, a lack of trust, infidelity, and substance use problems, yet hold much

higher expectations of marriage (Edin and Kefalas 2005; Gibson-Davis et al. 2005; Reed 2006).

Consistent with Reed's (2006) account of how cohabitors perceive their unions, many of the

cohabiting relationships that unfold altogether outside of marriage may be a practical response to

having a(n often unplanned) child together. Further, given that fewer cohabitors marry, those

making the transition may be a group increasingly selected on factors associated with stability.

We noted at the outset that variation in the meanings and functions of cohabitation may

confound our understanding of trends in union stability. Indeed, we found that focusing on

cohabiting couples with children implied less change over time in relationship churning. Further,

examining trajectories through cohabitation, marriage, and childbirth revealed change in the link

between cohabitation and union stability. Cohabitation is no longer a marker of instability among

couples with children, as long as marriage follows at some point. Unmarried couples who fail to

meet the high economic and relational bar for marriage experience the greatest risks of

instability. From a policy perspective, results suggest that securing the resources that play into

marriage's affordability would at the same time reduce the strains on parental relationships that put children at risk of family instability.

References

Abma, J. C., Chandra, A., Mosher, W.D., Peterson, L. S., & Piccinino, L. J. (1997). Fertility, family planning, and women's health: New data from the 1995 National Survey of Family Growth. *Vital and Health Statistics*, Series 23, No. 19. Hyattsville, MD: National Center for Health Statistics. At http://www.cdc.gov/nchs/data/series/sr_23/sr23_019.pdf

Bumpass, L., & Lu, H. H. (2000). Trends in cohabitation and implications for children's family contexts in the United States. *Population Studies*, *54*(1), 29-41.

Carlson, M. J., & Furstenberg, F. F. (2006). The prevalence and correlates of multipartnered fertility among urban US parents. *Journal of Marriage and Family*, *68*(3), 718-732.

Carlson, M., McLanahan, S., & England, P. (2004). Union formation in fragile families. *Demography*, *41*(2), 237-261.

Cavanagh, S. E. & Huston, A. C. (2006). Family instability and children's early problem behavior. *Social Forces, 85* (1), 551-581.

Cherlin, A. J. (2004). The deinstitutionalization of American marriage. *Journal of Marriage and Family*, *66*(4), 848-861.

Cherlin, A. (2009). *The Marriage-Go-Round: The State of Marriage and the Family in America Today*. New York: Alfred A. Knopf.

Craigie, T. A., Brooks-Gunn, J. , & Waldfogel, J. (2010). Family structure, stability, and early child health and development. *Princeton University and Columbia University mimeo*, 111.

Cohen, J., & Manning, W. (2010). The relationship context of premarital serial cohabitation. *Social Science Research*, *39*(5), 766-776.

Edin, Kathryn, and Maria Kefalas. (2005). *Promises I Can Keep: Why Poor Women Put Motherhood Before Marriage.* Berkeley and Los Angeles, California: University of California Press.

Fomby, P., & Cherlin, A. J. (2007). Family instability and child well-being. *American Sociological Review*, *72*(2), 181-204.

Fomby, P., & Sennott, C. (2013). Family structure instability and mobility: The consequences for adolescents' problem behavior. *Social Science Research, 42* (1), 181–206.

Furstenberg, Frank F., Jr. (1996). The future of marriage. *American Demographics*, *18* (6), 34-37, 39-40.

Gibson-Davis, C. M. (2009). Money, marriage, and children: Testing the financial expectations and family formation theory. *Journal of Marriage and Family*, *71*(1), 146-160.

Gibson-Davis, C. M., Edin, K., & McLanahan, S. (2005). High hopes but even higher expectations: The retreat from marriage among low-income couples. *Journal of Marriage and Family*, *67*(5), 1301-1312.

Guzzo, K. B., & Furstenberg, F. F. (2007a). Multipartnered fertility among American men. *Demography*, *44*(3), 583-601.

Guzzo, K. B., & Furstenberg, F. F. (2007b). Multipartnered fertility among young women with a nonmarital first birth: Prevalence and risk factors. *Perspectives on Sexual and Reproductive Health*, *39*(1), 29-38.

Guzzo, K. B., & Hayford, S. R. (2012). Unintended fertility and the stability of coresidential relationships. *Social Science Research*, *41*(5), 1138-1151.

Hayford, S. R., & Morgan, S. P. (2008). The quality of retrospective data on cohabitation. *Demography*, *45*(1), 129-141.

Kennedy, S., & Bumpass, L. (2008). Cohabitation and children's living arrangements: New estimates from the United States. *Demographic Research*, *19*, 1663-1692.

Kennedy, S., & Bumpass, L. (2011). Cohabitation and trends in the structure and stability of children's family lives. Paper presented at the Annual Meeting of the Population Association of America, Washington, DC.

Kennedy, S., & Ruggles, S. (2013). *Breaking up is hard to count: The rise of divorce and cohabitation instability in the United States* (MPC Working Papers No. 2013–01). Minneapolis: Minnesota Population Center, University of Minnesota.

Kiernan, K. (2000). European perspectives on union formation. Pp. 40-58 in *Ties That Bind: Perspectives on Marriage and Cohabitation,* edited by L. Waite, C. Bachrach, M. Hindin, E. Thomson, and A. Thornton. Hawthorne, NY: Aldine.

Lepkowski J. M., Mosher W. D., Davis K. E., Groves R. M., & Van Hoewyk J. 2010. The 2006–2010 National Survey of Family Growth: Sample design and analysis of a continuous survey. National Center for Health Statistics. *Vital and Health Statistics 2*(150), 1-36.

Lichter, D. T. (2012). Childbearing among cohabiting women: Race, pregnancy, and union transitions. Pp. 209-19 in *Early Adulthood in a Family Context*, edited by Alan Booth, Susan L. Brown, Nancy Landale, Wendy D. Manning, and Susan M. McHale. New York: Springer.

Lichter, D. T., Qian, Z., & Mellott, L. M. (2006). Marriage or dissolution? Union transitions among poor cohabiting women. *Demography*, *43*(2), 223-240.

Lichter, D. T., & Qian, Z. (2008). Serial cohabitation and the marital life course. *Journal of Marriage and Family*, *70*(4), 861-878.

Lichter, D. T., Turner, R. N., & Sassler, S. (2010). National estimates of the rise in serial cohabitation. *Social Science Research*, *39*(5), 754-765.

Magnuson, K. & Berger, L. M. (2009). Family structure states and transitions: Associations with children's well-being during middle childhood. *Journal of Marriage and Family, 71* (3), 575-591.

Manlove, J., Wildsmith, E., Ikramullah, E., Ryan, S., Holcombe, E., Scott, M. Peterson, K. 2012. Union transitions following the birth of a child to cohabiting parents. *Population Research and Policy Review, 31*, 361-386.

Manning, W. D., Brown, S. L., & Stykes, J. B. 2014. "Family complexity among children in the United States. *The ANNALS of the American Academy of Political and Social Science, 654* (1), 48-65.

Manning, W. D. & Cohen, J. A. (2012). Premarital cohabitation and marital dissolution: An examination of recent marriages. *Journal of Marriage and Family, 74* (2), 377-387.

Manning, W. D., Smock, P. J., & Majumdar, D. (2004). The relative stability of cohabiting and marital unions for children. *Population Research and Policy Review*, *23* (2), 135-159.

Martin, J. A., Hamilton, B. E., Ventura, S. J., Osterman, M. J. K., Wilson, E. C., & Mathews, T. J. (2012). Births: Final Data for 2010. *National Vital Statistics Reports* 61(1). Hyattsville, MD: National Center for Health Statistics. Accessed 8/7/13 at http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_01.pdf

Martin, S. P. (2006). Trends in marital dissolution by women's education in the United States. *Demographic Research*, *15* (20), 537-560.

Martin, T. C., & Bumpass, L. L. (1989). Recent trends in marital disruption. *Demography*, *26* (1), 37-51.

Martinez, G., Daniels, K., & Chandra, A. (2012). Fertility of men and women aged 15-44 years in the United States: National Survey of Family Growth, 2006-2010. *National health statistics reports, 51*. At http://www.cdc.gov/nchs/data/nhsr/nhsr051.pdf

McLanahan, S. (2004). Diverging destinies: How children fare under the second demographic transition. *Demography 41* (4), 607-627.

NCHS. (2011). *2006-2010 National Survey of Family Growth User's Guide*. Hyattsville, MD: National Center for Health Statistics. At http://www.cdc.gov/nchs/data/nsfg/NSFG_2006-2010_UserGuide_MainText.pdf#General

Osborne, C., Manning, W. D., & Smock, P. J. (2007). Married and cohabiting parents' relationship stability: A focus on race and ethnicity. *Journal of Marriage and Family*, *69* (5), 1345-1366.

Osborne, C. & McLanahan, S. (2007). Partnership instability and child well-being. *Journal of Marriage and Family, 69* (4), 1065-1083.

Perelli-Harris, B., Sigle-Rushton, W., Kreyenfeld, M., Lappegård, T., Keizer, R., & Berghammer, C. (2010). The educational gradient of childbearing within cohabitation in Europe. *Population and Development Review*, *36* (4), 775-801.

Perelli-Harris, B., Kreyenfeld, M., Sigle-Rushton, W., Keizer, R., Lappegård, T., Jasilioniene, A., & Di Giulio, P. (2012). Changes in union status during the transition to parenthood in eleven European countries, 1970s to early 2000s. *Population Studies*, *66* (2), 167-182.

Phillips, J. A., & Sweeney, M. M. (2006). Can differential exposure to risk factors explain recent racial and ethnic variation in marital disruption? *Social Science Research*, *35* (2), 409-434.

Rackin, H., & Gibson-Davis, C. M. (2012). The role of pre-and postconception relationships for first-time parents. *Journal of Marriage and Family*, *74* (3), 526-539.

Raley, R. K. (2001). Increasing fertility in cohabiting unions: Evidence for the second demographic transition in the United States? *Demography*, *38* (1), 59-66.

Raley, R. K., & Bumpass, L. (2003). The topography of the divorce plateau: Levels and trends in union stability in the United States after 1980. *Demographic Research*, *8* (8), 245-260.

Raley, K. R. & Wildsmith, E. (2004). Cohabitation and children's family instability. *Journal of Marriage and Family, 66* (1), 210-219.

Reed, J. M. (2006). Not crossing the "extra line": How cohabitors with children view their unions. *Journal of Marriage and Family*, *68* (5), 1117-1131.

Reinhold, S. (2010). Reassessing the link between premarital cohabitation and marital instability. *Demography*, *47* (3), 719-733.

Smock, P. J., Manning, W. D., & Porter, M. (2005). Everything's there except money: How money shapes decisions to marry among cohabitors. *Journal of Marriage and Family*, *67* (3), 680-696.

Sweeney, M. M. (2010). Remarriage and stepfamilies: Strategic sites for family scholarship in the 21st century. *Journal of Marriage and Family*, *72* (3), 667-684.

Tach, L., Mincy, R., & Edin, K. (2010). Parenting as a "package deal": Relationships, fertility, and nonresident father involvement among unmarried parents. *Demography*, *47* (1), 181-204.

Tach, L. & Edin, K. (2013). The compositional and institutional sources of union dissolution for married and unmarried parents in the United States. *Demography, 50* (5), 1789-1818.

Tavares, L. P., & Aassve, A. (2013). Psychological distress of marital and cohabitation breakups. *Social science research*, *42* (6), 1599-1611.

Teachman, J. D. (2002). Stability across cohorts in divorce risk factors. *Demography*, *39* (2), 331-351.

Teachman, J. (2003). Premarital sex, premarital cohabitation, and the risk of subsequent marital dissolution among women. *Journal of Marriage and Family*, *65* (2), 444-455.

Thomson, E., Lappegård, T., Carlson, M., Evans, A., & Gray, E. (2014). Childbearing across partnerships in Australia, the United States, Norway, and Sweden. *Demography*, *51* (2), 485-508.

Van de Kaa, D. J. (1987). Europe's second demographic transition. *Population Bulletin*, *42* (1), n1.

Waller, M. R. (2001). High hopes: Unwed parents' expectations about marriage. *Children and Youth Services Review*, *23* (6), 457-484.

Wu, L. L. (1996). Effects of family instability, income, and income instability on the risk of a premarital birth. *American Sociological Review*, *61* (3), 386-406.

Wu, L. L., & Martinson, B. C. (1993). Family structure and the risk of a premarital birth. *American Sociological Review*, *58* (2), 210-232.

Wu, L. L., & Musick, K. (2008). Stability of marital and cohabiting unions following a first birth. *Population Research and Policy Review*, *27* (6), 713-727.

Table 1. Union status around a couple's first birth, 1995 and 2006-2010 NSFG

	1995	2006-2010
Union status indicators		
Cohabiting at union start ($x_1 = 1$)	0.50	0.70
Cohabiting at birth ($x_2 = 1$)	0.17	0.35
Married in month t following birth ($x_{3t} = 1$)	0.93	0.81
N (unions)	2,656	3,046
N (union-months)	136,955	145,434
Transitions to marriage among those cohabiting at birth		
Married within 1 year	0.21	0.15
Married within 2 years	0.34	0.25
Married within 5 years	0.59	0.48
N (unions)	511	1,348
N (union months)	19,182	51,411

Source: 1995 and 2006-2010 NSFG (women only). Sample limited to couples having a first child together within 10 years of interview.

Notes: N's unweighted. All means weighted using *SVY* procedures in STATA 12.0. Underlined terms significantly different from 1995 at p<.05. Time-invariant characteristics measured in the month of the couple's first birth together (i.e., the first month of the union-month file). Time-varying characteristics (married in month t) estimated from the full union-month sample. Transitions to marriage generated from life tables that treat union dissolution as a competing risk.

Table 2. Key characteristics of couples who have had a child together by union status at union start and birth, 1995 and 2006-2010 NSFG

	Union status at union start				Union status at birth			
	Cohabiting		Married		Cohabiting		Married	
	1995	2006-2010	1995	2006-2010	1995	2006-2010	1995	2006-2010
R's education (highest grade at interview)								
Less than HS	0.17	0.19	0.08	0.10	0.30	0.30	0.09	0.09
HS degree	0.43	0.28	0.35	0.16	0.49	0.36	0.37	0.18
Some college	0.24	0.27	0.26	0.23	0.17	0.29	0.26	0.24
College +	0.17	0.26	0.30	0.51	0.04	0.05	0.28	0.49
Family complexity (union and birth histories)								
R cohabited previously	0.15	0.19	0.03	0.04	0.16	0.23	0.08	0.11
R married previously	0.14	0.07	0.05	0.04	0.13	0.07	0.09	0.06
R had child(ren) at start of this union	0.14	0.14	0.06	0.04	0.27	0.21	0.07	0.05
N (unions)	1,343	2,223	1,313	823	511	1,348	2,145	1,698
N (union-months)	61,223	96,344	75,732	49,090	19,182	51,411	117,773	94,023

Source: 1995 and 2006-2010 NSFG (women only). Sample limited to couples having a first child together within 10 years of interview.

Notes: *N*'s unweighted. All means weighted using *SVY* procedures in STATA 12.0. Underlined terms significantly different from 1995 at p<.05.

Characteristics measured in the month of the couple's first birth together (i.e., the first month of the union-month file).

Table 3. Odds ratios from discrete-time event history models of separation within 10 years of birth, 1995 and 2006-2010 NSFG

	Model 1		Model 2	
	1995	2006-2010	1995	2006-2010
Key variables				
Union duration (months from first birth in union)	1.00	1.00	1.00	1.01 *
Union status indicators				
Cohabiting at union start	1.52 ***	1.20	1.42 **	<u>0.98</u>
Cohabiting at birth	2.09 ***	2.29 ***	1.22	1.03
Married in month *t* (time-varying)	0.56 **	0.41 ***	0.58 **	0.43 ***
R's education (highest grade at interview)				
Less than HS			0.93	1.20
HS degree (reference)			1.00	1.00
Some college			0.86	0.92
College +			0.65 *	0.54 ***
Family complexity (union and birth histories)				
R cohabited previously			1.44 *	1.06
R married previously			1.22	1.10
R had child(ren) at start of this union				
No child(ren) (reference)			1.00	1.00
Youngest child age <1 year			0.75	1.02
Youngest child age 1-2 years			1.24	1.45
Youngest child age >2 years			1.44 †	1.72 **
Controls				
Racial-ethnic background				
Non-Hispanic White (reference)			1.00	1.00
Non-Hispanic Black			1.62 **	1.25
Hispanic			0.86	0.74 *
Other			0.92	0.76
Father's education (highest grade)				
Less than HS			0.83	0.77
HS degree (reference)			1.00	1.00
Some college +			0.91	<u>1.27</u> †
Missing			0.83	1.02
Mother's education (highest grade)				
Less than HS			0.93	1.03
HS degree (reference)			1.00	1.00
Some college +			1.10	1.09
Missing			0.77	0.94
Grew up with both parents			0.85	0.65 **
Attended church weekly			0.69 **	0.65 **
Characteristics of first birth in this union				
R's age			0.91 ***	0.94 **
Partner's age			0.99	1.01
Pregnancy mistimed			1.05	<u>1.53</u> **
Pregnancy unwanted			1.22	1.59 **
Union duration at time of birth (in months)			1.00	1.00
Couple had another child together in month *t*			0.74 *	0.58 ***
Constant	0.01	0.01	0.09	0.04
N (union-months)	136,955	145,434	136,241	145,414

Source: 1995 and 2006-2010 NSFG (women only). Sample limited to couples who have had a first child together within 10 years of interview. Union duration measured in months from first birth.

Notes: *N*'s unweighted. All models weighted using *SVY* procedures in STATA 12.0. Underlined terms significantly different from 1995 at p<.05. Asterisks indicate differences from 1.00 at †p<.10, *p<.05, **p<.01, ***p<.001. R=respondent.

Table 4. Odds ratios associated with union-birth trajectories, derived from discrete-time event history models of separation within 10 years of birth, 1995 and 2006-2010 NSFG

	M→B	C→M→B	C→B→M	C→B
Model 1				
1995				
M→B	1.00	1.52 ***	3.18 ***	5.66 ***
C→M→B		1.00	2.09 ***	3.73 ***
C→B→M			1.00	1.78 **
C→B				1.00
2006-2010				
M→B	1.00	<u>1.20</u>	2.75 ***	6.70 ***
C→M→B		1.00	2.29 ***	<u>5.57</u> ***
C→B→M			1.00	2.43 ***
C→B				1.00
Model 2				
1995				
M→B	1.00	1.42 **	1.73 **	2.99 ***
C→M→B		1.00	1.22	2.11 ***
C→B→M			1.00	1.72 **
C→B				1.00
2006-2010				
M→B	1.00	<u>0.98</u>	<u>1.01</u>	<u>2.35</u> ***
C→M→B		1.00	1.03	2.38 ***
C→B→M			1.00	2.32 ***
C→B				1.00

Source: 1995 and 2006-2010 NSFG (women only). Sample limited to couples who have had a first child together within 10 years of interview. Union duration measured in months from first birth.

Notes: Derived from combining and testing coefficients from Models 1 and 2 in Table 3. Union-birth trajectories: M→B = married at union start and birth; C→M→B = cohabiting at union start and married at birth; C→B→M = cohabiting at birth and married at t following birth; C→B = cohabiting at birth without ever marrying. Underlined terms significantly different from 1995 at p<.05. Asterisks indicate differences from 1.00 at *p<.05, **p<.01, ***p<.001.

Table 5. Predicted probabilities of separation within 5 years of birth, derived from discrete-time event history models, 1995 and 2006-2010 NSFG

	Model 1		Model 2	
	1995	2006-2010	1995	2006-2010
Varying union-birth trajectories				
M→B	0.15	0.11	0.14	0.14
C→M→B	0.21	0.13	0.19	0.14
C→B→M	0.39	0.28	0.23	0.14
C→B	0.59	0.54	0.36	0.29
Ratio C→B / M→B	4.03	4.90	2.59	2.13
Simulations (over all union-birth trajectories)				
Observed model coefficients and means[1]	--	--	0.17	0.16
2006-2010 coefficients and 1995 union status means[2]	--	--	--	0.15
2006-2010 model coefficients and all 1995 means[3]	--	--	--	0.14

Source: 1995 and 2006-2010 NSFG (women only). Sample limited to couples who have had a first child together within 10 years of interview. Union duration measured in months from first birth.

Notes: Predicted monthly probabilities of separation derived from Models 1 and 2 in Table 3, varying union status and holding all other covariates at weighted mean values shown in Appendix Table A1. Monthly conditional probabilities of separation multiplied to generate estimated proportions separating over 5 years. Union-birth trajectories: M→B = married at union start and birth; C→M→B = cohabiting at union start and married at birth; C→B→M = cohabiting at birth and married at t following birth; C→B = cohabiting at birth without ever marrying.

[1]Predicted probability of separation from observed models, all covariates held at observed levels.

[2]Predicted probability of separation from 2006-2010 model, union status indicators held at their 1995 means, all other controls held at their 2006-2010 means.

[3]Predicted probability of separation from 2006-2010 model, all covariates held at their 1995 means.

Appendix Table A1. Characteristics of couples who have had a child together, 1995 and 2006-2010 NSFG

	1995	2006-2010
Key variables		
Union duration (months from first birth in union)	51.21	51.88
Union status around a couple's first birth		
Cohabiting at union start ($x_1 = 1$)	0.50	0.70
Cohabiting at birth ($x_2 = 1$)	0.17	0.36
Married in month t following birth ($x_{3t} = 1$)	0.93	0.81
R's education (highest grade at interview)		
Less than HS	0.13	0.16
HS degree	0.39	0.24
Some college	0.25	0.26
College +	0.24	0.33
Family complexity (union and birth histories)		
R cohabited previously	0.10	0.15
R married previously	0.10	0.06
R had child(ren) at start of this union		
No child(ren)	0.90	0.89
Youngest child age <1 year	0.02	0.03
Youngest child age 1-2 years	0.02	0.02
Youngest child age >2 years	0.06	0.06
Controls		
Racial-ethnic background		
Non-Hispanic White	0.74	0.65
Non-Hispanic Black	0.07	0.10
Hispanic	0.14	0.18
Other	0.05	0.07
Father's education (highest grade)		
Less than HS	0.18	0.22
HS degree	0.43	0.31
Some college +	0.30	0.38
Missing	0.10	0.09
Mother's education (highest grade)		
Less than HS	0.17	0.22
HS degree	0.54	0.35
Some college +	0.25	0.41
Missing	0.04	0.01
Grew up with both parents	0.63	0.62
Attended church weekly	0.36	0.32
Characteristics of first birth in this union		
R's age	26.04	26.38
Partner's age	27.26	28.34
Pregnancy mistimed	0.19	0.22
Pregnancy unwanted	0.03	0.07
Union duration at time of birth (in months)	34.81	36.60
Couple had another child together in month t	0.38	0.38
N (unions)	2,656	3,046
N (union-months)	136,955	145,434

Source: 1995 and 2006-2010 NSFG (women only). Sample limited to couples who have had a first child together within 10 years of interview. Union duration measured in months from first birth.

Notes: N's unweighted. All means weighted using *SVY* procedures in STATA 12.0. Time-invariant characteristics measured in the month of the couple's first birth together (i.e., the first month of the union-month file). Time-varying characteristics (union duration, married in month t, had another child together in month t) estimated from the full union-month sample. R = respondent.