FAMILY STRUCTURE CHANGES AND MATERNAL HEALTH TRAJECTORIES*

Sarah O. Meadows
Princeton University

Sara S. McLanahan
Princeton University

Jeanne Brooks-Gunn
Columbia University

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Family Structure Changes and Maternal Health Trajectories

Abstract

Marriage and marital stability are positively associated with health and well-being. Thus, recent increases in births to unmarried parents and the instability surrounding these relationships raise concerns about the possible health effects associated with changes in family formation. Using latent trajectory models and data from the *Fragile Families and Child Well-Being Study* (FFCWS) this paper examines trajectories of mothers' mental and physical health, specifically focusing on transitions into and out of residential relationships with the child's biological father (n = 2,448). Mothers who remain married to their child's father are in better mental and physical health than unmarried mothers. Among mothers living with the father at birth, exiting a coresidential relationship (i.e., marriage or cohabitation) increases mental health problems and decreases self-rated health. Consistent with the crisis model, these effects appear to be short-lived. Analyses also reveal few significant differences in health slopes between stably married mothers and those who experience family structure change, results which are inconsistent with the marital resource model. The implications of these findings for selection and causation arguments, as well as social policies promoting stable, healthy unions between unmarried parents, are also discussed.

Introduction

A large body of research shows that marriage and marital stability are positively associated with health and well-being. Married individuals have higher levels of physical (Kiecolt-Glaser and Newton 2001) and mental health (Simon and Marcuseen 1999) than unmarried adults. Although some of these differences may be due to selection, theory provides good reason to believe that marriage and marital stability have causal impacts on health. Marriage promotes social integration, encourages reciprocal caretaking, and provides intimate, emotional support (Gove, Hughes, and Style 1983, Umberson 1987, Peters and Liefbroer 1997). Divorce negates these benefits and also induces stress (Gove and Shin 1989).

Given the link between marital status and health, researchers have become increasingly concerned about the potential effects of recent changes in family formation. In 1970 roughly eleven percent of all births in the United States occurred outside marriage (Ventura and Bachrach 2000). By 2003 the figure had risen to thirty five percent (Martin et al. 2005). This trend is especially pronounced among minorities and less educated women (Teachman, Tedrow, and Crowder 2000; Ellwood and Jencks 2004), suggesting that changes in family formation may have contributed to growing racial and class disparities in health.

Similarly, the quality of children's home environments may have also been reduced as a result of these changes in family formation, undermining their life chances (McLanahan 2004). Unmarried mothers report higher stress levels (McLanahan 1985), more mental health problems (Davies, Avison, and McAlpine 1997), and lower levels of overall health (Berkman 1969) than married mothers. They also have fewer parenting resources in terms of time and money (McLanahan and Teitler 1999). In short, understanding the link between parents' marital status

and maternal health is important not only in its own right but also because maternal health is strongly associated with the future well-being of children.

Recent changes in family formation are also of interest to policy makers. A major objective of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWROA, P.L.104-193), welfare reform legislation passed in 1996, was to reduce non-marital childbearing and increase paternal responsibility (Garfinkel and McLanahan 2003). States were required to strengthen their child support enforcement efforts and were rewarded for reducing non-martial birth rates. The reauthorization of welfare reform legislation in 2006 went a step further by providing funds for programs designed to reduce marital instability and encourage marriage among unmarried parents (Haskins 2006). These new policies and programs are based on the assumption that parents and children would be better off if unmarried parents married and more importantly, remained married. Yet the empirical evidence for this assumption is limited (Huston and Melz 2004).

Indeed, very little research has examined health trajectories of parents who have children outside marriage. Although some unmarried parents are in stable cohabiting unions, it is not clear whether these unions provide the same benefits as marriage. Moreover, women who give birth outside marriage are more likely to experience partnership instability than women who have children within marriage. Whether ending a non-marital union is more or less stressful than ending a marriage is also not known. Finally, we know very little about whether marriage after a non-marital birth provides the same benefits as marriage prior to birth.

This paper uses data from the *Fragile Families and Child Wellbeing Study* (FFCWS) to compare the health trajectories of different groups of mothers based on their family structures and changes in those structures. Using latent growth models we are able to test hypotheses about

the short- and long-term costs and benefits associated with different types of family structures and union transitions during the first five years after both marital and non-marital births. Three questions guide our study. First, is family structure at birth associated with mothers' health trajectories? Second, how are stability and changes in family structure after birth associated with health trajectories? And third, are the effects associated with family structure change time-specific or cumulative?

Bierman, Fazio, and Milkie (2006) convincingly argue that exploring the mental health advantage of the married necessitates the use of a multifaceted approach, both in terms of measurement of health and the marital status groups that are compared. With this in mind, our analysis extends previous research in several ways: the sample includes a large number of unmarried mothers which allows us to examine the effects of stability and change in non-traditional as well as traditional families, the measurement of mental health is multidimensional, incorporating both internalizing and externalizing disorders, and the data contain multiple observation points allowing us to examine both time-specific and cumulative effects that may be associated with changes in family structure.

The Benefits of Marriage

Existing theory and empirical research have much to tell us about the costs and benefits associated with marriage and marital stability for parents and children (House, Landis, and Umberson 1988; Waite 1995; Waite and Gallagher 2000). Classic sociological theory indicates that marriage is an important social institution with well understood norms and obligations. In Durkheimian (1897) terms, marriage reduces alienation and contributes to overall well-being. More recent theoretical work has cited reciprocal caretaking promoted by the institution of marriage as the reason for its protective effects (Gove, Hughes, and Style 1983). Partners attend

to one another's health and well-being by monitoring health behaviors (Umberson 1987) and providing intimate, emotional support (Peters and Liefbroer 1997), in part, because each partner expects to individually gain from a healthy union.

The extent to which the benefits of marriage extend to cohabiting unions is not entirely clear and is likely to depend on the nature of the union (Manning and Smock 2002). Insofar as cohabitation is an "incomplete institution" characterized by less commitment (Nock 1995; Rindfuss and VandenHeuvel 1990), we might expect the benefits to be lower. Further, because cohabiting unions are also characterized by higher rates of mental illness (DeKlyen, Brooks-Gunn, McLanahan, and Knab 2006) and drug and alcohol abuse and violence, health monitoring benefits may not hold (Kenney and McLanahan 2006). The costs of exiting these unions might also be lower because ending a cohabiting relationship is more common, and more expected, than ending a marriage (Rindfuss and VandenHeuvel 1990). Alternatively, the effect may be more negative because cohabiting couples typically have fewer resources than married couples.

Empirical Evidence

A well-established literature documents the health benefits associated with marriage (without regard to parenthood), including higher self-rated health (Williams and Umberson 2004), reduced mortality rates (Rogers 1995), lower rates of chronic illness and physical disability (Pienta, Hayward, and Jenkins 2000), and better mental health (Marks and Lambert 1998). The few studies that have investigated whether similar benefits exist for cohabitation suggest that cohabiting couples fall somewhere between married couples and single individuals in terms of well-being, especially mental health (Ross 1995). Cohabiting individuals frequently report higher levels of depression (Brown 2000) as well as more alcohol problems (Horwitz and White 1998) than their married counterparts.

In a similar vein, transitions into marriage appear to be more protective of health than transitions into cohabitation (Willitts, Benzeval, and Stansfeld 2004; but see Wu, Penning, Pollard, and Hart 2003 for conflicting results). Horwitz and White (1998) find significant but smaller mental health benefits among couples who entered a cohabiting union (as compared with couples who married), whereas both Brown (2000), and Kim and McKenry (2002) find no improvement in psychological well-being among couples who began cohabiting. In addition, Lamb, Lee, and DeMaris (2003) report no marriage benefits for depressive symptoms among couples who cohabited prior to marriage, although they did find strong benefits associated with the status of being married. Together these studies suggest that cohabitation, although similar in many ways, is not as salubrious as marriage, perhaps reflecting the instability typically characteristic of cohabiting relationships (Brown 2000).

The Cost of Union Dissolution

Just as marriage and marriage-like relationships appear to provide adults with a number of physical and mental health benefits, exiting such unions appears to have negative consequences (Aseltine and Kessler 1993; Hemström 1996). Divorce has been linked to a higher risk of mortality (in men only, Zick and Smith 1991; Lillard and Waite 1995), poor health behaviors (Lee et al. 2005), increased mental health problems (Barrett 2000; Simon and Marcussen 1999), and increased poverty (especially among women, Holden and Smock 1991; but also among men, McManus and DiPrete 2001). Additionally, divorce and separation are typically accompanied by material and emotional changes which increase parental stress levels (Gove and Shin 1989; Lillard and Waite 1995).

Somewhat surprisingly, little research investigates the health consequences of union dissolution among cohabiting couples. One of the few existing studies reports that exits from

marriage and cohabitation result in similar decreases in functional and self-rated health but not in mental health (Wu and Hart 2002). Although these results from this single study suggest similarity in the impact of union dissolution, exiting a cohabiting relationship may actually be *more* detrimental for health than divorce. Insofar as cohabiting couples have lower socioeconomic status, earnings, and levels of education than married couples (Manning and Lichter 1996), ending these relationships may have more severe consequences for financial well-being than ending a marriage, especially for women (Avellar and Smock 2005). Similarly, because individuals in cohabiting relationships frequently have worse mental health than their married counterparts (DeKlyen et al. 2006), the exit of a partner may signify the loss of a key piece of social support resulting in an even greater negative impact on mental health.

Unmarried Parents and Health

Much of the existing research on marriage and health does not distinguish between adults with children and adults who are childless, although the divorce literature is a notable exception (Amato 2006). Single mothers in particular have received the most attention, with most studies reporting worse mental and physical health outcomes for this group, as compared to married mothers (Davies, Avison, and McAlpine 1997; Wickrama et al. 2006). More importantly, very little is known about the costs and benefits associated with family structure changes for parents who experience birth outside marriage. Unmarried parents are a diverse group (Sigle-Rushton and McLanahan 2002), including many cohabiting couples as well as romantic, non-coresident parents who eventually marry. Exactly what happens to these couples if and when they marry is unclear. According to one scenario, health improves with marriage as it does for childless adults (King, Kiernan, Ahn, and Wilcox 1998; Simon and Marcussen 1999). According to another, health declines because these partnerships are fraught with distrust and conflict (Edin 2000).

Thus, marriage (or cohabitation) may not be ubiquitously advantageous for health. Forming a new partnership is likely to increase resources yet new partnerships may also be stressful, especially during an initial adjustment period. In Holmes and Rahe's (1967) classic piece on stressful life events marriage ranked as the seventh most stressful out of 50 total events.

Family Structure Change and Stress: Short- and Long-Term Effects

The distinction between the impact associated with a marital status change, such as a marriage or divorce, and the impact associated with occupying a particular status is very important, although often overlooked. The crisis model, for example, suggests that the negative impact of a divorce is most pronounced around the time of the event and fades in the absence of additional stressors (Acock and Demo 1994; Booth and Amato 1991). Theoretically, divorce can be viewed as an acute stressor in that its negative association with health is delimited by a beginning and an end of the crisis event (Avison and Turner 1988; Hetherington, Cox, and Cox, 1985, Wheaton 1999). Further, adaptation theory suggests that all individuals have a set level of subjective well-being and that, although a stressful event may cause a drop (or increase) in well-being, this decline (or augmentation) is temporary (see Diener, Lucas, and Scollon 2006 for a review of adaptation theory).

In contrast, the (marital) resource accumulation model suggests that the benefits associated with marriage accumulate the longer an individual remains in that status (see Ross and Wu 1996). Whereas the married accumulate resources, individuals who divorce face the risk of not only immediately losing resources, but also of accumulating resource deficits over time. The result is a growing disparity between the stably married and divorced. Role theory argues that certain roles are associated with chronic strain, consistent with the accumulation argument (Pearlin 1999). These chronic strains are a common feature of life for single parents (Avison

1999). Moreover, the strains associated with divorce may spill over into other life domains (i.e., financial, work, social relationships), exacerbating the negative effect of union dissolution on well-being (Pearlin, Menaghan, Lieberman, and Mullan 1981). In short, whereas married mothers are expected to accumulate resources, single mothers are expected to accumulate stress, leading to growing health disparities between stably married and stably single mothers.

Williams and Umberson (2004) note that simultaneous tests of the crisis and marital resource models are lacking in the literature, especially as they pertain to physical health (see Johnson and Wu 2002 and Strohschein, McDonough, Monette and Shao 2005 for exceptions; note that both examine mental health). Reliance on cross-sectional data and failure to differentiate between marital status and marital transitions are cited as reasons for their absence. Further, the two models, crisis and (marital) resource accumulation, are not incompatible. Johnson and Wu (2002) argue that if social roles are responsible for the negative association between divorce and psychological distress (via role strain) one should find an enduring effect of divorce on mental health. Similarly, Wheaton (1999) argues that life events often lead to chronic strains, which is clearly the case with union dissolution. Thus it is entirely possible that union dissolution, an acute stressor, is associated with both an immediate crisis for health as well as a long-lasting harmful impact on well-being given a subsequent change in social roles.

Selection

Most discussions of the link between marital status and health assume that the protective effect of marriage and the deleterious effect of divorce are causal (Booth and Amato 1991; Johnson 1991). An alternate view posits that the correlations between health and marriage or divorce are due to selection into and out of these marital statuses (Aseltine and Kessler 1993; Mastekaasa 1992, Wade and Pevalin 2004). According to this argument, healthier individuals

are more likely to marry and less healthy individuals are more likely to divorce (Goldman 1993), leading to a spurious correlation between marital status and health. One typical means of minimizing potential selection bias is to include a number of controls for pre-existing health status as well as other individual traits that are likely to be correlated with union transitions as well as health (see Horwitz, White, and Raskin-White 1996). Currently there is no clear consensus on the role of selection in accounting for health disparities among marital status groups; however, given that selection and causation are not mutually exclusive it is likely that both are at work (Hope, Rodgers, and Power 1999; Waldron, Hughes, and Brooks 1996).

Differential selection into and out of different marital statuses clearly poses a serious threat to the causal argument. This is true of both cross-sectional and longitudinal data, but with respect to the later, selection bias has specific implications for both the actual amount of data needed to distinguish between selection effects and causal relationships (Lamb, Lee, and Demaris 2003; Marcussen 2005). Analyses that rely on only two points in time, one pre- and one post-event, to examine the impact of union transitions on health are only able to capture changes in outcomes occurring within the first year after the transition. Such studies are thus unable to detect whether short-term effects dissipate over time as predicted by the crisis model (Williams and Umberson 2004). Moreover, they cannot gauge whether the costs and benefits associated with particular statuses accumulate over time. Nor can they address the processes that may underlie an individual's response to changes in marital status (Strohschein et al. 2005).

Research Aims of the Current Study

The current study has three specific research aims. The first explores the association between parents' relationship status at birth and maternal health trajectories during the subsequent five year period. These statuses include married, cohabiting, romantically involved

but non-resident, and non-romantic, non-resident. This analysis provides us with an overall picture of the variation in health status at birth as well as over time. The second research goal examines how mothers' relationship stability and transitions are associated with their health trajectories. Here, we compare mothers who remain stably married to those who remain stably cohabiting and stably single. We also compare mothers in unstable relationships with those who remain stably married. These comparisons will alert us to possible growing disparities in mothers' health and whether these disparities are associated with particular types of family structures and transitions. If the (marital) resource accumulation hypothesis is correct, we expect to see evidence of growing disparities between stably married mothers (and perhaps stably cohabiting mothers) and stably single mothers. Specifically, we expect the slope of health trajectories to widen as time passes, with stably married mothers becoming increasingly healthier than their non-married counterparts (or alternatively that mothers with unstable relationship histories become increasingly unhealthy compared to their stably married counterparts). Finally, the third research aim examines time-specific and cumulative effects associated with relationship transitions. If we find that transitions result in time-specific effects that fade over time, then we provide support for the crisis model. However, if we find that transitions result in persistent effects, then we provide support for the accumulation model. Note that it is possible that both short- and long-term effects exist, in which case both models would be substantiated.

Given the threat of potential selection bias, we utilize a number of techniques to minimize its influence. First, we include a rich set of control variables measured at the time of the birth. The *Fragile Families and Child Wellbeing Study* is unique in that it asks detailed questions about parents' capabilities, family backgrounds, and previous relationships. For example, mothers are asked to indicate if either biological parent has a history of depression

and/or substance abuse. It also asks about the number of relationship transitions mothers have experienced in the past. This information, which is rarely available in other studies, allows us to control for many of the variables that are likely to affect relationship instability as well as selection into particular relationship statuses. Second, we use a two-step Heckman procedure to correct for unmeasured variables that may also affect relationship status and maternal health. Finally, latent growth models themselves give us some purchase on selection bias. Specifically, this modeling technique allows us to estimate both the effect of relationship stability and transitions on mothers' initial health status one year after birth as well as her health trajectory measured between years one and five. Whereas selection is likely to affect a mothers' initial status, it is less likely to affect her trajectory (although it is possible that some unobserved variable causes mothers to have different trajectory slopes as well as different intercepts). Moreover, a finding of no difference in the trajectories of different subgroups indicates selection is not at work (assuming that any potential the selection factor is itself stable over time). Similarly, evidence of time-specific, but not cumulative, effects is also inconsistent with the selection argument.

Methods

Data

Data come from the *Fragile Families and Child Wellbeing Study* (FFCWS), a national longitudinal survey of parents and their children (Reichman, Teitler, Garfinkel, and McLanahan 2001). The FFCWS consists of 4,898 children, including 3,712 born to unmarried parents in large U.S. cities. Maternal baseline interviews were conducted in-person within 48-hours of the focal child's birth, with follow-up interviews via telephone when the focal child was one-, three-, and five-years of age. Our analysis uses data from all four waves and is restricted to mothers

with valid information on the health measures, relationship transitions, and the control variables. Listwise deletion resulted in a final sample of 2,448 women, including 1,554 who were living with the father at the time of the birth.[1]

Measures

Mental Health Problems. A composite score for mental health problems is created by summing three dichotomously coded items—heavy episodic drinking (i.e., binge drinking), illicit drug use, and diagnosis of a major depressive episode—all of which are available at the one-, three-, and five-year interviews. Heavy episodic drinking is defined as consumption of at least 5+ drinks in one sitting at least once in the previous month at the one-year interview and 4+ drinks in one sitting at least once in the previous month at the three- and five-year interviews. Roughly six percent of mothers at one-year, 12 percent at three-years, and 13 percent at five-years report a recent episode of binge drinking. Illicit drug use is defined as use of at least one illicit drug (sedatives, tranquilizers, amphetamines, analgesics, inhalants, marijuana, cocaine, LSD/hallucinogens, or heroin) without a prescription, in larger amounts than prescribed, or for

[1] One mother does not report a baseline marital status, 1,234 do not have health measures across all waves, and 1,215 are missing on the controls. Note that sample sizes may vary across models given the changing definition of the relationship history variables that are used. Additional analyses indicate that mothers not in our final sample have less education, are more likely to be African American and less likely to be White, more likely to not be in a relationship with the father and less likely to be married to him at baseline, more likely to have a mother with a history of mental health problems, less likely to have lived with both parents at the age of 15, more likely to have used drugs, smoked, and considered an abortion during their pregnancies, and reported slightly more mental health problems at one-year and slightly lower levels of self-rated health at one-, three-, and five-years than mothers in our analytic sample. Non-married mothers at baseline are younger and less well-educated, less likely to be white and more likely to be African American, more likely to have a biological mother with a history of mental health problems, have more previous relationships, are less likely to have lived with both parents at the age of 15, more likely to have used drugs, smoked, and considered an abortion during their pregnancies, and have more mental health problems at the one-year interview and slightly lower self-rated health at three-year interview than married mothers at baseline. These patterns indicate that the mothers in our sample are somewhat more advantaged than the target population. We conducted supplementary analyses on mothers who attrited after the one-year or the three-year survey. Differences between the attritors and non-attritors on the observable variables were minimal and primarily affected the racial composition of the earliest attritors (i.e, those who left after the one-year survey), who were more likely to be of Hispanic or other race/ethnicity. More importantly, no significant differences existed on the observable health measures for mothers who left the survey after one-year (i.e., self-rated health and mental health problems at one-year) and mothers who left the survey after the three-years (i.e., self-rated health and mental health problems at one- and three-years).

longer than prescribed in the past month. Two percent of mothers at one-year and five percent at three- and five-years report recent illicit drug use. Depression is measured using the Composite International Diagnostic Interview Short Form (CIDI-SF) Version 1.0 November 1998 (see Kessler et al. 1998). Scoring followed procedures outlined by the developers of the CIDI-SF to yield 12-month DSM-IV diagnoses of Major Depressive Episode (MDE) (American Psychiatric Association 1994; Walters et al. 2002). Thirteen percent of mothers at one-year, 18 percent at three-years, and 16 percent at five-years meet the diagnostic criteria for MDE. The mean mental health problem score across all mothers is 0.2 at one-year, 0.4 at three-years, and 0.3 at five-years. Note that the CIDI depression measure is not obtained at the baseline interview because of potential overlap with postpartum depressive symptoms.

Independently, each of the three items has been cited in existing studies as an indicator of poor mental health. Moreover, Aneshensel (2002) has argued that disorder specific models provide a biased estimate of the impact of social factors and stress on mental health when these factors may influence more than one health outcome. Indeed, in recent years the mental health literature has moved to including both internalizing (e.g., depression) and externalizing (e.g., alcohol use/abuse, violence) behaviors as indicators of mental health problems (Umberson, Williams, and Anderson 2002). We opt to combine depression, binge drinking, and drug use into one measure of mental health problems to maximize the variability of this construct within our sample and to capture the breadth of emotional distress than may result from changes in family structure.

Self-Rated Health. At the one-, three-, and five-year interviews mothers are asked to rate their physical health ("In general, how is your health? Would you say it is ..."). [2] Responses

[2] Because the depression measure is not available at the birth of the child, we have opted to keep the analyses parallel by not utilizing the self-rated health measure at baseline interview in the growth curve itself.

range from excellent to poor on a five-point scale where higher values indicate better health. Mothers report a mean self-rated health score of 3.8 at one-year, 3.8 at three-years, and 3.7 at five-years.

Family Structure Variables. Using maternal reports, three types of time-invariant family structure variables are created: relationship status at baseline, stability, and transitions (see Table 1a). All are a "snap-shot" description of mothers' marital relationships over the five years since the birth. *Baseline status* with respect to the child's father is identified as married, cohabiting, romantically involved but not coresident, and no relationship. *Stability* is a series of dummy variables that categorize a mother's relationship with the biological father as either married across all waves, cohabiting across all waves, not in a relationship across all waves (i.e., single), and a residual category that includes all mothers who experience at least one transition (i.e., unstable). Similarly, *transitions* are a series of mutually exclusive dummy variables that categorize all the possible relationship changes a mother can experience. These include exit from marriage, exit from cohabitation, move from cohabitation to marriage, movement into a marriage or cohabiting relationship with the biological father, movement into a marriage or cohabiting relationship with a non-biological, social father, and a residual category for experiencing more than one transition.[3] Together, the transition variables and the stability variables describe all the possible relationship histories of the mothers in the sample.

[Insert Table 1a here.]

The *family structure change variables*, in contrast, are time-varying (see Table 1b). For each two successive waves--baseline and one-year, one-year and three-years, and three-years and five-years--we create a series of dummy variables describing possible relationship transitions

[3] Note that sample size issues restrict us from separating movement into marriage from movement into a cohabiting relationship. For our purposes, social fathers are non-familial, romantic partners.

with either the biological father or a social father, depending on the residential status of the mother at birth. Possible transitions include movement into a residential relationship (e.g., marriage or cohabitation) and movement out of a residential relationship (e.g., divorce or separation). Residential parents at baseline may exit a marriage, exit a cohabiting relationship, transition from cohabitation to marriage, experience multiple or other transitions, or remain married or in a cohabiting relationship.[4] Non-coresident mothers may enter into a residential relationship with the biological father, enter into a residential relationship with the social father, experience multiple or other transitions, or remain single with no coresident partner. All transitions are mutually exclusive and refer to the *first* transition a mother experiences. That is, family structure change variables are coded such that women who experience a transition can not again experience the same transition. Any subsequent transition is coded as multiple/other. However, women who do not change status can remain stable in adjacent transition periods. Mutual exclusivity across waves also does not apply to the multiple/other transition category.

Control Variables. Because relationship status at baseline is not randomly assigned, our relationship variables may serve as proxies for other characteristics that themselves may cause mothers' relationship statuses and more importantly, their health outcomes. Fortunately the FFCWS survey includes a rich set of measures that allow us to control for many of the characteristics that are expected to affect both family formation and health.[5] Included here are measures of mothers' health status prior to birth: whether she *received medical care*, *used alcohol* at least several times a month, *used drugs* at least once a month, *smoked* at least part of

[4] Other transitions refer to mothers who may experience a transition at an early wave that leaves them in a status where they are eligible to experience another transition at a later wave. For example, a mother married to the biological father at birth may divorce between baseline and one-year and subsequently enter into a residential relationship with a new partner between one-year and three-years. This mother would receive a value of one on "exit marriage baseline to one-year" and a value of one on "multiple/other transition one-year to three-year."

[5] We control only for *observable* characteristics which may lead to selection into marital status, meaning that marital status is "conditioned" on the maternal characteristics we include in our model. We thank an anonymous reviewer for noting this subtlety.

one pack of cigarettes a day, or *considered an abortion* during her pregnancy. In addition, mothers are asked for their *self-rated health at baseline* (see footnote 2) and whether *her parents suffered from a variety of mental health problems* including alcohol or drug abuse, depression, and anxiety.[6]

In addition to mothers' early health, we also control for mothers' *attitude toward marriage* (e.g., "A single mother can bring up a child as well as a married couple."; "It is better for a couple to get married than just live together."; "It is better for children if their parents are married."). Higher values indicate a more favorable marriage attitude. Individuals with less positive attitudes toward marriage are likely not to marry and are also more likely to see divorce as a viable option to end an unsatisfactory marriage (Carlson, McLanahan, and England 2004). We also include a dummy variable indicating whether or not the mother *lived with both biological parents at the age of 15*. Teachman (2002) finds that, in and of itself, time spent away from both biological parents, regardless of the reason, is also related to an increased risk of divorce. This variable may also capture a mother's commitment to marriage and establishing long-term, stable intimate-partner relationships. Adults raised in families with a history of instability have been found to hold more negative views of marriage (Amato and DeBoer 2001), have more difficulties with interpersonal relationships (Ross and Mirowsky 1999), as well as have higher odds of experiencing divorce and relationship dissolution themselves (Amato and Cheadle 2005; Wolfinger 1999). Finally, maternal reports of the *number of prior relationships*

[6]Although these variables are not medical diagnoses, and are subject to recall error, they do give some indication of a family history of mental health problems as well as exposure to such illnesses. A limitation of these measures is that a mother's own mental health status may affect her assessment of her parents' mental health, a phenomenon known as "shared method variance." Shared method variance refers to the possible inflation of the association between two self-reported variables (i.e., the variables share the same method of derivation) (see Bank, Bishion, Skinner, and Patterson, 1990). In this case, if shared variance exists, controlling for maternal reports of parents' mental health problems should lead us to underestimate the effect of the relationship history and family structure variables on health trajectories.

are used to give some indication of relationship experience and stability before a mother's relationship with the biological father began.

In addition, all models control for mother's *age at baseline* (in years), *education* (a four category variable ranging from less than high school to college degree and above), and *race/ethnicity* (Black, white, Hispanic, and other with white being the omitted category). Means and standard deviations for all control variables can be found in Table 1a.

Analyses

Because we are interested in capturing the dynamic aspect of family structure changes on health we use latent growth curve modeling. This strategy assumes that mothers differ in initial ratings of health based on family structure and that variance in subsequent growth (or decay) of health trajectories also varies by family structure. Assuming a linear pattern over time, each individual's trajectory is characterized by a unique intercept (α), linear, time-dependent slope (β), and some measurement error (ε). Thus, the level one equation is as follows:

$$y_{it} = \alpha_i + \beta_i t + \varepsilon_{it} \qquad \text{(Equation 1)}$$

It represents within-individual (*i*) change over time (*t*). In order to incorporate the time-varying covariates representing changes in family structure into the model, we must modify Equation 1 as follows:

$$y_{it} = \alpha_i + \beta_i t + \gamma_t w_{it} + \varepsilon_{it} \qquad \text{(Equation 2)}$$

The addition of the "$\gamma_t w_{it}$" term represents the effect of each time (*t*) family structure variable on health at time (*t*) for each *i*th individual. In other words, each γ represents a perturbation from the latent health trajectory caused by a change in family structure at a specific point in time (see Curran and Willoughby 2003).

The second level of the growth model allows the random intercepts (α_i) and slopes (β_i) to be a function of variables that change across individuals (i) but do not change across time (t). This represents between-individual change over time. The level two equations are as follows:

$$\alpha_i = \alpha_0 + \alpha_1 x_{i1} + \alpha_2 x_{i2} + \ldots \alpha_k x_{ik} + u_i \quad \text{(Equation 3)}$$

$$\beta_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \ldots \beta_k x_{ik} + v_i \quad \text{(Equation 4)}$$

For our purposes, the x's are the controls and the time-invariant family structure variables. The intercept and slope for each health outcome are directly regressed on these characteristics to assess for potential group differences in the means of the growth factors.

Figure 1 graphically depicts the estimated growth model. The parameters from the intercept to the three measures of health are fixed at one. Conversely, the parameters from the slope to the measures of health are initially fixed at zero and subsequently at two and four to reflect time since the one-year interview. With only three observations contributing to health trajectories we are limited to a linear specification of slopes. Notice that we are also interested in subsequent changes in a mother's trajectory once she experiences a change in family structure. For example, a change in family structure between baseline and one-year is related to the one-year measurement of health, the three-year measurement of health, and the five-year measurement of health. The same is true for a change in family structure between one-year and three-years except that it is not retrospectively related to observed health at one-year. This model parameterization allows for a formal assessment of the influence of each new instance of family structure change on the development of health trajectories relative to the group of mothers who experience no change. It also allows us to gauge whether family structure changes have a time-specific impact on health (i.e., crisis model) or whether these transitions result in cumulative effects (i.e., marital resource model).

[Insert Figure 1 about here.]

All models are estimated using Mplus, Version 4.1 (Muthén and Muthén 2006). Model fit is evaluated using the maximum likelihood ratio test statistic (χ^2), which if significant, indicates poor fit. However, models with sample sizes over 200 are frequently significant and thus we use three supplemental measures of model fit—the root mean square error of approximation (RMSEA), the Tucker Lewis Index (TLI), and the Comparative Fit Index (CFI). Convention dictates that an RMSEA below .05 and a TLI and CFI close to 1.0 indicate good model fit (Bollen and Curran 2006).

Results

Family Structure: Relationship Status at Birth

Our first research question asks whether family structure at birth is associated with maternal health trajectories. The results for this question are presented in Table 2. According to the table, the average mother married at baseline starts with a self-rated health of 3.18 (α intercept) at the one-year interview and experiences a nonsignificant decline in her health trajectory by the five-year interview ($\beta = -.04$, ns, see Table 2, columns 1 and 2). Compared to married mothers, those who are cohabiting ($\alpha = -.13$, $p < .05$) and those in romantic non-coresidential relationships ($\alpha = -.13$, $p < .05$) have lower levels of self-rated health at the one-year interview (i.e., intercepts) and similar health trajectories (i.e., slopes). Mothers who are not in a relationship with child's father at baseline have the lowest self-rated health ($\alpha = -.31$, $p < .01$) one year after birth; however, the slopes of these mothers are actually better than those of married mothers (-.04 plus .05). So while all mothers experience a decline in self-rated health over time, this decline is not as steep for mothers who are not in a relationship with the child's father at baseline.

Turning to mental health problems, the average married mother experiences .26 (α) problems at the one-year interview and shows a significant increase in problems over time (β = .07, p < .10, see Table 2, columns 3 and 4). Cohabiting mothers are not significantly different from married mothers in terms of their mental health one year after birth (β = .04, ns), whereas romantically involved mothers (α = .05, p < .10) and mothers who are not in a relationship with child's father (α = .07, p < .10) both report more mental health problems than married mothers one year after birth. There are no slope differences between married mothers and other groups.

[Insert Table 2 about here.]

The growth models also allow us to investigate whether significant differences exist among unmarried mothers in terms of both intercepts and slopes using post-estimation Wald chi-square tests. Cohabiting and romantically involved mothers report higher self-rated health than mothers not in a relationship with child's father at the one-year interview. These mothers also experience less of a decline in self-rated health than other unmarried mothers. For mental heath problems, there are no significant differences in intercepts among the baseline non-marital groups. However, a slope difference is evident between cohabiting and romantically involved mothers, with romantically involved mothers experiencing a shallower increase in mental health problems than cohabiting mothers.

Regardless of outcome, mothers who are married to the child's father at baseline are the healthiest one year after birth, followed by cohabiting mothers, romantically involved mothers, and finally, mothers who are not in a romantic relationship with the child's father. The findings for intercept differences are what we would expect and are consistent with both selection and resource accumulation arguments.[7] The finding of no slope differences is surprising and

[7] We also estimate the models in Tables 2 and 3 while adjusting for nonrandom selection into marriage at the baseline interview by using a hazard rate instrument based on the inverse Mills ratio (Berk, 1983; Heckman, 1979).

inconsistent with the argument that married mothers accumulate advantages over time relative to other mothers. However, these models do not account for the fact that baseline relationship statuses are not stable throughout the observation period. In the next set of models, we take account of these family structure changes.

Family Structure: Stability and Transitions

Our second research question asks how stability and change in family structure after birth are associated with mothers' health trajectories. The (marital) resource accumulation model predicts that mothers who are stably married, and possibly mothers who are stably cohabiting, will have better health trajectories than mothers who are stably single or mothers who experience unstable relationships. Table 3 presents results for both self-rated health and mental health problems. Columns 1 and 2 show that, with the exception of mothers who exit a cohabiting relationship, all mothers who experience a transition, regardless of whether it is an entrance or an exit, as well as mothers who are stably cohabiting and stably single, report lower self-rated health at the one-year interview than stably married mothers. More importantly, only mothers who exit from cohabiting relationships have a significantly different slope than stably married mothers. Whereas all mothers experience a decline in self-rated health, mothers who exit cohabiting relationships experience a significantly steeper decline (-.05 plus -.04; $\beta = -.04$, $p < .10$). It is also noteworthy that, although not statistically significant, mothers who exit a marriage experience a similar declining slope (-.05 plus -.04; $\beta = -.04$, ns).

[Insert Table 3 about here.]

Known as lambda (λ), the instrument represents the likelihood of being single (i.e., cohabiting, romantically involved, or in no relationship with the biological father) at birth. A probit model first estimates the likelihood of non-marriage at baseline. From the likelihood, we construct a lambda for each mother such that high values indicate a greater likelihood of being unmarried at birth. This variable is then entered into the growth models at Level 2. As the results do not differ we present the most parsimonious models here (results available upon request).

Results for mental health problems are similar to those for self-rated health. With the exception of mothers who make a transition from cohabitation to marriage and mothers who enter a residential relationship with the child's biological father, all groups have significantly more mental health problems at the one-year interview than stably married mothers (see Table 3, columns 3 and 4). Only mothers who move from cohabitation to marriage with the child's father have a significantly different slope than stably married mothers. While stably married mothers experience an increase in mental health problems ($\beta = .06$, ns), mothers who marry from the cohabiting state experience a significantly steeper increase (.06 plus .03; $\beta = .03$, $p < .05$). Although not statistically significant, mothers who exit from both marriages and cohabiting relationships, as well as those who have multiple relationship transitions, experience similarly steeper declines in mental health problems than stably married mothers (.06 plus .03; exit marriage $\beta = .03$, ns; .06 plus .01; exit cohabitation $\beta = .01$, ns; .06 plus .02; multiple $\beta = .02$, ns). These results are suggestive of a growing gap between the stably married and the groups of mothers who experience exit transitions, as is predicted by the marital resource model.

The model presented in Table 3 compares each of the stability and transition groups to stably married mothers. Given uncertainty about whether or not the marital resource model applies to cohabitation as well as marriage, we sought to test differences between stably cohabiting mothers and each of the stability and transition groups. Chi-square tests reveal no differences in self-rated health trajectories and only two significant differences in mental health problem trajectories (i.e., the slope for the stably cohabiting group is not as steep as the slope for the cohabitation to marriage and multiple transition groups). What is most striking is that we observe no slope difference between the stably cohabiting and the stably single on either health outcome as is predicted by the resource accumulation model. So while the stably married appear

to have a health advantage at the one-year interview (i.e., the intercept) this does not necessarily extend to the stably cohabiting. We find some, albeit weak, support for the resource accumulation model for the stably cohabiting but only in terms of mental health (i.e., slope differences between stably cohabiting and multiple transition groups). Finally, Table 3 also allows us to examine the relative influence of leaving a marriage versus leaving a cohabiting relationship. No significant difference in either the intercept or the slope exists between these two groups in terms of both self-rated health and mental health problems.

From these results, it appears that stability in a marriage is related to better maternal health. Conversely, the absence of a coresident partner and instability in the mother-father relationship is associated with worse mental and physical health, especially in terms of where mothers start their trajectories. Although the (marital) resource accumulation model predicts diverging trajectories between stably married or cohabiting mothers and stably single mothers over time, our finding do not support this hypothesis as we observe no differences in slopes among these groups of mothers. What is true, however, is that these groups of women begin their trajectories at very different places and this disparity is perpetuated across the first five years of the child's life. In the case of both self-rated health and mental health problems, results suggest that the gap may widen between stably married, and in two instances stably cohabiting, mothers and those mothers who exit a marriage or a cohabiting relationship and who experience multiple marital transitions. However these growth models, using time-invariant relationship history variables, are unable to test the crisis model which predicts that family structure transitions have a time-specific impact on well-being.

Individual Changes: Time-Varying Family Structure Changes

The final research question asks whether the effects associated with family structure change are time-specific. For this analysis we introduce time-varying family structure change variables into the latent growth models at level one to determine whether transitions produce a "shock," shifting the overall health trajectory at a specific point in time, as suggested by the crisis model. In contrast, the (marital) resource accumulation model predicts that the effect of a change in family structure extends beyond the time at which it occurs. These two hypotheses are not incompatible and our models allow us to assess the degree to which there is empirical support for one or both. If time-specific family structure changes have immediate impacts on health, such results would support the crisis model. And if those same family structure variables continue to have an impact on health in subsequent years then the results would support the resource accumulation model.

Self-Rated Health. Table 4a presents the results from a growth model examining the timing of exits from and entrances into marital and cohabitating relationships on self-rated health trajectories, controlling for stability in cohabiting relationships and single status as well as multiple/other transitions. The reference group is mothers who remain in a marriage with the biological father across the entire observation period. According to the estimates in Table 4a, exiting a marriage ($\alpha = -.58$, $p < .01$) or cohabiting relationship ($\alpha = -.19$, $p < .05$) between baseline and the one-year interview results in an immediate negative shock to mothers' self-rated health trajectories compared to remaining stably married. These same transitions have no significant impact on self-rated health at the three-year interview although divorce does have an additional negative impact on physical health at the five-year interview ($\alpha = -.58$, $p < .01$).

Mothers who experience a dissolution between the one- and three-year interviews also experience an instantaneous drop in self-rated health, but this effect is only significant for exiting

a cohabiting relationship ($\alpha = -.30$, $p < .01$) and it remains significant at the five-year interview ($\alpha = -.24$, $p < .05$). Mothers who experience dissolution between the three- and five-year interviews also experience an immediate decrease in self-rated health (exit marriage $\alpha = -.37$, $p < .01$ and exit cohabitation $\alpha = -.30$, $p < .01$). On the whole, the strongest negative effects of dissolution are limited to the year in which the transition occurs, consistent with the crisis model. However the lack of persistent negative effects associated with these exit transitions is not indicative of a cumulative advantage for the stably married.

Somewhat unexpectedly, movement from cohabitation into marriage is also associated with a time-specific drop in self-rated health at all three waves, although it is not significant at the three-year interview (one-year $\alpha = -.24$, $p < .01$; three-year $\alpha = -.16$, ns; and five-year $\alpha = -.41$, $p < .01$). These results suggest that this event does show a prolonged negative relationship with physical health beyond the year in which it occurs. Finally, movements into coresidential relationships with either biological or social fathers show a similar pattern, with few significant time-specific declines in self-rated health.

[Insert Table 4a about here.]

Mental Health. The results for mental health problems are presented in Table 4b and are similar to those for self-rated health. Exits from marital and cohabiting relationships are associated with time-specific increases in mental health problems at the one-, three-, and five-year interviews and provide even stronger support for the crisis model. These associations become non-significant in the later years, suggesting that exits from coresidential relationships do not continue to affect health trajectories after the initial shock. Movement from cohabitation to marriage, movement into a residential relationship with the biological father, and movement into a residential relationship with a social father have little discernible impact on mental health

at any time. Only movement into marriage from cohabitation or movement into a coresidential relationship with the biological father occurring between one- and three-year interview has a time-specific impact, increasing mental health problems (cohabitation to marriage $\alpha = .19$, $p < .01$; biological father = .16, $p < .05$). However, when the stably single are treated as the comparison group, mothers who transition into residential relationships with biological but not social fathers actually experience a significant decrease in mental health problems (results not shown). This effect however, is best characterized as time-specific and not cumulative and is only significant if it occurs before the child's first birthday.

[Insert Table 4b about here.]

In sum, our time-invariant models provide limited, weak support for the (marital) resource accumulation model by suggesting that exit transitions are related to diverging trajectories in well-being between stable and unstable groups of mothers. However these results should be qualified by the fact that our time-invariant models do not find support for the accumulation of negative consequences as a result of prolonged exposure to single motherhood or experiencing relationship transitions. Instead, the findings support the crisis model's hypothesis that family structure changes are associated with immediate consequences for health that do not persist over time.

Discussion and Implications

Existing literature on the association between marriage and health has primarily focused on entry into marriage and marital dissolution. As a consequence, we are only beginning to question how non-marital union formation and dissolution affect maternal health and well-being, especially in non-traditional families. Given the large increase in non-marital childbearing, and given state and federal interest in promoting marriage as a strategy for reducing poverty and

improving child well-being, understanding the effects of union transitions in non-traditional families is an important objective. This paper attempts to fill this gap by examining the links between changes in family structure that extend beyond marriage and trajectories of mental and physical health among a diverse sample of new mothers.

Our findings indicate that mothers who are married when their child is born, and who remain married until their child is age five, have better mental and physical health than other mothers. Married mothers report better health one year after birth, and their advantage relative to other marital status and transition groups holds for both mental and physical health. This finding is not surprising, given the vast amount of cross-sectional research showing that married individuals are in better health than unmarried adults (Waite 1995) and the equally large literature showing that marital dissolution has negative consequences for well-being (Wade and Pevalin 2004). Also consistent with existing literature, we find that cohabiting mothers fall somewhere between married and single mothers in terms of both mental and physical health.

Because we do not observe mothers before their relationships are formed, we do not know how much of the difference in health one year after birth is due to differential selection into marital statuses and how much is due to benefits associated with being in these statuses. The fact that mothers who eventually exit a coresidential relationship (i.e., marriage or cohabitation) have lower initial levels of health than stably married mothers suggests that union dissolution is selective of less healthy people. The fact that cohabiting mothers who marry their child's father after birth are not significantly different from cohabiting mothers who do not marry the father, and the fact that non-coresident mothers who move in with the father after birth are no different from mothers who remain single, suggests that union formation after birth is not selective of more healthy mothers. We address potential selection bias by including a rich set of control

variables predate the birth of the child. These variables are likely to correlate with both a mother's health status and her propensity to enter certain types of relationships (i.e., marriage). In additional results not reported here, we also include a measure of nonrandom selection into marriage at baseline which does not alter our conclusions (see footnote 8).

Unmarried mothers as well as mothers who experience relationship transitions are not only less advantaged in terms of health at the start of their trajectories, but also experience a decline in health status relative to married mothers. Once again, this finding could be due to selection – unmarried mothers may have unmeasured characteristics that place them on more negative trajectories than married mothers – or to causation. To further explore whether these disruptions resulted in short or long-term consequences, as proposed by the crisis and marital resource models, respectively, we examined the time-specific effects of changes in union status. The selection hypothesis suggests that any factors involved in selection into relationship statuses and/or transitions would persistently affect health as well. Thus, if selection is at work, family structure changes should have persistent negative effects on health (see Lucas, Clark, Georgellis, and Diener 2003). Results from this analysis are most consistent with the crisis model: with few exceptions, the effect of ending a marriage or cohabiting union appears to be limited to the immediate period after the transition occurs. This finding is inconsistent with the selection hypothesis. Our findings are, however, consistent with those of Strohschein and colleagues (2005) who also find support for the crisis model.

Lack of support for a cumulative impact of dissolution should not imply that our results do not contribute to our understanding of long-term maternal and family well-being. Brief periods of decline associated with family structure change may be followed by "recovery" periods where mothers are able to readjust, especially in the absence of other, subsequent

transitions. Indeed our findings are in line with those of Hetherington (1999) who finds that most divorced families reach a sort of equilibrium two to three years after a divorce event, especially families with high levels of conflict prior to dissolution (see also Hetherington and Stanley-Hagan 1999). Sustaining this post-divorce adjustment however, necessitates the absence of other family stressors and role strains (e.g., poverty, material hardship, conflict, non-authoritative parenting).

Taken as a whole, these results speak directly to current government efforts to increase marriage. First, mothers experience great variation in marital histories and types of transitions with respect to both biological and social fathers. Given this instability and diversity, policy makers should focus their attention on those transitions most likely to influence maternal health. Second, all of the evidence indicates that exits from relationships and multiple transitions are harmful to health. A related literature finds that relationship instability is negatively associated with child outcomes (Brown 2006; Cavanagh and Huston 2006; Demo and Acock 1988). Thus, encouraging unmarried parents to marry when their chance of maintaining a stable union is low could well have unintended negative consequences for mothers and children. This possibility implies that marriage programs should target couples who are likely to have successful marriages. Insofar as maternal health and well-being are related to the health and well-being of children, pushing couples into marriage may not always build strong families. "Who marries whom" is a very important aspect of this debate (Huston and Melz 2004). Finally, the fact that self-reported health problems and mental health problems are relatively common among unmarried mothers suggests that the new marriage programs need to directly address these barriers. More generally, our results underscore the importance of providing unmarried mothers with mental health services.

We have argued that the study of maternal health trajectories is important because of the link between mothers' health and child well-being. Recent evidence suggests that family structure changes occurring during adolescence have a *direct* impact on children. Brown (2006) finds that parental marital stability has important protective effects for adolescent delinquency, depression, and school engagement. In further support of our conclusions, she observes no appreciable benefit associated with movement from a cohabiting step-family (i.e., a biological mother and a social father) to a married step-family. Further, experiencing a transition out of a cohabiting step-family was not more or less harmful than experiencing a transition out of a married step-family—both had a marginally significant, negative impact on adolescent well-being. Given that parental support is an important protective factor during this period in the life course, the very same family structure changes that are negatively associated with maternal well-being may thus doubly disadvantage children and youths who go through these experiences with their parents.

Limitations

We should note at the outset that our sample is restricted to new mothers in large metropolitan areas which may hinder the generalizability of our finding. Our results show strong associations between family structure and intercepts, but fewer significant associations between the family history variables and trajectory slopes, especially for self-rated health. Despite variance around the overall group trajectory, changes in the absolute levels of health vary little. For self-rated health this finding is to be expected, given the age range of the mothers in the FFCWS. Further, the unhealthiest and most disabled women are unlikely to marry or have children.

Finally, if mothers who are the most negatively affected by exit transitions are also the most likely to have left our sample, then we may have limited our ability to detect long-term cumulative disadvantage effects. Obviously, we cannot observe the health of these mothers after they leave the survey, however we can observe their health statuses prior to attrition and compare them to mothers who experience similar transitions but remain in the sample over time. Results not presented here reveal that mean differences are not statistically significant. Nevertheless, it is still possible that the "hit" these mothers took after a union dissolution was more deleterious than that of mothers who stayed in the sample.

Conclusion

The health advantages of marriage and the disadvantages of union dissolution are well-documented disadvantages for divorce. Yet much of this literature overlooks movement into and out of other types of family structures. This analysis has described health trajectories of new mothers, focusing on these alternate relationship types. Marriage, and to a lesser degree, cohabitation, is beneficial for health, so long as the union remains stable. Mothers who do experience a transition, whether it involves ending an existing relationship or entering a new one, suffer declines in well-being compared to the stably married; however, in the absence of a subsequent transition, these periods of decline are followed by recovery. Unfortunately, a large percentage of unmarried mothers experience more than one transition during the first years of their children's lives (approximately 19 percent in our analytic sample), and thus do not have an opportunity to recover during a critical period of development (Osborne and McLanahan 2004). These finding are especially important in an era when government and social welfare policies are aimed at promoting and sustaining stable families in at attempt to help members of these non-traditional families achieve the same degree of well-being as their traditional counterparts.

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Table 1a. Descriptive Statistics for Time-Invariant Family Structure Variables (Means or Percentages, with Standard Deviations in Parentheses, N = 2,448).

	Mean/Percent	
Family Structure Variables		
Baseline Relationship with Biological Father		
Married	28.31	
Cohabiting	35.17	
Romantic, Non-coresident	30.88	
No Relationship	5.63	
Relationship Stability		
Stably Married	23.90	
Stably Cohabiting	7.56	
Stably Single	13.72	
Unstable	54.82	
Relationship Transitions[a]		
Coresident at Birth		
Exit Marriage	3.02	
Exit Cohabitation	10.54	
Cohabitation to Marriage	9.56	
Non-coresident at Birth		
Enter Residential with Biological Father	6.05	
Enter Residential with Social Father	6.70	
Multiple Transitions	18.95	
Controls		
Baseline Self-Rated Health (Range: 1 – 5)	3.95	(.94)
Lived with Biological Parents at 15	52.04	
Number of Previous Relationships (Range: 0 – 20)	2.18	
Marriage Attitude[b] (Range: 7 – 22)	15.02	(2.24)
Prenatal Behaviors		
Received Medical Care	98.01	
Alcohol Use	2.00	
Drug Use	1.67	
Smoking	17.40	
Considered Abortion	25.61	
Parents' Mental Health History		
Biological Mother	33.54	
Biological Father	42.11	
Age (Range: 14 – 50)	25.36	(6.07)
Education[c]	2.23	(1.02)
Black[d]	44.65	
White[d]	24.88	
Hispanic[d]	26.23	
Other[d]	4.08	

Notes: [a] Mutually exclusive categories created from the "Unstable" group. [b] Greater values mean more positive attitude. [c] Four categories: less than high school, high school, some college, and college degree and above. [c] White is the reference category.

Table 1b. Percent of Mothers Experiencing Time-Varying Family Structure Changes (N = 2,448).

	Baseline to One-Year	One-Year to Three-Year	Three-Year to Five-Year
Time-Varying Family Structure Changes			
Coresident at Birth			
Exit Marriage	1.14	2.49	2.94
Exit Cohabitation	10.09	4.90	3.10
Cohabitation to Marriage	5.43	3.84	2.37
Non-coresident at Birth			
Enter Residential with Biological Father	8.50	2.90	1.06
Enter Residential with Social Father	3.10	3.80	3.39
Multiple/Other Transitions	-	27.53	47.96
Stability Groups			
Continuously Married	27.17	25.20	23.20
Continuously Cohabiting	19.64	11.27	6.17
Continuously Single	24.91	18.06	9.80

Table 2. Results of Growth Model of Maternal Health and Time-Invariant Family Structure Variable: Baseline Relationship with Biological Father.

	Self-Rated Health		**Mental Health Problems**	
	Intercept (α)	Slope (β)	Intercept (α)	Slope (β)
Level 2				
Intercept	3.18***	-.04	.26**	.07*
Age at Baseline	-.01***	-.002	-.003	-.001
Education at Baseline	.05**	.01**	.01	-.002
Race				
Black	-.02	-.002	-.04	-.03***
Hispanic	-.13**	.04**	-.003	-.04***
Other	.003	.001	-.06	-.01
Baseline Self-Rated Health	.41***	-.02***	-.02	.001
Lived with Bio-Parents at 15	.02	-.01	-.01	.01
Previous Relationships	.002	-.002	.02***	.004***
Marriage Attitude	-.02**	.01***	-.003	-.003**
Prenatal Behaviors				
Received Medical Care	-.20	.02	-.03	.04*
Alcohol Use	-.27**	.08**	.28***	.05**
Drug Use	.25*	-.02	-.001	.000
Smoking	-.08*	.001	.08***	.01
Considered Abortion	-.06	-.01	.11***	-.01
Parents' Mental Health History				
Biological Mother	-.18***	-.01	.16***	.02***
Biological Father	-.11***	-.003	.09***	-.004
Family Structure (Baseline)[b]				
Cohabiting	-.13**[c]	-.01[c]	.04	.01[c]
Romantic, Non-coresident	-.13**[d]	-.01[d]	.05*	-.01[c]
No Relationship	-.31***[cd]	.05*[cd]	.07*	-.01
Model Fit				
χ^2 (df)	24.38 (20)		85.56*** (20)	
RMSEA	.009		.037	
TLI	.994		.864	
CFI	.998		.955	
N	2,448		2,456	

Notes: α is the intercept of health at one-year. β is the growth (or slope) in health.
[a] White is referent category. [b] Married is the referent category. [c,d] Indicate coefficients within the same column are different at $p < .05$.
* $p < .10$ ** $p < .05$ *** $p < .01$

Table 3. Results of Growth Model of Maternal Health and Time-Invariant Family Structure Variables: Transitions and Stability.

	Self-Rated Health		Mental Health Problems	
	Intercept (α)	Slope (β)	Intercept (α)	Slope (β)
Level 2				
Intercept	3.31***	-.05	.19*	.06
Age at Baseline	-.01***	-.002	-.003	.000
Education at Baseline	.04**	.01**	.01	-.002
Race				
Black	-.004	.000	-.06**	-.03***
Hispanic	-.12**	.04**	-.01	-.04***
Other	.01	.001	-.06	-.01
Baseline Self-Rated Health	.41***	-.02***	-.02*	.000
Lived with Bio-Parents at 15	.001	-.01	-.01	.01
N Previous Relationships	.003	-.002	.01***	.003
Marriage Attitude	-.02**	.01**	-.002	-.003**
Prenatal Behaviors				
Received Medical Care	-.22*	.03	-.03	.04*
Alcohol Use	-.27**	.09**	.28***	.05**
Drug Use	.21	.01	.004	.003
Smoking	-.08	.002	.08***	.01
Considered Abortion	-.05	-.01	.11***	-.01
Parent's Mental Health History				
Biological Mother	-.18***	-.01	.15***	.02***
Biological Father	-.12***	-.002	.10***	-.004
Family Structure [b]				
Coresident at Birth				
Exit Marriage	-.19*	-.04	.17**	.03
Exit Cohabitation	-.10[d]	-.04*[d]	.13***	.01
Cohabitation to Marriage	-.23***	.01	.04	.03**[df]
Continuously Cohabiting	-.20**	-.02	.07*	-.01[de]
Non-coresident at Birth				
Enter Residential with Biological Father	-.16*	-.01	.06	-.01
Enter Residential with Social Father	-.20**	.001	.13***	-.02
Continuously Single	-.27***[d]	.004[d]	.10***	-.01[fg]
Multiple Transitions [c]	-.26***	-.004	.09***	.02[eg]
Model Fit				
χ^2 (df)	27.13 (25)		92.49*** (25)	
RMSEA	.006		.033	
TLI	.997		.863	
CFI	.999		.954	
N	2,440		2,448	

Notes: α is the intercept of health at one-year. β is the growth (or slope) in health.
[a] White is referent category. [b] Stably married is the referent category. [c] Includes both resident and non-coresident at birth. [d,e,f,g] Indicates coefficients within the same column are different at $p < .05$.
* $p < .10$ ** $p < .05$ *** $p < .01$

Table 4a. Growth Model of Self-Rated Health and Time-Varying Family Structure Changes (N = 2,440).

	Intercept (α)		Slope (β)	
Level 2				
Intercept	3.24***		-.04	
	Self-Rated Health[b]			
Level 1	One-Year	Three-Year		Five-Year
Family Structure Changes[c]				
Exit Marriage				
Baseline to One Year	-.58***[e]	-.04[ef]		-.58***[f]
One-Year to Three-Year		-.07		-.09
Three-Year to Five-Year				-.37***
Exit Cohabitation				
Baseline to One Year	-.19**	-.02		-.10
One-Year to Three-Year		-.30***		-.24**
Three-Year to Five-Year				-.30***
Cohabitation to Marriage				
Baseline to One Year	-.24***	-.14		-.15
One-Year to Three-Year		-.16		.05
Three-Year to Five-Year				-.41***
Enter Relationship with Biological Father				
Baseline to One Year	-.12	-.03		-.01
One-Year to Three-Year		-.16		-.11
Three-Year to Five-Year				-.46***
Enter Relationship with Social Father				
Baseline to One Year	-.05	-.05		-.17
One-Year to Three-Year		-.20**		-.02
Three-Year to Five-Year				-.21**
Multiple/Other[d]				
One-Year to Three-Year		-.13		
Three-Year to Five-Year				-.11
Stability Groups				
Continuously Cohabiting	-.14**	-.11*		-.26***
Continuously Single	-.21***	-.19***		-.25***
Model Fit	χ^2 (df)	RMSEA	TLI	CFI
	51.43 (48)	.005	.996	.998

Notes: α is the intercept of self-rated health at one-year. β is the growth (or slope) in self-rated health.
[a] White is referent category. [b] Observed indicators of self-rated health. Model includes full set of controls at Level 2. [c] Continuously, stably married is the referent category. [d] Includes coresident and non-coresident at birth. [e,f] Indicates coefficients within the same row are different at $p < .05$.
* $p < .10$ ** $p < .05$ *** $p < .01$

Table 4b. Growth Model of Mental Health Problems and Time-Varying Family Structure Changes (N = 2,448).

	Intercept (α)		Slope (β)	
Level 2				
Intercept	.20*		.07	
	Mental Health Problems[b]			
Level 1	One-Year	Three-Year		Five-Year
Family Structure Changes [c]				
Exit Marriage				
Baseline to One Year	.21**[e]	-.08[e]		.01
One-Year to Three-Year		.36***[e]		-.07[e]
Three-Year to Five-Year				.17***
Exit Cohabitation				
Baseline to One Year	.14***[ef]	-.16[e]		.02[f]
One-Year to Three-Year		.16***		.04
Three-Year to Five-Year				.11*
Cohabitation to Marriage				
Baseline to One Year	.01[e]	-.24**[ef]		.07[f]
One-Year to Three-Year		.19***		.08
Three-Year to Five-Year				-.04
Enter Relationship with Biological Father				
Baseline to One Year	.01[e]	-.31***[ef]		-.08[f]
One-Year to Three-Year		.16**		.01
Three-Year to Five-Year				-.04
Enter Relationship with Social Father				
Baseline to One Year	.14**[e]	-.17[e]		.03
One-Year to Three-Year		.08[e]		-.15**[e]
Three-Year to Five-Year				-.01
Multiple/Other[d]				
One-Year to Three-Year		.37***		
Three-Year to Five-Year				.10*
Stability Groups				
Continuously Cohabiting	.01	.09**		-.08
Continuously Single	.08***	.12***		-.03
Model Fit	χ^2 (df)	RMSEA	TLI	CFI
	98.59*** (48)	.021	.913	.967

Notes: α is the intercept of mental health problems at one-year. β is the growth (or slope) in mental health problems. [a] White is referent category. [b] Observed indicators of self-rated health. Model includes full set of controls at Level 2. [c] Continuously, stably married is the referent category. [d] Includes coresident and non-coresident at birth. [e,f] Indicates coefficients within the same row are different at $p < .05$.
* $p < .10$ ** $p < .05$ *** $p < .01$

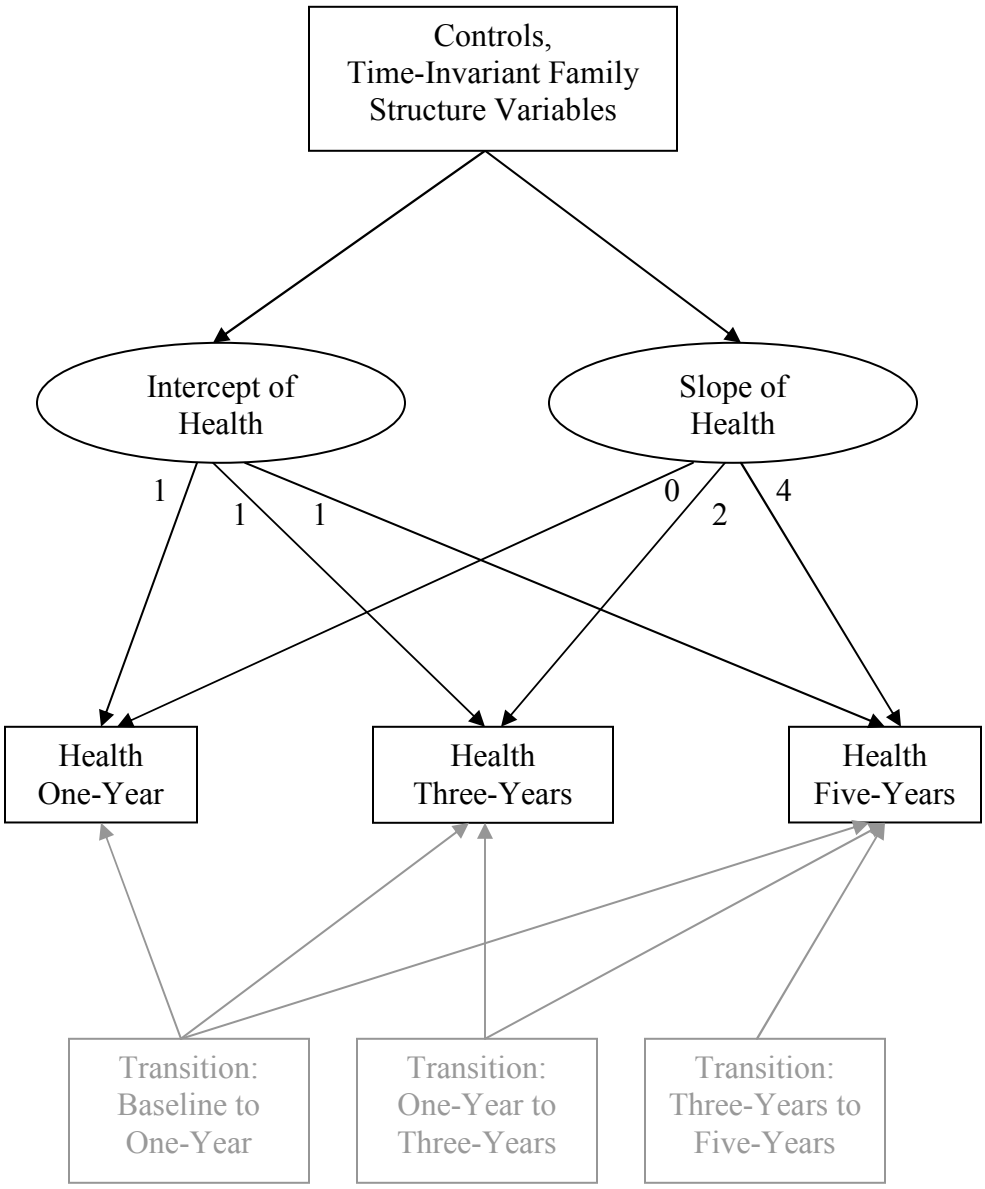

Figure 1. Latent Growth Model of Maternal Health.
Notes: Transition refers to the family structure change variables. Paths in gray indicate the time-varying covariates introduced at level one. In these models the relationship variables at level two are removed.