The Long Arm of Maternal Multipartnered Fertility and Adolescent Well-being

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National Center for Family & Marriage Research
Working Paper Series
WP-13-04
August 2013

National Center for Family & Marriage Research
Bowling Green State University

This research was supported by the National Center for Family & Marriage Research,
which is funded by a cooperative agreement, grant number 5 UOI AEOOOOOI-05,
between the Assistant Secretary for Planning and Evaluation (ASPE) in the U.S. Department of Health and Human Services (HHS)
and Bowling Green State University.

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** Working Draft, August 6, 2013**

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Abstract

Over the past decade, there has been an emerging body of research focusing on multipartnered fertility, where a parent has children by more than one partner. However, it is not clear if concern over multipartnered fertility, in and of itself, is warranted. We draw on 24 waves (1979-2010) of nationally representative data from the 1979 National Longitudinal Study of Youth main youth interviews to create detailed relationship histories of mothers and then link these data to self-reported assessments of adolescent well-being found in 9 waves (1994-2010) of the young adult (NLSY79-YA) supplement. Results suggest that maternal multipartnered fertility has a significant direct and moderated effect on adolescent drug use and sexual debut net of cumulative family instability and exposure to particular family forms like marriage, cohabitation, and divorce. Moreover, maternal multipartnered fertility remained a significant predictor of both drug use and the timing of first sex even after accounting for selection into this family form and controlling for the adolescent's experience of poverty, unemployment, and educational disadvantage at the time of birth and throughout childhood.

Over the past decade, there has been an emerging body of research focusing on multipartnered fertility, where a parent has children by more than one partner. The growth in union dissolution and nonmarital childbearing has increased the prevalence of multipartnered fertility (Guzzo and Furstenberg 2007), altered the circumstances in which it occurred (Manlove, Logan, Ikramullah, and Holcomb 2008), and fostered concern over the implications for families, particularly children (Klerman 2007). However, it is not clear if concern over multipartnered fertility, in and of itself, is warranted. Multipartnered fertility is, at its essence, a sign of parental union instability, and this is not a new phenomenon of the 21st century. Despite the recent nomenclature, divorce, remarriage, and additional childbearing have been fairly common over the past 40 years (Cherlin 1992, 2009). What is different, though, is that multipartnered fertility is occurring more frequently and occurring more often partially or completely outside of marriage, accompanied by higher instability among nonmarital unions (McLanahan and Beck 2010). Nonmarital unions, higher union instability, and thus multipartnered fertility occur more frequently among the disadvantaged (McLanahan 2009). Family instability and socioeconomic disadvantage, in turn, are linked to poorer parenting behaviors and outcomes for children (Osborne and McLanahan 2007; Osborne, Berger, and Magnuson 2012; Waldfogel, Craigie, and Brooks-Gunn 2010), but it is not clear if multipartnered fertility is an additional source of disadvantage beyond these factors. In sum, then, it is not clear whether, and how, multipartnered fertility is actually associated with child well-being.

The current research addresses an important gap in the literature: is multipartnered fertility detrimental to adolescent well-being? Although there is a growing body of research linking instability in maternal relationships and family structures to child well-being (e.g., Beck et al. 2010; Cooper et al. 2009; Osborne et al 2012), research has largely been unable to

disentangle the consequences of multipartnered fertility from its underlying causes. The limited information we do have comes almost exclusively from the Fragile Families study, which covers (to date) only a fairly short-term period, meaning children are observed only through childhood; this is problematic as research suggests that the effects of family structure and instability accumulate and thus more permanent and long-term effects are unlikely to be observed until adolescence (Cavanagh and Huston 2008; Osborne and McLanahan 2007). Further, the Fragile Families study does not observe individuals prior to the birth of a focal child, making it difficult to account for the experiences mothers and older children had prior to observation. We use the National Longitudinal Survey of Youth 1979 (NLSY79) which is uniquely suited to address issues of selection and family instability by allowing us to follow women prior to having children, observe union formation and dissolution over an extended period of time, and address long-term issues of adolescent well-being by using the Child and Young Adult supplements of the NLSY79.

Multipartnered Fertility and Child/Adolescent Well-Being

It is widely assumed that multipartnered fertility has deleterious effects on children's well-being (Klerman 2007). These negative effects may operate through a number of avenues. For instance, resource dilution, where parents have to spread their involvement and resources across multiple children and households (Blake 1981, 1989; Carlson & Furstenberg 2006), and the presence of competing demands across children and from current and ex-partners (Manning and Smock 2004; Meyer, Cancian, and Cook 2005) may reduce the resources available to children. Alternatively, parenting behaviors may differ across children with different partners in a direct manner, if parents selectively invest in children from the current relationship at the expense of those from prior relationships because the transactional and logistical costs are lower and the

benefits are higher, essentially pitting coresidential and nonresidential children against each other (Guzzo 2009; Manning and Smock 1999, 2000). Parenting behaviors may also indirectly differ; multipartnered fertility has been linked to parental depression (Turney and Carlson 2011), poorer mental and physical health (Dorius 2012), lower perceptions of social support (Harknett and Knab 2007), and lower-quality coparental relationships (Carlson and Furstenberg 2007), all of which affect parenting. It is worth noting, though, that the causal direction between mental health and related measures and multipartnered fertility is unclear. For instance, having children across households may increase stress, and a difficult coparental relationship could lead to union instability and thus increase exposure to multipartnered fertility.

To date, however, only one study has directly examined multipartnered fertility and child well-being. Bronte-Tinkew, Horowitz, and Scott (2009) examined father's multipartnered fertility and children's well-being at 36 months using the Fragile Families data. They found that children whose father had multipartnered fertility exhibited more externalizing problem behaviors than those whose father had children with only one partner, although paternal depressive symptoms indirectly affected problem behaviors and thus mediated the association. They also found evidence that men with multipartnered fertility had lower levels of father involvement, which in turn was associated with poorer physical health among children.

A main critique of this work, and the broader set of arguments about multipartnered fertility, is that it is difficult to disentangle residential effects from the effects of multipartnered fertility. This is especially problematic because there are clear gender differences in the lived experience of multipartnered fertility – mothers usually live with all of their children, regardless of the number of fathers, whereas multipartnered fertility among fathers usually means living apart from one or more of their children (Guzzo forthcoming). As such, day-to-day parenting

experiences among mothers may vary little across children by different fathers, beyond differences associated with parity and spacing and differences related to household structure and financial stability. Arguments about resource dilution or competing demands are more applicable to those who must distribute time and resources across households, or balance the needs of residential children (whose needs and demands are more immediately obvious) with nonresidential children (whose demands are not immediately known). Further, opportunities and requirements for involvement and support vary across households and residence statuses. Coresidential parents have more opportunities to interact with children who live with them than with children who do not live with them. Custody, visitation, and child support agreements may vary across children and impact support and involvement, as will logistical factors such as distance. Higher levels of stress may emerge from the increased logistical complications that likely arise when trying to parent across households. As such, prior work on multipartnered fertility, and related work on nonresidential fatherhood, does not fully enable us to understand the potential impacts on children. The current research addresses this problem by using a sample of mothers, all of whom live with all of their children.

Family Instability and Transitions

Another problem that complicates the issue is that multipartnered fertility is not a static concept that applies equally to all children in family. While we might categorize an adult as having multipartnered fertility at a particular point, we also have to acknowledge that multipartnered fertility occurs as a process stemming from relationship instability. By definition, a person has single-partnered fertility before they have multipartnered fertility. Extending this to children, a first-born child has no half-siblings prior to their parent going on to have a new-partner birth, but this is not necessarily true for higher-parity children. On the one hand, first-born child

experiencing parental multipartnered fertility must, at a minimum, experience new union formation by one of their parents; in most instances, they likely also experience the demise of their biological parents' union. On the other hand, the youngest child born to a parent with multipartnered fertility may experience no transitions in family structure at all – all the transitions occurred prior to their birth. This adds an additional layer of complexity to arguments about multipartnered fertility and child well-being – how can we disentangle any effects of multipartnered fertility from the effects of underlying family instability, and how do effects vary for first versus higher-order children? Research using the Fragile Families dataset is unable to address this issue, as the survey focuses on a focal child of any parity. In this project, we focus on the first-born child, for whom exposure to family instability, transitions, and multipartnered fertility is greatest, observing their mother's fertility and union behavior prior to their first birth through adolescence. In doing so, we are unable to account for paternal multipartnered fertility (meaning we underestimate children's experience of family complexity), but this also eliminates the added complexity of half-siblings in different households.

Certainly, there is a wide body of research establishing the importance of family structure for children's well-being. Children who spend time in a single-parent, stepfamily, or cohabiting family type tend to fare worse, across a variety of indicators, than their peers who spend their entire childhood living with both biological parents in a married household (McLanahan and Sandefur 1994; Amato 2005; Langton and Berger 2011). Family structure is associated with resources – married biological parents have more financial resources (Manning and Brown 2006; Thomas and Sawhill 2005) and greater commitments and investments in their shared biological child(ren) (Carlson and Corcoran 2001; Hofferth and Anderson 2003). They also tend to exhibit

higher-quality parenting, lower parental stress, and stronger coparental relationships (McLanahan and Beck 2010) than other family structures.

However, recent scholarship has recognized that transitions in family structure play a role as well – that it is not just the form a family takes but how stable a family is that influences child well-being. Family structure and instability are intertwined (Thomson and McLanahan 2012), with children born to cohabiting families experiencing the greatest instability, followed by those born to single mothers, with two-biological married parent families exhibiting the least instability (Cavanagh and Huston 2006; Langton and Berger 2011; Osborne and McLanahan 2007). According to the social stress perspective (George 1989, 1993), partnership transitions – even positive ones, such as moving from a cohabitation to a marriage – are linked to changes in material and social resources (Cooper et al 2009; Osborne, Beck, and Berger 2012). Such changes, then, can disrupt family and household functioning, increase parental stress, and affect the coparental relationship; these, in turn, can lead to poorer parenting (Beck et al 2010; Osborne and McLanahan 2007). This instability, in turn, is linked to problem behaviors and poorer social development (Cavanagh and Huston 2006, 2008). Family instability effects appear to be cumulative, with more transitions associated with poorer outcomes (Cavanagh and Huston 2008; Osborne and McLanahan 2007).

Finally, it is worth noting that even in intact families, family size is inversely associated with child well-being (Downey 1995), and the birth of a sibling has been linked to behavioral problems among first-born children (Volling 2012). Explanations for these findings include resource dilution and increased maternal stress (Downey 1995; Tach 2012), and there is little reason to expect that the theoretical mechanisms would differ between women with same-partner versus multipartnered fertility. Whether one has two children by two men or two children by one

man, the basic needs of children and maternal resources available likely do not vary substantially. Tach (2012), for instance, found that the increase in parental stress following multipartnered fertility was similar to the increase following same-partner fertility. However, other work has found that adolescent with half-siblings do not fare as well as those with only full siblings (Evenhouse and Reilly 2004; Halpern-Meekin and Tach 2008), though studies have not simultaneously considered the impact of transitions on well-being.

Selection

It is vital to consider selection factors when attempting to estimate the impact of parental family behaviors on child well-being. The factors that influence the risk of maternal union instability and multipartnered fertility – such as socioeconomic and demographic characteristics like education and employment – may also influence parental resources and child well-being (Thomson and McLanahan 2012). Selection risk factors have a direct effect on child well-being; for instance, adolescent drug use among parents is strongly predictive of child drug use (Kerr, Capaldi, Pears, and Owen 2012), mother's age at first sex is a predictor of a child's age at first sex (Paul, Fitzjohn, Herbison, and Dickson 2000), and mother's education influences parenting behaviors (Kalil, Ryan, and Corey 2012). There are also indirect selection effects that may work through family structure and stability, as a mother's own family structure growing up affects the conditions in which she enters parenthood (Amato and Kane 2011) and stability of the parental union (Teachman 2002). Similarly, education and income not only affect parenting behaviors and household resources, but they are also associated with union stability (Amato 2010). As such, analyses must include maternal background factors prior to parenthood as well as factors influencing stability after a child is born.

Context

Finally, it is important to consider whether the effects of multipartnered fertility may differ by the child's exposure to particular family, childhood, or maternal contexts. For example, children who experience greater family instability, including higher levels of cumulative instability or exposure to certain family events, such as a marriage, divorce, cohabitation, or cohabitation dissolutions, may be more vulnerable to the effects of multipartnered fertility than children who face less instability. Similarly, multipartnered fertility may be more influential for adolescents who face longer stints of time in poverty or in homes characterized by maternal unemployment, or educational disadvantage during childhood, as well as maternal characteristics at the time of the child's birth (e.g. age, education, and paternal residence). To avoid an omitted variable bias and adequately test the potential effects of multipartnered fertility on adolescent wellbeing, we will need to consider the moderating effects of multipartnered fertility within a variety of common childhood experiences and contexts.

Keeping all of this in mind, we turn again to our basic research question, which is: Does adolescent well-being vary by maternal multipartnered fertility? We expect that at the bivariate level, adolescents with half-siblings will have poorer well-being, which we operationalize as drug use and early age at sexual debut. It is less clear to us, however, whether any association between multipartnered fertility and adolescent well-being exists after we account for family structure and stability, household characteristics during childhood, selection factors, and possible moderating effects.

Data and Methods

We utilize 24 waves (1979-2010) of nationally representative data from the 1979 National Longitudinal Study of Youth main youth interviews and 9 waves (1994-2010) of the young adult

(NLSY79-YA) surveys. Born between 1957 and 1965, main youth respondents are drawn from the later Baby Boom Generation who entered young adulthood in the late 1970s and early 1980s when cohabitation and nonmarital childbearing were increasing and multipartnered fertility was likely on the rise. These NLSY79 respondents have been interviewed every year from 1979 through 1994 and biennially thereafter.

At each survey wave, the mothers in our sample were asked questions regarding their union and fertility experiences and their current household composition (which allows for the assessment of cohabitation prior to the first survey questions in 1990), and NLS provided a unique ID number for each of the mother's partners which were maintained for every year the man was in the household. As a result, it is possible to triangulate information and identify birth fathers, assess whether multipartnered fertility occurred, and document the individual events of instability (e.g. marriage and cohabitation starts), as well as cumulative counts of instability (e.g., the total number of union dissolutions and formations over a period of time). This coding strategy allowed us to quantify a number of important characteristics surrounding the timing of each child's birth, including the residential status of the father (resident or nonresident) and the total number of residential partners prior to the birth (see Dorius 2012 for a complete discussion of these coding procedures).

In 1986, biennial interviewing began for all biological children of NLSY79 mothers as part of the "Child Supplement" (NLSY79-C), and starting in 1994 adolescent children ages 15 and older were interviewed as part of the "Young Adult" sample (NLSY79-YA). We focus on these young adults and link their self-reported data regarding drug use and sexual initiation to information about their mother's relationship experiences during childhood.

We rely on the original 6,282 women from the cross-sectional and supplemental samples of the 1979 National Longitudinal Survey of Youth, with military and economically disadvantaged respondents excluded because these oversamples were dropped in the 1990s. We also exclude women who missed at least three consecutive or five total waves of data collection as this degree of missing data would have made it difficult to reliably measure relationships over time, leaving us with 2,715 eligible mothers with two or more children. We restrict the analyses to those with two or more children to ensure that our counterfactual is accurate and intuitive; all children whose mothers have multipartnered fertility have at least one sibling, but not all children whose mother have single-partnered fertility have siblings. Thus, we are comparing first-born adolescents who have at least one half-sibling to first-born adolescents who have only full siblings. Our analytic sample consists of the first-born children of these women who were eligible to complete a 15 year old interview (the adolescents must have turned 15 years old after the 1994 young adult assessment began, dropping 596 children, and were at least 15 by the final survey in 2010, dropping an additional 193 children). We include only those children who lived with their mothers at least 75% of the time from birth to age 15 (dropping 115 children), and provided valid responses to questions on drug use and sexual initiation at age 15 (excluding a further 276 children). Because our sample selection criteria reduces the number of older children and earlier/younger mothers (the earliest mothers gave birth to children who turned 15 before the YA assessments began in 1994 so they did not complete a 15 year old interview), and it excludes those with the less traditional living arrangements (those who live with someone other than their mothers), our analytic sample has slightly lower rates of instability and MPF than has been found among all women of the NLSY79 cohort (Dorius, 2010). The final sample includes 1,669 first-born young adults aged 15-31 at the time of the final survey.

Measures

Children's outcomes in adolescence. Self-reported assessments of adolescent drug use and sexual debut at age 15 were created by pooling the biennial Child and Young Adult data from 1994-2010. Adolescent drug use is measured as the sum of eight yes/no indicators of whether or not the adolescent had ever used marijuana, uppers, inhalants, cocaine, crack, hallucinogens, sedatives, or other drugs by the time of their fifteenth birthday (or the survey nearest to their 15th birthday). Reports pulled from 1994-1996 rely on questions about the number of times, age of first use, and most recent use of the eight drugs, which were recoded to yes/no format to keep consistent with later years. Starting in 1998, children were asked directly about ever using the eight drugs (also in yes/no format), and from 2000-2010 skip patterns were used to identify children who responded yes in prior waves. A child was counted as having used one of the eight drugs if they answered yes to any of these questions by the time of their 15th birthday.

Like drug use, age at first sex was based on pooled reports from 1994-2010, including reports from the Child Supplement (given to children ages 10-14) and the Young Adult Supplement (given to children ages 15 and older). The age of sexual debut was assessed the first time a child reported having sex as either a Child or Young Adult respondent. In some cases, the child reported the year but not the month of intercourse, and in these situations, January of the known year was imputed and used to create a century month date that was then converted to a numerical age. By their 15th birthday, only 8% of the children in our study had reported having sex, although this number increased substantially during each year of adolescence, until it reached an overall rate of 83% for the full sample of first-born children.

Children's experiences from birth to age 14. Multipartnered fertility status is a dichotomous measure identifying whether a woman has ever had children by two or more fathers. This was

assessed by creating a detailed relationship history for each woman from 1979-2010 and noting when births occurred within relationships to identify unique birth fathers. By triangulating data from the women's self-reports (NLSY79), the biological children's self-reports (NLSY79-YA), and the household roster for each year, multipartnered fertility was ascertained for all women in the sample, including those in non-residential relationships at the time of birth (see Dorius 2012 for more details).

To test whether multipartnered fertility matters net of family instability generally, it was important to develop additional measures of family change over this period. As such, we created a set of "ever" measures that tap whether the adolescent ever experienced certain family forms between birth and age 14; including three dichotomous indicators of ever experiencing a divorce, cohabitation, or cohabitation end (1= yes). We also include an indicator of whether or not the child did not experience a marriage (1= no marriage). The item for marriage was reverse coded to provide a theoretically relevant reference string in the final models (Cohen, Cohen, West and Aiken 2003). Because these groupings are not mutually exclusive, each dummy is entered into the regression models. In addition, to capture the cumulative effect of family structure instability more generally we count the total number of family transitions (e.g., maternal coresidential union dissolutions and formations) experienced from birth to age 14. Note that we do not count as a transition the marriage of cohabiting biological parents; a child is unlikely to experience that as instability (see Manning, Smock, and Majumdar 2004). The scale of cumulative family structure transitions originally ranged from 0-10, but was truncated at 5 due to the small number of individuals in the upper range (less than 3%). Truncating measures of cumulative instability is a common method employed in the family literature to deal with non-

normal distributions of instability (Cavanagh & Fomby, 2012; Cavanagh & Huston, 2006; Crosnoe, 2012) and helps us to better meet the assumptions of OLS regression analyses.

In addition to family structure changes, we address issues of family size, race, gender, and exposure to poverty, maternal employment and education, and urbanity of residence to shed light on the context of childhood and provide an overview of the resources and constraints faced by the children in our sample. Family size is a continuous measure of the number of full- or half-biological siblings born to the mother by the time of the child's fourteenth birthday (0 to 11). Race/ethnicity is derived the child's reports of whether they self-identified as Hispanic, Black or African American, or non-Hispanic White (reference), and we also include child gender. We include a measure indicating whether or not the mother went on to receive additional education above and beyond what was reported at the time of the child's birth. Exposure to poverty, employment, and urbanicity of residence were assessed by identifying the proportion of years (0 to 1) from the time of the child's birth to age 14 that the mother reported living in poverty (measured as the total number of years the mother reported living under the federal poverty line divided by the number of years assessed), being employed (measured as the total number of years the mother reported working an average of 1 to 40 hours a week during the last calendar year divided by the total number of years assessed), or residing in an urban place (measured as the total number of years the mother reported living in an urban residence divided by the number of years assessed). The proportion measures were created to express the child's ongoing exposure to poverty, employment, and type of residence rather than their experience during any given year. Note that for all proportions, missing values do not add additional years to the denominator.

Mother's characteristics at the time of first birth. Age, education, economic resources, and relationship status at birth have all been shown to influence the likelihood of multipartnered fertility occurring. As a result, we consider each item in our models, with the general hypothesis being that women who are younger, less educated, poorer, and single at the time of birth will be more likely to enter into multipartnered fertility relationships than their counterparts (Carlson & Furstenberg, 2007; Manlove et al. 2008). Because our data allow us to identify every residential relationship reported by the woman from 1979 to the time of the first birth we are able to measure the number of residential partners each woman had over this period. Our measure of number of residential partners ranged from 0 to 5 but was truncated at 2 or more partners due to the small number of women who had 3 to 5 partners prior to their first birth (less than 1%). By truncating the item we were able to reduce the non-normal distribution between number of partners and the dependent variables, helping us to better meet the assumptions of OLS regression analyses. Our measure of number of residential partners prior to first birth ranges from 0-2 or more, with one partner (most often the birth father) being the modal response and reference category. A second item assessed whether or not the biological father was living in the home at the time of birth. A third identified whether or not the mother was teenager at the time of first birth. We also include a measure of the mother's education at the time of birth, constructed as a binary measure of whether or not the mother had less than a high school education. We also include two items assessing whether or not the woman lived below the poverty line or was employed (i.e., the woman reported working an average of 1 and 40 hours a week) during the twelve months leading up to the birth.

Mother's selection into childbearing. To minimize the possibility that selection is driving the effect of multipartnered fertility on adolescent outcomes, we control for a number of early life

characteristics that have been shown to relate to both women's relationship instability and children's well-being. This includes a dichotomous indicator of immigrant status, age at first sex (in years), and the woman's exposure to family instability at age 14 (constructed from the 1979 question regarding one's family situation during childhood; this variable was collapsed into four categories variables indicating whether the woman lived with two biological parents (reference), one biological parent and one step parent, a single parent, or no biological parents at age 14). We also account for the mother's delinquency during her own transition to adulthood by taking the mean of 17 items used to differentiate highly delinquent youth from occasional participants. This scale was assessed in 1980 when the women in our sample were ages 15 to 23 and includes questions on skipping school, alcohol/marijuana use, vandalism, shoplifting, drug dealing, robbery, assault, and gambling. Each of the selection items was assessed temporally prior to the women's first birth, with the exception of delinquency, where 205 (10%) of the women in our sample had their first child the same year as the survey assessing delinquent behaviors. We have chosen to retain these women in our sample because they represent an important group of younger mothers with adolescent children, although we address potential concerns by running the final analyses with and without these women included (described in more detail in the sensitivity analyses section).

The moderating effect of MPF. To address our concern that the relationship between MPF and child wellbeing may be affected by the family context, we have created interactions between our dichotomous MPF measure (1=yes) and the five family instability measures (cumulative instability, ever divorce/cohabit/cohabitation end, never marry), the three measures of childhood context (time in poverty, time employed, and gains in education), and three measures of maternal characteristics at birth (age, education, and resident father).

Analytic Plan

Our analyses are divided into three parts. The first stage provides a descriptive examination of multipartnered fertility among women and their first-born children in the NLSY79 sample, with a focus on the experiences of adolescent children raised by women with at least two children who have children with more than one man (MPF) and those with at least two children who have their children with the same man (SPF). The second stage of analysis utilizes logistic regression models to explore the impact of maternal multipartnered fertility on adolescent's drug use and sexual debut with direct and moderating models designed to test the following hypotheses:

H1: MPF will have a significant and independent effect on adolescent well being (measured as drug use and sexual debut) net of family instability [Model 2].

H2: MPF will have a significant and independent effect on adolescent well being (measured as drug use and sexual debut) net of children's exposure to socioeconomic disadvantage in childhood [Model 3].

H3: MPF will have a significant and independent effect on adolescent well being (measured as drug use and sexual debut) after controlling for the characteristics surrounding each child's birth [Model 4].

H4: MPF will have a significant and independent effect on adolescent well being (measured as drug use and sexual debut) net of the mother's pre-birth characteristics [Model 5].

H5: MPF will have a significant and independent effect on adolescent well being (measured as drug use and sexual debut) in the fully conditioned models that control for the family instability, socioeconomic disadvantage in childhood, characteristics at birth, and selection into birth [Models 6 & 7].

We round out our analyses by describing a number of sensitivity tests used to explore the robusteness of our findings regarding alternate samples, measures, and models. Our paper will conclude by considering the long-term and inter-generational consequences of having children with more than one person and will discuss how these findings might be used to inform family policy.

Following standard protocol (Carlson and Furstenberg 2006) and recommendations from NLSY (Olson 2009), we report weighted descriptive statistics in step one, and unweighted coefficients in steps two and three, at which time we adjust for oversampling of Black and Hispanic mothers by including measures of race, education, and poverty in the multivariate regression equations. Also following standard practice, we use mean-centered interval level variables in our multivariate models to make the results easier to interpret and to reduce the likelihood of collinearity in models with interactions (Aiken & West 1991). For all three steps, we rely on mean imputation to address missing values (missingness was less than 5% for any one item) in the data.

As part of our preparatory work, we verified the basic assumptions of regression were met in terms of collinearity and statistical power. In regards to multicollinearity, even though many of the concepts were correlated with one another, the relationship between independent variables does not appear to be problematic given the variance inflation factor scores were well below the cut off for concern with a high of 4.3 and a mean of less than 2. Given the large number of variables needed to test hypothesis five, it was important to conduct a power analyses to verify that the sample size was large enough to reasonably reject the null hypothesis, should the findings be significant. This was done in two steps. Prior to the analysis being run, an a-priori assessment of the minimum sample size requirements was completed using Soper's online

software (Soper 2013; Cohen, Cohen, West & Aiken 2013). Given all of the possible predictor variables and a probability level of .05, anticipated effect size of .02, and a power level of .8, the minimum sample requirements were well below the analytic sample available for our models. After the models were finalized, a post-hoc power analysis was run in STATA with the POWERREG command. The goal of the second test was to create a refined measure of the analytic power at the .08 level, which uses the Bonferroni adjusted alpha to control for the number of hypotheses being tested in addition to the effect size, sample size, probability level, and number of predictors, including relevant interactions (UCLA Statistical Consulting Group 2013). Using the refined estimates of power increased our sample requirement to 1,591–again within the range of our available data. Taken together, our preparatory work suggests that the findings produced with this data will not be driven by outliers or influential observations, are unaffected by curvilinear relationships between the independent and dependent variables, and should not reflect type 1 or type 2 errors. As a result, we can be reasonably confident that any significant findings ($p < .05$) regarding MPF reflect meaningful differences between MPF and SPF families.

Results

Table 1 provides a descriptive overview for the full analytic sample, as well as by multipartnered fertility (MPF) and single-partner fertility (SPF) groupings. For both of the outcomes of interest, twice as many children raised in multipartnered fertility families reported either experimenting with drugs or having sex by their fifteenth birthday than children raised in single-partner fertility families. MPF children experience about three times the number of family transitions from birth to 14 compared to other children, have less exposure to marriage, and experience cohabitation and divorce more than twice as often. MPF children spend about one-third of their childhood in

poverty (compared to less than 10% of the time among SPF families), though they have similar levels of maternal employment and urban residence as other children. Although women with MPF are more likely to experience educational gains after the birth of their first child than women who have their children with the same man, they still have lower educational attainment overall because of the deficit MPF mothers begin with, as a quarter of the MPF mothers reported less than a high school education at the time of their first child's birth. Further, about three times as many MPF mothers than SPF mothers were teenagers at their first child's birth and about twice as many were in poverty. As anticipated, fewer fathers were resident at the birth of their child if the mother went on to have MPF compared to those who had all of their children with the same man. Women with MPF began their own sexual initiation, on average, over a year earlier than SPF women and more of them experienced family instability in their own nuclear family as a teenager.

- Table 1 here -

Tables 2 and 3 provide stepwise logistic regression models of adolescent drug use and sexual debut testing the independent effects of MPF in zero order models [Model 1] and after controlling for the four theoretically important group of predictors, comprised of family instability [Model 2], children's socioeconomic experiences from birth to age 14 [Model 3], maternal characteristics at birth [Model 4], and maternal selection into childbearing [Model 5]. In addition to the step-wise models, both tables include results for a fully conditioned model where all variables were entered at once [Model 6], and a model that includes all predictors plus interactions between MPF and theoretically relevant groups [Model 7].

- Table 2 here -

- Table 3 here -

Because the regression models presented in Tables 2 and 3 have more than two dichotomous variables included as covariates, the interpretation of the unstandardized betas is somewhat unique. In this case, each dichotomous measure provides a contrast of the cases scoring a '1' on a single item with the base reference category, also known as the omitted category, base cell, or reference string (Darlington 1990; Cohen, Cohen, West and Aiken 2003). As described by Levitt and Dubner, you can imagine that each predictor variable represents a light switch on a panel of switches that are all turned off (2009). The intercept reflects the value of the outcome—in this case drug use—for the base category, when the interval-level predictors are held constant at their mean (because they were mean centered prior to being entered into the regression equation) and when all of the dummy 'switches' are off (equal 0). Each coefficient provides the contrast if you were to turn on a single switch at a time. In this scenario, interactions between our dichotomous variables reflect the score if you were to have multiple switches on at the same time. Using this example as a starting place, the base category (when the lights are off) reflects the value of drug use when time in poverty, time employed, time urban, number of partners prior to birth, mother's age at first sex, and delinquency are held constant at their mean, and the dummies reflect the most advantaged individuals in the sample: White non-Hispanic boys who were raised in SPF homes where the mother was married and the child never experienced a divorce or cohabitation start or end, and the child's mother lived with the birth father, was not a teenager, had more than a high school education (but no further gains), was employed, and lived above the poverty line at the time of birth. The reference string also includes children born to natives of the US who were raised by two biological parents. The effect of MPF among this highly advantaged group is the coefficient reported in the first row of Table 2 Model 6.

Given that we know MPF mothers tend to experience more instability, face greater periods of economic disadvantage, and are younger, less educated, and less likely to live with the birth father at the time of birth (Dorius 2010), it is important to consider interactions that would expand our analysis to include coverage of more disadvantaged groupings. Drawing on the earlier example, interactions allow us to turn on multiple switches at once to see how MPF moderates the effects of instability at the time of birth and throughout early childhood. If we left these interactions out of our models, we would be forcing the predictors in the full model (6) to absorb these effects, leading the estimates to be mis-specified. We avoid this omitted variable bias by testing the moderating effect of MPF on all five family instability measures, three measures of childhood context (time in poverty, time employed, and gains in education), and three measures of maternal characteristics at birth (age, education, and resident father). In reduced models of adolescent drug use that include MPF, the predictor variable, and the interaction between MPF and the predictor, we find 7 of the 11 interactions are significant (none of the 'ever' variables had significant reduced form interactions with MPF, but all others had significant interactions; results not shown). In a fully conditioned model, three of these interactions remain significant, and are reported in Table 2 Model 7. Similarly, in reduced logistic models of sexual debut that include MPF and theoretically relevant interactions, 6 of the 11 interactions are significant (ever divorce or ever cohabit, educational gains, time employed, and age and education at birth; results not shown), although only four remain significant in the fully conditioned models reported in Table 3 Model 7.

Examining the results of Table 2 more closely, we that MPF has a significant bivariate relationship with our measure of well-being, and the significance of this relationship is not diminished by controlling for cumulative instability or experiencing particular family events like

marriage, cohabitation, or divorce. Further, the direct effect between MPF and drug use remains significant net of exposure to poverty, employment, and educational disparities at the time of birth, or in the lagged estimates covering the first fourteen years of childhood. The direct effect of MPF only disappears in the full model (6) prior to the inclusion of interactions. However, once the moderating influence of MPF and cumulative transitions, and age and education at birth were considered, the main effects appeared once more. As the standardized betas reported in Model 7 demonstrate, not only is MPF a significant direct and moderating predictor of drug use, it has one of the largest effects of any variable included in the full model. It is interesting to note, however, that while the influence of MPF remains strong, the interactions provide some countervailing effects. For example, although children with MPF experience more transitions than SPF children, when a SPF child encounters a high number of transitions (over 4) they tend to do less well, in terms of drug use, than similarly exposed MPF children. Similarly, while having MPF and being a teen mother is predictive of more drug usage among teens, it is the case the MPF children with teen mothers do slightly better overall than SPF children with teen mothers.

Table 3 includes the step-wise consideration of MPF and key covariates in a series of 7 logistic models predicting early sexual debut. Like the findings for drug use, the results regarding sexual initiation are robust and indicate that MPF is relatively important predictor of early sex, even when considering a broad range of controls. In zero-order models, MPF more than doubles the chance that a child will have sex by age 15. The only variable with a substantively larger direct effect is the proportion of time in poverty from birth to age 14. In the full model, we find significant interactions between MPF and four measures of family instability: cumulative transitions, exposure to divorce, time employed and educational gains after the child's birth.

These results suggest that though MPF has significant direct effects on sexual debut, it also interacts with other components of instability to influence adolescent wellbeing. Figures 1 and 2 illustrate these interactions through predicted probabilities. In Figure 1, we see that the presence of a half-sibling has a large, and growing, impact on the probability of an early sexual debut as the number of family transitions increases, whereas adolescents who have only full siblings experience a modest decline in the probability of early sex with more family transitions. In Figure 2, we can see that as the time the adolescent's mother is unemployed decreases, adolescents with half-siblings have lower probabilities of early sex relative to their peers who have full siblings, whose probability of early sex is fairly stable.

- Figure 1 here -

- Figure 2 here -

Sensitivity Analyses

Sample. While we were focused on making comparisons between SPF and MPF mothers with two or more children, we were also interested in how the results might differ if we included all mothers, to see if the effects were more generally applicable. The final analyses were also run on a larger sample of eligible mothers who had one or more children (n=2,044). Results for all of the step-wise models were robust in the size, strength, and direction of coefficients (all sensitivity models were omitted from the paper due to space limitations, but are available by request). The only notable difference between the two sets of analyses was two of the interactions from the logistic model were significant with the larger sample, although their addition did not alter MPF's main effect in Table 3 Model 7.

In a second set of supplemental analyses, we addressed a concern with temporal ordering that arose for 205 of the women in our sample who had their first child 1 to 15 months (6.8

months mean) prior to the assessment of the delinquency score. While the ordering was correct for the vast majority of women, we wanted to make sure that the findings were not muddled by the inclusion of the youngest mothers in our sample. The supplemental analyses (n=1,494) produced similar results for all of the key predictors and interactions in the models, with two exceptions. Once the younger mothers were removed, age at first sex was no longer a significant predictor of drug use, and the significance of the delinquency-drug use path was improved.

Measures. We tried a number of approaches for measuring woman's age and education at the time of birth, including a continuous measure of years for age and educations, as well as groups of categorical dummies (age included items for less than 20, 20-24, 25-30, and 30 plus years old at the time of birth; education included four items indicating less than high school, a high school degree, some college, and college or more). Each of the measures was then included, one at a time, to the final models (not shown). For both variables, it was clear that the strength of the effect was driven by early deficits in education and very young parenthood, rather than incremental gains with each year of age or schooling. For parsimony we chose to use these cutpoints in our final models because they better reflect the thresholds of risk for negative development in adolescence.

Due to the non-normal distribution of the number of residential partners prior to birth and number of cumulative transitions from birth to 14 we truncated both items, as is the common practice in family research. As a robustness check, we ran the final models one at a time with both variables added as continuous measures and then compared the results (not shown). Findings across the new and old models were similar in terms of size, strength, and significance of coefficients for both outcomes, with one exception. In the drug use findings presented in Table 2 Model 7, the continuous measure of cumulative transitions had a significant interaction

with MPF, such that children who experience 5 or more transitions and have MPF do slightly better than children who experience 5 or more transitions and are raised in a single-partner fertility home. Although the truncated measure did not pick up this interaction at the upper range of the scale, these results support our overall findings that children with MPF appear to have a 'tipping point' at which the accumulation of risk factors after a certain point is no longer associated with declines in wellbeing.

Models. Finally, we wondered whether the effect of MPF on drug use was useful in explaining incremental changes in drug use among those who used drugs, rather than just a dichotomous approach assessing any or no usage. To test this alternate hypothesis, we used the original scaling of 0-8 types of drugs ever used by the child prior to age 15. We then tested the five hypotheses using OLS regression models identical in design to those reported in Table 3. The results were similar to our earlier findings with some exceptions. Notably, the direct effect of MPF increased in significance for models 2 and 4 (hypotheses 1 and 3, respectively). This marginal change in significance was not particularly surprising given that data reduction is often associated with declines in significance (Aiken & West 1991). Importantly, the full logit and OLS models (Model 7) produced similar results in terms of significance and magnitude of effects, suggesting that the basic story regarding the relationship between multipartnered fertility and adolescent drug use remains the same regardless of measurement choice.

Discussion

Our paper was motivated by the question of whether multipartnered fertility represents a unique stressor for children, or if its effect can be explained by the instability and economic uncertainty common among multipartnered families. Rising rates of nonmarital childbearing, accompanied by the instability of nonmarital unions, along with repartnering among divorced parents, has

increased the prevalence of multipartnered fertility. As such, children are increasingly growing up in more complex families.

There are several literatures which address complex families and child well-being, ranging from work on family structure and instability to work on stepfamilies and nonresidential fathers. The notion of multipartnered fertility, however, is a fairly recent idea, but it many ways, it is not new behavior. Thus, to understand how multipartnered fertility may impact family functioning, we have to build upon findings from a wide range of research. Our research is uniquely able to examine how multipartnered fertility affects child well-being in several ways. By focusing on mothers who coreside with their children nearly all of the time, we are able to move beyond the effects of coresidence. By looking at first-born children, we are able to examine the well-being of those most exposed to multipartnered fertility, but who also experienced a period of single-partner fertility, and the multiple years of observation mean we can look at older children with substantial years of exposure to family factors to examine long-term impacts. The data also include a rich set of family structure and transition information to allow us to control for exposure to instability. Further, the availability of a rich set of background factors – measured prior to birth – allow us to account for selection while the detailed longitudinal information on education, employment, and poverty enable us to account for changes in the context in which children live. Thus, our study really provides the first complete analysis able to isolate the independent effect of multipartnered fertility on adolescent well-being.

Our results suggest that maternal multipartnered fertility has an important—and independent—effect on adolescent well-being net of cumulative family instability and exposure to particular family forms like cohabitation and divorce. Moreover, maternal multipartnered

fertility remained a significant predictor of well being even after the adolescent's experience of poverty, unemployment, and educational disadvantage at the time of birth and throughout childhood were considered and after accounting for selection into multipartnered fertility. Compared to adolescents with only full-siblings, adolescents with half-siblings are more likely to have used drugs and had sex by age 15, confirming the unproven but widely accepted suspicions that multipartnered fertility represents another form of disadvantage for children (Klerman 2007).

It is worth noting, though, the association between maternal multipartnered fertility was moderated by some maternal characteristics and measures of family instability. For instance, we found that the probability of drug use was slightly higher among children with only full siblings who were born to a teenage mother than among children with half-siblings; similarly, longer spells of unemployment reduced the probability of early sexual debut for those whose mother had multipartnered fertility than those who mother had single-partner fertility. It is not clear why this association exists. We suggest that it is unlikely that half-siblings are protective against risky behavior in adolescence in certain circumstances. Instead, it might be the reverse situation – that certain types of disadvantaged circumstances are particularly detrimental to otherwise "traditional" families (i.e., families that have only full siblings). In related work on collective stress and adolescent well-being, Sun and Li find that when adolescents "face a large number of difficulties and disadvantages in their lives to begin with, family crises…may have only a limited effect over and above the original disadvantages (Sun & Li, 2007:760)." A similar process may be happening among our sample.

Limitations

We argue that the NLSY79 is especially well-suited to disentangle the very complex factors that influence child well-being, but there are nonetheless disadvantages. A major drawback of our data is our inability to incorporate paternal multipartnered fertility, family instability, and involvement. It is almost certainly the case that some of the adolescents with only full siblings by their mother have half-siblings by their father. Because paternal multipartnered fertility and instability is likely to be highest among those with maternal multipartnered fertility (as both parents are exposed to the risk of repartnering and new-partner births), though, this may be an important mechanism explaining the higher likelihood of risky behavior among adolescents even after we account for maternal characteristics. Similarly, we cannot account for paternal involvement among nonresident fathers, nor do we account for involvement by social fathers.

Conclusion

We found that among adolescents living with mother, having half-siblings increases the chances that an adolescent engages in risky behavior relative to those with only full-siblings. These findings, taken in conjunction with work indicating that paternal multipartnered fertility is associated with poorer outcomes among young children (Bronte-Tinkew, Horowitz, and Scott 2009), provides strong evidence that multipartnered fertility is detrimental for children and adolescents, and this is true beyond the substantial disadvantages occurring in non-intact families experiencing instability. Thus, multipartnered fertility is likely to contribute to the widening differentials children experience by socioeconomic status. It is not clear, though, how multipartnered fertility impacts family and child well-being. Do parents with children by more than one partner have weaker relationships with their children? Do they monitor them less? Do their children experience different relationships with and across families that negatively influence them? As family scholars continue to examine the increasing complexity of today's

families, understanding the mechanisms and relationships within families will become more important. This will provide important insights that might help those on the frontline – counselors, teachers, and so on – identify ways to support complex families. At the same time, direct attempts to reduce multipartnered fertility are unlikely to be successful; it is difficult to imagine anyone choosing to have children with multiple partners. Instead, reducing the behaviors that drive multipartnered fertility – unintended childbearing and unstable relationships – might be a more effective approach.

Table 1. Weighted Descriptive Statistics

	Analytic Sample (N= 1699)			SPF (n= 1193)	MPF (n=476)
	Range	Unique	*M/%* (*SD*)	*M/%* (*SD*)	*M/%* (*SD*)
Adolescent Outcomes at Age 15					
Drug use, sum of 8 items	0-1	2	0.213(0.409)	0.174(0.379)	0.354(0.479)
Sexual debut, 1=yes	0-1	2	0.063(0.244)	0.046(0.209)	0.127(0.334)
Children's Experiences Birth-14					
Multipartnered fertility (MPF)	0-1	2	0.215(0.411)	-	-
Number of family transitions	0-5	6	0.992(1.418)	0.575(1.077)	2.512(1.473)
Did mother ever marry [a]	0-1	2	0.959(0.199)	0.986(0.118)	0.859(0.348)
Did mother ever divorce	0-1	2	0.303(0.460)	0.203(0.402)	0.669(0.471)
Did mother ever cohabit	0-1	2	0.261(0.440)	0.155(0.362)	0.651(0.477)
Did mother ever end cohabitation	0-1	2	0.075(0.264)	0.034(0.181)	0.226(0.419)
Proportion time in poverty	0-1	74	0.138(0.243)	0.085(0.187)	0.330(0.316)
Proportion time unemployed	0-1	73	0.240(0.283)	0.232(0.285)	0.269(0.275)
Proportion time urban	0-1	72	0.767(0.350)	0.763(0.353)	0.782(0.340)
Education gains since birth	0-1	2	0.159(0.366)	0.128(0.335)	0.272(0.446)
Number of siblings	1-7	7	1.538(0.836)	1.490(0.789)	1.711(0.968)
Female	0-1	2	0.487(0.500)	0.477(0.500)	0.523(0.500)
Child race/ethnicity, Hispanic	0-1	2	0.065(0.246)	0.057(0.233)	0.091(0.288)
Child race/ethnicity, Black	0-1	2	0.119(0.324)	0.077(0.266)	0.273(0.446)
Child race/ethnicity, White	0-1	2	0.816(0.387)	0.866(0.341)	0.636(0.482)
Maternal Characteristics at Birth					
Poverty at birth	0-1	2	0.135(0.342)	0.095(0.293)	0.283(0.451)
Unemployed at birth	0-1	2	0.171(0.377)	0.145(0.353)	0.265(0.442)
Education at birth, less than HS	0-1	2	0.119(0.324)	0.081(0.273)	0.257(0.437)
Age at birth, 19 or less	0-1	2	0.158(0.365)	0.102(0.303)	0.364(0.482)
Dad not resident at birth	0-1	2	0.143(0.350)	0.059(0.236)	0.446(0.498)
Number partners prior to birth 2+	0-1	2	0.082(0.275)	0.091(0.288)	0.049(0.215)
Maternal Selection					
Mother's age at first sex	8-27	20	17.89(2.130)	18.20(2.119)	16.75(1.746)
Mother's delinquency in 1980	0-4	58	0.278(0.345)	0.255(0.323)	0.360(0.404)
Mother *didn't* live with both parents	0-1	2	0.237(0.426)	0.196(0.397)	0.387(0.488)

Notes: [a] Entered into regression equation as "Did mother *never* marry" : All= 0.041(0.199); MPF = 0.014(0.118); SPF = 0.141(0.348)

Table 2. Logistic Regression Models of **Adolescent Drug Usage** at Age 15 and Family Characteristics from Birth to Age 14. N=1,669

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Children's Experiences Birth-14							
Maternal MPF[a]	2.002***	1.295	1.489**	1.321	1.666***	1.030	1.665*
Cumulative transitions (0-5)		1.202**				1.040	1.022
Mom never marry[a]		1.689*				1.337	1.219
Mom ever divorce[a]		0.877				1.126	1.062
Mom ever cohabit[a]		1.496*				1.274	1.253
Mom ever end cohabitation[a]		0.724				0.877	0.919
Time in poverty[b]			2.152**			0.861	0.921
Time mom unemployed[b]			0.990			0.794	0.807
Time urban[b]			1.271			1.402	1.426
Mom educational gains[a]			1.623***			1.176	1.191
Number of siblings			1.018			1.017	0.994
Female[a]			1.027			1.025	1.027
Race, Hispanic[a]			1.334			1.261	1.190
Race, Black[a]			0.994			0.830	0.798
Race, White[a]			(ref)			(ref)	(ref)
Maternal Characteristics at Birth							
Poverty at birth[a]				1.238		1.318	1.302
Unemployed at birth[a]				1.344*		1.475*	1.399*
Education at birth, less than HS[a]				1.481*		1.304	1.720*
Age at birth, 19 or less[a]				1.598**		1.374	1.940**
Dad nonresident at birth[a]				1.279		1.378	1.344
Number of partners prior to birth				0.320**		0.293**	0.291**
Maternal Selection							
Age at first sex					0.876***	0.924*	0.927*
Delinquency[c]					1.313	1.442*	1.475*
Not living with both parents at 14[a]					1.083	0.942	0.913
MPF * Education at birth <HS							0.551+
MPF * Age at birth <19							0.485*
Psuedo R-sq	0.108	0.032	0.038	0.059	0.032	0.077	0.085

Notes: [a] 1=yes; [b] proportion of time from birth to age 14 in which the respondent reported yes to this condition; [c] mean of seventeen items used to differentiate highly delinquent youth from occasional participants. + p< .10, * p<.05, ** p<.01, *** p<.001

Table 3. Logistic Regression Models of **Adolescent Sexual Initiation** at Age 15 and Family Characteristics from Birth to Age 14. N=1,669

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Children's Experiences Birth-14							
Maternal MPF[a]	2.530*	1.612*	1.779**	1.666*	2.069***	1.256	2.533*
Cumulative transitions (0-5)		1.182				1.053	0.824
Mom never marry[a]		2.124*				1.599	1.669
Mom ever divorce[a]		1.076				1.401	2.469*
Mom ever cohabit[a]		1.258				1.109	1.131
Mom ever end cohabitation[a]		0.813				0.925	0.767
Time in poverty[b]			2.545*			0.777	0.899
Time mom unemployed[b]			0.826			0.491	0.885
Time urban[b]			1.183			1.379	1.380
Mom educational gains[a]			1.247			0.773	1.344
Number of siblings			0.924			0.955	0.932
Female[a]			0.934			0.950	0.931
Race, Hispanic[a]			1.269			1.167	1.133
Race, Black[a]			1.379			1.363	1.336
Race, White[a]							
Maternal Characteristics at Birth							
Poverty at birth[a]				1.327		1.442	1.398
Unemployed at birth[a]				1.493		1.829**	1.873**
Education at birth, less than HS[a]				2.033**		2.303**	2.305**
Age at birth, 19 or less[a]				1.336		1.122	1.126
Dad nonresident at birth[a]				1.234		1.190	1.178
Number of partners prior to birth				1.018		0.996	0.986
Maternal Selection							
Age at first sex					0.831**	0.885*	0.875*
Delinquency[c]					0.944	1.021	0.900
Not living with both parents at 14[a]					1.073	0.894	0.902
MPF * Cumulative transitions							1.553*
MPF * Ever divorce b-14							0.303*
MPF * Time unemployed b -14							0.215*
MPF * Educational gains b-14							0.303**
Psuedo R-sq	0.107	0.040	0.044	0.068	0.044	0.087	0.107

Notes: [a] 1=yes; [b] proportion of time from birth to age 14 in which the respondent reported yes to this condition; [c] mean of seventeen items used to differentiate highly delinquent youth from occasional participants. + p< .10, * p<.05, ** p<.01, *** p<.001

Figure 1. Predicted probabilities of adolescent sexual debut by MPF and cumulative instability from birth to age 14.

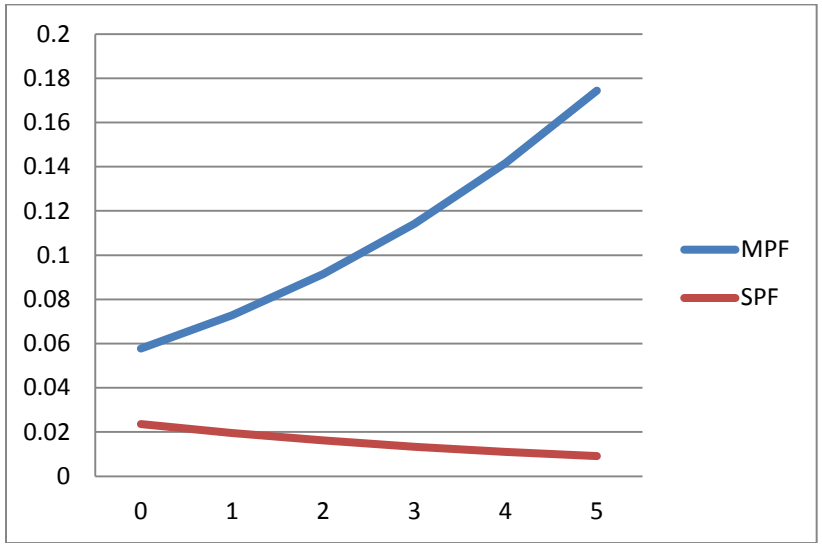
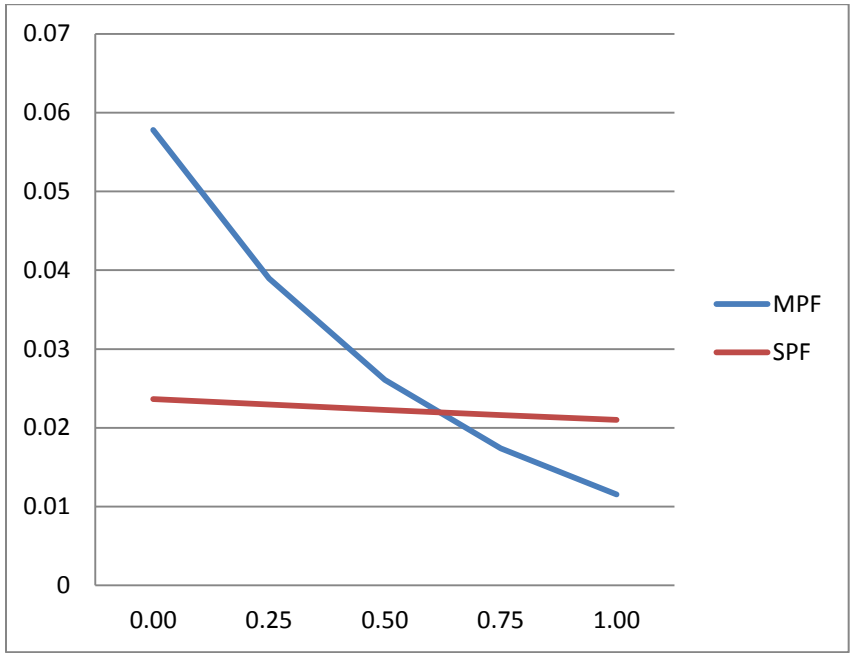


Figure 2. Predicted probabilities of adolescent sexual debut by MPF and the proportion of time the mother was unemployed from birth to age 14.



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