

## **Mother's Union History and the Health of Children Born to Single Mothers**

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Using data from the NLSY79 linked mother-child files, we examine whether children born to single mothers who marry or cohabit have better (or worse) psychological and physical health outcomes in early adulthood than those whose mothers remained unmarried. We limit our analysis to first-born children who were born to and lived with a single mother and distinguish mothers' union histories by marital and cohabitation status, dissolution status of the union, and paternity status of partner. Preliminary results indicate that, on average, children born to single mothers receive few mental or physical health benefits in young adulthood if their mothers subsequently marry or cohabit vs. remain unpartnered.

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## **Mother's Union History and the Health of Children Born to Single Mothers**

Recent policy initiatives emphasize that encouraging marriage is an effective strategy for improving the lives of economically disadvantaged single mothers and their children. Although decades of research establish that, on average, children raised in two parent homes fare better than those raised in single parent homes, much of this research focuses on children of divorce. The result is that we do not know if the offspring of never married mothers fare better when their mothers marry compared to remaining unmarried. The goal of this paper is to determine whether children born to single mothers who marry or cohabit have better (or worse) psychological and physical health outcomes in early adulthood (primarily age 19, but ranging up to age 29) than those whose mothers remained unmarried. We limit our analysis to first-born children who were born to and lived with a single mother and distinguish mothers' union histories by marital and cohabitation status, dissolution status of the union, and paternity status of partner.

Data are from the 1979 The National Longitudinal Survey of Youth (NLSY79) mother-child files. The NLSY79 is an ongoing longitudinal, population based cohort survey of a nationally representative sample of 12,686 young men and women who were aged 14-22 in 1979. Preliminary results generally indicate that children born to single mothers receive few mental or physical health benefits in young adulthood if their mothers subsequently marry or cohabit vs. remain unpartnered. Exceptions to the pattern are observed for black young adults born to a single mother. Compared to their counterparts whose mothers remain unpartnered, those whose mothers subsequently marry and divorce their biological father report significantly better physical health and those whose mothers subsequently marry and divorce a new partner report better mental health in young adulthood. Analyses are planned to identify mechanisms that explain these associations.

## **BACKGROUND (to be expanded)**

A vast body of research indicates that being raised in a family that does not include both biological parents is associated with a range of poor outcomes in childhood, adolescence, and young adulthood (McLanahan and Sandefur 1994). Children who did not grow up with both biological parents score lower on measures of psychological adjustment, academic success, and marital stability (McLanahan and Sandefur 1994; Amato and Keith 1991, Amato 1996) and are more likely to experience a nonmarital birth (Wu and Martinson 1993). This literature focuses primarily on children in divorced families. Less is known about the well-being of children born to single mothers, especially when they reach adolescence and young adulthood. This is a substantial omission, given the increase in nonmarital childbearing over the past twenty years. In 2007, unmarried mothers gave birth to four out of every 10 babies born in the United States and these rates are even higher for African American births (Harris 2009; Ventura 2009).

This omission is especially problematic because evidence of better outcomes among children in two-parent compared to single-parent homes is often used to buttress claims that promoting marriage among single mothers will produce positive outcomes for their children. Conclusions about likely consequences of their mother's marriage for children of never-married mothers cannot be drawn solely from research on children of divorce. Compared to children of never-married mothers, children of divorce are less likely to live in poverty, experience fewer residential moves, have greater academic success, and have more extensive family networks, which are important for social support (Raley, Frisco and Wildsmith 2005).

The few studies that have directly examined the long-term consequences of single mothers' subsequent unions for children's well-being are inconsistent across studies and are limited in the outcomes they consider. Relying on data from the NSFH, Aquilino (1996) reports that children born to single mothers who later live with a stepfather have no greater educational success than those whose mothers remain unmarried. These findings, however, are inconsistent with findings from Furstenberg and colleagues' (1987) Baltimore study, which suggested that

the marriage of women who became single mothers as adolescents improved the school performance of their children. The two samples utilized were quite different, however. The NSFH sample is much more racially, economically, and geographically diverse than the sample in the Baltimore study (a community sample of poor black adolescent mothers). In contrast to the marriages of older single mothers (in the NSFH), who have more resources, the children of disadvantaged teenage mothers (in the Baltimore study) who marry may gain more economically.

Our study extends prior research in a number of important ways. First, compared to Furstenberg's (1987) classic study, we focus on a more recent, more racially diverse cohort of single mothers. Furstenberg's study sampled black unmarried teen mothers living in Baltimore in 1966. Because the NLSY79 is nationally representative, regional differences resulting from the focus on Baltimore will be minimized, and we are able to include white and Hispanic women in our analysis. We also examine a cohort of women who came of age when cohabitation was becoming increasingly more normative. We further build on Aquilino's (1996) study, which focused only on academic outcomes of single mothers' offspring, by considering the consequences of mother's marital history for children's physical and mental health in early adulthood and by distinguishing between several important characteristics of mother's unions, including paternity status of the partner.

**Union Type, Union Dissolution, and Paternity Status.** The risk of marital dissolution is an important consideration in determining the impact of a single mother's marriage on their children. The marriages that single mothers enter are especially vulnerable to dissolution. Because of the relative lack of "marriageable men" available to disadvantaged single mothers (Harknett and McLanahan 2004; Qian, Lichter and Mellott 2005), the unions that they enter may introduce more instability into the lives of children by increasing exposure to alcohol and drug abuse, other unhealthy behaviors, violence, and union dissolution (McLanahan 2006). This instability may result in more negative outcomes for children of single mothers than if their

mothers had remained unmarried. For this reason, our analysis distinguishes mothers' unions that dissolve from those that endure.

Paternity status of the spouse is also relevant. Data from the Fragile Families and Well-Being Study suggest that a minority of never-married mothers marry the father of their child (Carlson, McLanahan and England 2004). All fathering statuses are not equivalent in their ramifications for children (Aquilino 1996; Brown 2004; Cooksey and Fondell 1996; Ginther and Pollak 2004; Hofferth 2006; Morrison and Ritualo 2000). The benefits of growing up in a two-parent home for child well-being appear to be substantially diminished for children living with stepfathers compared to biological fathers (Hofferth 2006). However, here too, much of what we know is based on studies of the offspring of divorced parents and it is unclear whether these findings might apply to children of single mothers. We distinguish between children whose mothers partnered with their biological father compared to those whose mothers formed a union with a new partner.

A single mother's cohabitation experiences are also likely relevant to her offspring's health and well-being. A growing body of evidence suggests that the benefits of having a father in the household are conferred mainly when parents are married, rather than cohabiting, in part because paternal investment in offspring is weaker in cohabiting unions (Brown 2004; Hofferth 2006; Hofferth and Anderson 2003). Thus, for offspring of single mothers, a mother's cohabitation (even if it involves the child's father) will likely be associated with less favorable outcomes than marriage. Less research has examined whether mother's cohabitation experience offer benefits (or costs) to young adults compared to the mother remaining unpartnered. We separate children whose mothers' cohabited from those who entered a marital union (with the biological father or a new partner).

## **DATA**

Data are from the 1979 The National Longitudinal Survey of Youth (NLSY79). The NLSY79 is an ongoing longitudinal, population based cohort survey of a nationally

representative sample of 12,686 young men and women who were aged 14-22 in 1979 plus oversamples of Black, Hispanic, military and poor white respondents. Over time the minority and economically disadvantaged white oversamples were eliminated, but the remaining respondents have been re-interviewed annually through 1994 and biennially since. Data on this cohort currently span a 25-year period, with detailed union histories collected throughout the study. A particular strength of the NLSY79 for the proposed study is the availability of linked data on the children born to the NLSY79 women. The Children of the NLSY79 Survey began in 1986 and has collected data biennially on a range of cognitive, socio-emotional, and physiological assessments. Beginning in 1994, children aged 15 and older were given a separate survey that includes many items asked of their mothers when they were the same age.

When weighted, the sample of children born to the women of the NLSY79 can be considered fully representative of children born to a nationally representative sample of women between the ages of 14 and 21 on December 31, 1978. It is important to note that first-born children in the NLSY79 sample were born to younger mothers. This is appropriate to some extent because we focus on children born to never-married mothers, who tend to be give birth at younger ages. However, as of 2008, most first-born young adults who were born to relatively older mothers have aged into the young adult sample, thereby increasing the age range of offspring (and of age of mother at birth). As of 2008, approximately 88% of first-born children born to never-married mothers in the NLSY79 had reached the age of 19.

The analytic sample for the first part of the analysis (which compares young adults born to a never married mother to those born to married mothers) is limited to the 1,954 first born children who turned age 19 by 2006 and who were not missing data on additional variables in the analysis (803 born to a never married mother and 1127 born to a married mother).<sup>1</sup>

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<sup>1</sup> These sample sizes are for the CES-D analysis. The sample size for the self-assessed health analysis is slightly larger (n = 1,954 total; 814 born to a never-married mother; 1,140 born to a married mother).

Although the NLSY includes data on all children born to NLSY79 mothers, we limit the analysis to 1<sup>st</sup> born children so as not to violate assumptions of independence of observations.

The analytic sample for the second part of the analysis (which compares young adults born to a single mother who had various union histories to those whose mother remained continually never-married) is limited to the (1,218) young adults born to a never-married mother who have reached age 19 by 2006.<sup>2</sup> After listwise deletion of those with missing data on additional variables in the analysis, a total of 758 (518 black) offspring born to never-married mothers provide data for our analysis of the mental health outcome and 769 (525 black) provide data for the analysis of the physical health outcome.

## **Measures**

*Dependent Variables.* Our analysis employs two dependent variables: self-assessed health and depressive symptoms. *Self-assessed health* is measured with responses to a single question: “In general, would you say your health is excellent, very good, good, fair, or poor?” Responses are coded from 1 “Poor to 5 “Excellent,” with higher values indicating better health. Self-assessed health is highly predictive of subsequent morbidity and mortality (Idler and Benjamini 1997) and is widely recognized as a valid and reliable indicator of health status in the general population (Ferraro and Farmer 1999). Due to the ordered nature of the dependent variable, ordered probit models are used to predict self assessed health. *Depressive symptoms* is assessed with a 7-item version of the CES-D Depression scale. It represents a count of the number of symptoms respondents reported experiencing “most/all of the time” in the past week. Responses range from 0-7. Because this is a count variable, we employ negative binomial regression.

The dependent variables are assessed at age 19 where data are available. Because data are collected biennially assessments are not available at age 19 for all young adults. In cases in

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<sup>2</sup> The 2008 data were recently released we will be incorporating it into the final version of this paper. This will increase the sample sizes for all analyses.

which data on the dependent variable are missing at age 19, we use data from age 20. If data are missing at both age 19 and age 20, we take the age 21 measure. We proceed in this fashion up to age 29. The dependent variable is measured at age 19 for approximately 30% of the analytic sample, at age 20 for 25% of the sample, at age 21 for 13% of the sample at age 22-29 for 32% of the sample. All models include dummy variables that control for age at measurement of the dependent variable (age 20, age 21-29, compared to age 19).

*Mother's Union History.* Six dummy variables distinguish the following marital and cohabitation histories of the mothers of the young adults in our analytic sample (i.e., who were born to single mothers and not missing data on variables in the analysis): (1) entered a single enduring marriage with the biological father (n=171), (2) entered a single enduring marriage with someone other than the biological father (n=131), (3) entered and exited a marriage with the biological father (n=104) (4) entered and exited a marriage with someone other than the biological father (n=102) (5) never married but entered a cohabitation with the biological father (n=67) and (6) never married but entered a cohabitation with someone other than the biological father (n=29). The reference category consists of young adults born to mothers who never married & never cohabited (n=154).<sup>3</sup>

*Control Variables.* The following control variables are included: sex (1 = female) race/ethnicity (non-Hispanic Black; Hispanic; non-Hispanic white)<sup>4</sup>, age at which the dependent variable is measured (19, 20, or 21 and over), mother's US nativity (1=foreign born), mother's age at child's birth, mother's cohabitation status at child's birth (1=cohabiting), mother's cognitive ability (1980 AFQT score), mother's family composition at age 14 (1=lived with both biological parents), and mother's SES background (her mother's years of education). Note that the NLSY clearly identifies only 3 race/ethnic categories: Non-Hispanic Black, Hispanic, and a third group of non-Hispanic non-Black respondents. For brevity we refer to the

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<sup>3</sup> Sample sizes shown are for the CES-D analysis. Sample sizes for the self-assessed health models are slightly larger.

<sup>4</sup> The NLSY measures race/ethnicity of young adults as the race/ethnicity of the mother.



latter group as “white” in results and to non-Hispanic Black respondents as “Black.” Although not included in the current preliminary results, final models will also include controls for mother’s educational attainment and mother’s poverty status at child’s birth

## **RESULTS**

We first examine differences in the physical and mental health of young adults who were born to a never-married versus a married mother. Ordered probit regression models predicting self-assessed health and negative binomial regression models predicting depressive symptoms are presented in Table 1. We model the CES-D outcome using negative binomial regression because it represents a count of number of depressive symptoms in the past week, necessitating the use of poisson or negative binomial regression. Because the distribution of the CES-D is overdispersed (i.e., the variance is greater than the mean) we employ negative binomial regression (Long 1997; Zorn 1998) and present the incidence rate ratio (IRR). For categorical independent variables, the IRR is interpreted as the percent change in the dependent variable for one category of a categorical independent variable relative to the reference category, holding other variables constant. For each dependent variable, we first estimate a base model that includes all control variables. This is followed by a model that includes the interaction of sex with the dummy variable indicating whether the young adult was born to a never-married or married mother. In the last model, the interaction of race/ethnicity with mother’s marital status at birth is entered.

<Table 1 about here>

The results in Models 1 and 4 of Table 1 indicate that those born to a never-married mother have slightly and marginally significantly lower levels of self-assessed health in young adulthood than their counterparts born to a married mother. There are no differences in the rate of depressive symptoms for young adults born to a single compared to a married mother. Tests for interactions in Models 2, 3, 5, and 6 indicate that, with one exception, these patterns do not

vary by race/ethnicity or sex. The results in Model 5 show that mother's marital status at birth is not significantly associated with the rate of depressive symptoms for males (IRR=.874;  $z = -1.08$ ). However, the rate of depressive symptoms is significantly greater for female young adults born to never-married mothers compared to their counterparts born to married mothers (IRR = 1.375;  $z = 2.10$ ). Taken together, although the coefficients are modest and in some case reach only marginal levels of significance, these findings are consistent with the substantial existing evidence that, on average, children born to single mothers fare worse on numerous indicators of well-being than those born to married mothers. This study is one of the first to show evidence of relatively long-term negative health consequences of being born to a never-married mother.

We next turn to the central aim of this paper: identifying the consequences of mother's marital history for the early adulthood health and well-being of children born to single mothers. This part of the analysis is limited to young adults who were born to and lived with a never-married mother. Here we are interested in whether offspring of mothers who later marry or cohabit have better physical and mental health in young adulthood than those whose mothers remain unpartnered and whether union dissolution or the paternity status of the mother's partner affects these associations. Ordered probit regression models predicting self-assessed health and negative binomial regression models predicting depressive symptoms are presented in Table 2. We first present analyses for the total sample and then a separate analysis for Black women only. Although analyses for each of the three race/ethnic groups is preferred, sample sizes in union transitions categories are too small to allow whites and Hispanics to be examined separately.

<Table 2 about here>

Results for the total sample are shown in Models 1 (self-assessed health) and 2 (depressive symptoms) of Table 2. They indicate, among young adults who were born to single mothers, there are no significant differences in the self-assessed health or rate of depressive symptoms of those whose mothers remained unpartnered throughout their lives and those

whose mothers subsequently married or cohabited, regardless of paternity status of her partner or whether the union endured or dissolved. Mother's subsequent union history appears to have no consequences for the health and well-being of children born to single mothers once they reach young adulthood.

The results in Model 3 and 4 indicate that this conclusion must be slightly modified for black young adults. As shown in Model 3, offspring of black single mothers who marry and divorce a new partner report better physical health in young adulthood than those whose mothers remain unpartnered. Model 4 indicates that children of black single mothers who marry and divorce the child's biological father have a lower rate of depressive symptoms in young adulthood than those whose mothers remain unpartnered, although the difference only reaches a significance of .10. Future analyses will examine the role of socioeconomic status, health behaviors and other likely mechanisms in explaining these patterns.

We conducted supplementary analysis that changed the reference category for the analysis in Table 2 to "mother cohabited with the biological father." This allowed us to examine whether young adults whose mothers cohabited with their biological father differ from: (a) those whose mothers married or (b) those whose mothers did not marry or cohabit. Only one dummy variable for mother's marital history was significant. Black young adults whose mother married and divorced their biological father have marginally significantly lower rates of depressive symptoms ( $IRR = .509$ ;  $z = -1.78$ ) in young adulthood than their counterparts whose mothers cohabited with but did not marry their biological father.

## **DISCUSSION**

<To be added>

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**Table 1. Regression estimates of the association of mother’s marital status at birth with self assessed health and depressive symptoms in young adulthood ( $n = 1,930$ )**

	Self-Assessed Health <sup>a</sup>			Depressive Symptoms <sup>b</sup>		
	1.	2.	3.	4.	5.	6.
Born to never-married mother (0 = first birth occurred while married)	-.109 (.062) †	-.071 (.080)	-.151 (.104)	1.037 (.098)	.874 (.109)	1.117 (.080)
<b>Control Variables</b>						
Foreign born mother (0 = U.S. native born)	.160 (.110)	.160 (.110)	.161 (.110)	.538 (.106)**	.536 (.106)**	.532 (.106)***
Mother’s age at first birth	.014 (.009)	.014 (.009)	.014 (.009)	.984 (.014)	.984 (.014)	.985 (.014)
Mother’s years of education	.020 (.010)*	.020 (.010)*	.020 (.010)*	.972 (.014)†	.973 (.014)†	.972 (.014)†
Mother had intact biological family (0 = no)	.102 (.053) †	.104 (.053) †	.102 (.053) †	1.144 (.092)†	1.138 (.092)	1.145 (.092)†
Mother’s cognitive ability (AFQT)	.003 (.001)**	.003 (.001)**	.003 (.001)**	.997 (.002)	.997 (.002)	.997 (.002)
Mother Hispanic (0 = white)	.161 (.077)*	.161 (.077)*	.141 (.087)	.998 (.120)	.998 (.119)	1.066 (.145)
Mother black (0 = white)	.265 (.071)***	.265 (.071)***	.248 (.097)*	1.233 (.133)†	1.230 (.131)†	1.2193 (.178)
Female (0 = male)	-.345 (.049)***	-.315 (.064)***	-.346 (.049)***	1.206 (.091)**	1.044 (.106)	1.207 (.091)**
Age 20 (0 = age 19)	-.001 (.066)	.002 (.066)	-.002 (.066)	.904 (.092)	.890 (.091)	.906 (.092)
Age 21 or over (0 = age 19)	-.075 (.059)	-.073 (.059)	-.076 (.059)	.974 (.088)	.969 (.087)	.975 (.088)
Number of siblings	.019 (.021)	.019 (.021)	.019 (.021)	.990 (.033)	.987 (.032)	.991 (.033)
<b>Interactions</b>						
Born to never-married mother X Female	---	-.073 (.010)	---	---	1.375 (.208)*	---
Born to never-married mother X Hisp.	---	---	.077 (.153)	---	---	.793 (.190)
Born to never-married mother X Black	---	---	.053 (.138)	---	---	.963 (.201)
_cut 1	-2.126 (.258)	-2.106 (.260)	-2.136 (.259)	---	---	---
_cut 2	-.759 (.232)	-.737 (.234)	-.770 (.233)	---	---	---
_cut 3	.216 (.231)	.239 (.233)	.206 (.232)	---	---	---
_cut 4	1.223 (.232)	1.245 (.234)	1.212 (.233)	---	---	---
Log likelihood	-2487.745	-2487.477	-2487.606	-1934.610	-1932.39	-1934.08

Notes: †  $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  (two-tailed tests); <sup>a</sup> Ordered probit regression coefficients;

<sup>b</sup> Incidence Rate Ratio (IRR) from negative binomial regression; (standard errors in parentheses);

**Table 2. Regression coefficients estimating the association of mother’s union transitions with self-assessed health and depressive symptoms among young adults born to a single mother**

	Total Sample <sup>a</sup>		Black Only	
	Self-Assessed Health <sup>a</sup>	Depressive Symptoms <sup>b</sup>	Self-Assessed Health	Depressive Symptoms
	1.	2.	3.	4.
<b>Mother’s Union History</b>				
Never married but cohabited with biological father	-.027 (.176)	.774 (.203)	.084 (.215)	.730 (.226)
Never married but cohabited with new partner	.122 (.219)	1.162 (.334)	.042 (.239)	1.197 (.359)
Married biological father and it endured	.202 (.139)	.753 (.153)	.206 (.163)	.727 (.173)
Married biological father and it ended	.113 (.153)	.735 (.164)	.183 (.191)	.609 (.173)†
Married new partner and it endured	.068 (.130)	1.074 (.192)	.016 (.145)	1.149 (.223)
Married new partner and it ended	.138 (.142)	.923 (.187)	.344 (.170)*	.848 (.203)
(Ref = Never married and never cohabited)	---	---	---	---
_cut 1	-2.512 (.406)	---	-2.537 (.470)	---
_cut 2	-1.147 (.377)	---	-1.270 (.440)	---
_cut 3	-.211 (.375)	---	-.286 (.437)	---
_cut 4	.685 (.376)	---	.593 (.437)	---
Log likelihood	-1022.349	-803.491	-690.274	-572.239
<i>n</i>	769	758	525	518

Notes: \*p < .05; \*\*p < .01; \*\*\*p < .001 (two-tailed tests); Model controls for the following variables, measured in 1979 or 1980: mother’s race/ethnicity (non-Hispanic Black, non-Hispanic white, Hispanic), US nativity of mother, mother’s age at first birth, mother’s cohabitation status at first birth, respondent’s mother’s educational attainment, mother’s cognitive ability, and mother’s family composition at age 14. Models also control for the young adult’s sex, age at which the dependent variable is assessed, and number of siblings.

<sup>a</sup> Ordered probit regression coefficients; <sup>b</sup> Incidence rate ratios (IRR) from negative binomial regression.