CrossMark

The Changing Face of Teenage Parenthood in the United States: Evidence from NLSY79 and NLSY97

Maureen A. Pirog[1,4] · Haeil Jung[2] · Daewoo Lee[3] (ID)

Abstract

Background Previous studies identify consistent patterns of economically disadvantaged backgrounds, educational deficits, and relatively weak labor market outcomes of teen parents.

Objective In this study, we provide an updated report on differences in adult cohabitation rates during past decades, examine the risk factors associated with becoming a teen parent, and track teen parents' educational and labor market outcomes until the age of 29 to examine whether the outcomes associated with become teen parents have changed in recent decades.

Methods We select two nationally representative birth cohorts in the National Longitudinal Survey of Youth (NLSY) 1979 and 1997 (N = 9821). We use the difference-in-difference approach to examine whether the positions of teen parents have progressed or worsened across the two cohorts.

Conclusion The birth rates to teenage girls remained unchanged across the two cohorts, but the reported rates of teenage fatherhood increased. The proportions of both unmarried teenage fathers and mothers increased between the two cohorts. Teen fathers and mothers

✉ Daewoo Lee
lee_daewoo@columbusstate.edu

Maureen A. Pirog
pirog@indiana.edu

Haeil Jung
hijk@korea.ac.kr

[1] School of Public and Environmental Affairs, Indiana University Bloomington, 1315 E. 10th St., SPEA 410H, Bloomington, IN 47405, USA

[2] Department of Public Administration, Korea University, 145 Anam-Ro, Seongbuk-Gu, Seoul 02841, Korea

[3] Department of Politics, Philosophy, and Public Administration, Columbus State University, 4225 University Avenue, FOB 301, Columbus, GA 31907, USA

[4] University of Johannesburg, Johannesburg, South Africa

🙎 Springer

came increasingly from single-mother families with disadvantaged backgrounds. The proportion of teen mothers or fathers living with partners has not changed, but there has been a major shift from marriage to non-marital cohabitation. The education and earnings of the 1997 cohort of teen parents showed some progress relative to the earlier teen parent cohort, but no progress relative to peers who were not teen parents.

Keywords Pregnancy · Teenage · Poverty/disadvantage · Marriage/cohabitation · Families · Educational achievement · Earnings

Introduction

Although adolescent parenthood has shed some of its stigma in recent years, teenagers who have children can still suffer adverse consequences, both for the children and for them-selves (Aparicio et al. 2016; Barr and Simons 2012; Chumbler et al. 2014; Ellis-Sloan 2014; Smithbattle 2007; Yardley 2008). Teenage mothers tend to attain lower levels of education and skill formation, largely due to disadvantageous family and personal char-acteristics (Kalil and Kunz 1999; Lichter and Qian 2008; Miller and Moore 1990; Schoen et al. 2007). Teen mothers also are likely to continue having children, and to further delay the education and training needed for the labor market (Beutel 2000; Boden et al. 2008; Davis 2002; de Fátima Rato Padin et al. 2009; Furstenberg 1976; Hoffman et al. 1993; Hofferth et al. 2001; McDermott and Graham 2005; Teti and Lamb 1989; Thrane and Chen 2012). Furthermore, teen mothers have an increased likelihood of exhibiting behavioral problems (Ketterlinus et al. 1992; Manlove 1997) and experiencing disruptions in their psychological well-being (Booth et al. 2008; Nayak and Kehily 2014).

Similarly, with respect to teenage fathers, the precursor and consequences of teenage fatherhood have remained relatively stable. Teen fathers tend to have lower educational achievement, lower socio-economic status, and a greater likelihood of involvement in a variety of risky behaviors than their non-father peers (Card and Wise 1978; Fletcher and Wolfe 2012; Glikman 2004; Marsiglio 1988; Pirog-Good 1988, 1995, 1996; Robbins et al. 1985; Stouthamer-Loeber and Wei 1998; Thornberry et al. 1997; Vinnerljung et al. 2007; Wilkinson et al. 2009). As a result of their lower job skills and risky or delinquent behaviors, teen fathers are less likely to fulfill their child support obligations and less likely to share the domestic burden of caring for children (even those with whom they cohabit), both of which negatively affect children's wellbeing (Cancian et al. 2011, 2013; Nepomnyaschy and Garfinkel 2010; Pirog-Good and Good 1995).

A vast number of previous studies identify consistent patterns of economically disad-vantaged backgrounds, educational deficits, and relatively weak labor market outcomes of teen parents (Card and Wise 1978; Fergusson and Woodward 2000; Geronimus and Korenman 1993; Hofferth and Moore 1979; Upchurch and McCarthy 1990; Waite and Moore 1978). However, scholars have questioned whether these disadvantages are the causes or consequences of early parenting or both. For example, some scholars argue that the time spent child rearing and the stress associated with parenting are likely to hinder teens' educational attainment and/or employment opportunities (Barber et al. 1999; Becker 1981). Others, however, suggest that the observed lower levels of educational attainment and poorer labor market outcomes could be attributable to pre-existing socioeconomic difficulties, such as teen parents' family environments. These pre-existing deficits are understood to be predictive of teen parenting (Geronimus and Korenman 1993; Hotz et al. 2005). In general, scholars accept both causal interpretations: Disadvantages in childhood

and early adolescence are predictive of becoming a teen parent and having become a teen parent is predictive of subsequent disadvantages. In this paper, we set aside a discussion of the precursors of teen parenting and look instead at how the life experiences of teen parents have changed in recent decades. It is hypothesized that the national trends in cohabitation and out-of-wedlock parenting may have reduced the stigma associated with teen parenting and that this might be reflected in somewhat better outcomes for teen parents.

In this study, we focused on two decades of unique periods that witnessed distinct changes in sexual behavior among youth. Since the beginning of our study period (1979), there has been sizeable decline in teen birth rates (Santelli and Melnikas 2010). The proportion of sexually experienced male and female teenagers aged 15–19 has consistently declined across selected years: 56% in 1988, 37.9% in 1995, and 30.6% in 2006–2010 (Abma and Sonenstein 2001; Martinez et al. 2011). During the period, contraceptive utilization among sexually active teenagers has increased from 70.7% in 1995 to 85.6% in 2006–2010 (Abma and Sonenstein 2001; Kearney and Levine 2015; Martinez et al. 2011). A combination of these two factors at least partially explains changes in teenager fertility over our study periods.

At the same time, state-level public policies attributed to the unique trends in our study period. States initiated policies on limited access to contraceptives and abortion services in varying degrees, disproportionately affecting teens. For example, two states (Texas and Utah) require parental consent for teen's contraceptive services; twenty-one states and the District of Columbia explicitly allow minors to obtain contraceptive services without a parent's involvement; another twenty-five states determine access to contraceptives as teen's privacy rights (Frost 2013). An implicit purpose of these laws is to prevent abortions among teens, either by increasing the cost of abortions or by inducing substitution from abortion to contraception. Researchers have found some association between the parental involvement law and the reduction in the abortion rate, but the law's causal impact on teens' birthrate showed mixed results (Dennis et al. 2009).

Also, some states enforced mandatory counseling and waiting period laws on abortion. It requires that women should receive counseling before an abortion is performed and then must wait a specified time period between the counseling and the procedure. As of 2009, 36 states require a mandatory counseling before an abortion is performed; 27 of these states requires a woman seeking an abortion to wait a mandatory period, most often 24 h (Joyce et al. 2009). Overall, studies found that the law had no impact on abortion rates or birthrates (Bitler and Zavodny 2001; Meier et al. 1996; Medoff 2007). However, in Mississippi, there was a decline in the abortion rate in Mississippi, the state with the most restrictive laws regarding abortion (Althaus and Henshaw 1994; Joyce et al. 1997; Joyce and Kaestner 2001).

More recently, in Texas, the legislature passed a law that imposes strict requirements on abortion providers. It requires abortion facilities to meet the standards of Ambulatory Surgery Centers (ASCs) and mandates physicians performing abortions to have admitting privileges at a nearby hospital. Studies found that even though the supreme court struck down these two provisions as unconstitutional, the abortion rate among the teens in Texas decreased substantially (Colman and Joyce 2011; Grossman et al. 2014). Research also found that women continued to seek abortion services across state lines; however, abortions obtained out of state did not offset striking declines in Texas (Colman and Joyce 2011).

Additionally, the federal government's policy to promote marriage and two-parent families could affect marriage among teens (Graefe and Lichter 2008; Hao and Cherlin 2004; Kaestner et al. 2003; Lopoo and DeLeire 2006). After the 1996 Personal

Responsibility and Work Opportunity Reconciliation Act (PRWORA) was enacted, the welfare program encouraged marriage and the formation and maintenance of two-parent families. Under the PRWORA, welfare policies make it harder to qualify for receiving benefits for single mothers and imposed family caps on welfare benefits (Acs and Nelson 2004). Also, PRWORA mandated that states develop systems to establish voluntary paternity acknowledgement, provide information about the rights and responsibilities of minor parents, and required most teenage mothers to live with a parent or another approved adult (Rozie-Battle 2003). Studies attribute that these PRWORA provisions have discouraged nonmarital births, including teenage parenthood (Hao and Cherlin 2004; Kaestner et al. 2003; Lopoo and DeLeire 2006). At the same time, by 1998, more coordinated state and federal child support enforcement was implemented through the Uniform Interstate Family Support Act (UIFSA), while child support enforcement responsibility moved from the courts to administrative agencies (Huang 2010; Pirog and Ziol-Guest 2006). These changes in the child support enforcement provided teen mothers with greater incentives to inform fathers of their paternity, which likely contributed to increase reported rates of teen fatherhood (Case et al. 2003; Cassetty and Hutson 2005; Huang 2010; Nepomnyaschy and Garfinkel 2010).

In addition to changes in public policy, shifting norms related to cohabitation and parenting outside of marriage may influence the number and composition of teenagers who choose to become parents. Over past decades, there has been an increase in cohabitation among teen parents. In 2002, about one-third (35.1%) of unmarried teenage mothers were cohabiting with their partners; however, cohabitation of unmarried teens increased to nearly half (45.6%) between 2006 and 2010 (Chandra et al. 2005; Martinez et al. 2012). At the same time, a majority of teen mothers give birth while cohabiting and outside of marriage (Martinez et al. 2012). After the birth of the child, only about half of teen mothers are living with or married to the father of their child within a year (Eshbaugh 2008). During past decades, cohabitation has been the most common family formation activities among teenagers, followed by teen childbearing as a close second (Manning and Cohen 2015).

The growth in cohabitation among teen parents has raised concerns over the potential consequences for well-being of children. Research consistently show worse outcomes for children raised by a teen parents, including academic performance, social, emotional and behavioral problems, and delinquency issues (e.g., Cooksey 1997; Hardy et al. 1997; Hofferth and Reid 2002). Teenage cohabitation is also tied to subsequent life course outcomes among teen parents. Their relationship is less enduring after the birth of the child, and divorce is common among teen parents who choose marriage (Eshbaugh 2008; Furstenberg et al. 1987).

These normative and policy shifts could, in turn, influence teens' subsequent choices and outcomes related to living arrangements, educational attainment, and labor market outcomes. In this study, we examine these longer-term consequences not only to better understand the changing profiles of teenage mothers and fathers and their life experiences after a child's birth, but also to inform relevant public policies intended to prevent unplanned teenage parenthood and develop public programs that help teenage parents form healthy and nurturing family environments for their children.

Thus, the purpose of this paper is to update previous studies by examining the changing social characteristics of teenage mothers and fathers in recent decades. Specifically, we compare the characteristics of teen parents have changed across two nationally representative birth cohorts in the National Longitudinal Survey of Youth (NLSY) 1979 and 1997, report on differences in adult cohabitation rates, and discuss the choices teen parents are making about living with their children. We also examine the risk factors associated with

becoming a teen parent and track teen parents' educational and labor market outcomes until the age of 29 to examine whether the outcomes associated with become teen parents have changed in recent decades.

We find the NLSY 1979 and 1997 data to be ideal for our study. The NLSY 1979 birth cohort had passed their teenage years by the time PRWORA was enacted in 1996. Respondents in the 1997 NLSY were still in teenagers in 1996, and would therefore would have been subject to PRWORA provisions as teen parents. Therefore, the new PRWORA provisions on welfare benefits are likely to have impacted teen parents in the NLSY 1997 cohort, but would not have affected the earlier cohort at any point of interest to our study. In addition to PRWORA, the de-stigmatization of non-marital cohabitation over the years and greater enforcement of child support laws have potential consequences for living arrangements, educational attainment, labor earnings, and public policies targeting these groups.

Method

Data and Sample

This study relies on two sources of data: the 1979 National Longitudinal Survey of Youth (NLSY79) and the 1997 National Longitudinal Survey of Youth (NLSY97), provided by the U.S. Bureau of Labor Statistics (BLS). The NLSY79 is a sample of 12,686 young men and women who were born between January 1, 1957 and December 31, 1964. At the time of their first interview at 1979, their ages ranged from 14 to 22. After the first survey, follow-up interviews were conducted annually until 1994 and biannually after that year. The NLSY97 consists of a nationally representative sample of approximately 9000 youths, born between January 1, 1980 and December 31, 1984. At the time of the first interview, respondents' ages ranged from 12 to 18, and they were interviewed on an annual basis. During both NLSY79 and NLSY97 interview period, an interviewer visited randomly selected households to identify all survey eligible youths. If an eligible youth lived in the household, the interviewers also interviewed one of the youth's parents (including non-biological parents) or parent-type figure (including guardian or foster parents).

One advantage of the NLSY is that the BLS provides weights for each observation in each panel year to allow us to generate nationally representative profiles of teen parents and youth who do not become teen parents. The BLS also provides explicit instructions on how to construct a single weight per observation when either pulling observations from different panel years or pooling data across years. Our descriptive and multivariate analyses all utilize either the set of sampling weight provided by the BLS or customized longitudinal weights using BLS's guidelines, which adjusts the sampling design and the use of data for more than one round of surveying.

There is considerable variation in the age of the survey respondents in the baseline years of the NLSY79 and NLSY97 cohorts; youth in the NLSY79 cohort were 14–22 years old and those in the NLSY97 cohort were 12–17 years old. Thus, simply using the two cohorts as given does not provide a valid comparison of teen parents across the two cohorts. For example, because of differences in maturity and life experiences, it would be inappropriate to compare 18–22 year olds in the baseline year of the NLSY79 cohort to 11–12 year olds in the baseline year of the NLSY97 cohort. Additionally, some NLSY respondents ret-rospectively reported their child's births up to three years prior to their survey year. For

example, 10.52 and 11% of births occurred before the first survey year among teen fathers of our sample in NLSY79 and NLSY97. For teen mothers of our sample, it is 25.22 and 22.74% in NLSY79 and NLSY97. As a result, differences in ages at the baseline might impact the recollection of birth dates of children and introduce considerable measurement error, particularly for men who less frequently live with their children. Therefore, we restrict our sample to youth aged 15–17 in the baseline years of both panels. In other words, respondents born in 1962, 1963, or 1964 in the NLSY79 and those born in 1980, 1981, or 1982 in the NLSY97 are included here in order to create comparably aged birth cohort data from both panels.

There are many identical questions in both panels which facilitate comparisons across the two panels on such topics as fertility, family backgrounds, and economic well-being. Further, the NLSY panels follow respondents for a long time. To be specific, this allows us to follow the birth cohorts (ages 15–17 at the baselines) for fifteen years when respondents are in their early thirties. When we restrict the two panels to comparably aged birth cohorts, we have 4415 individuals whom we follow from the NLSY79 and 5406 individuals from the NLSY97.

Measurement

This study has three key dependent variables. First, we create an indicator variable for teenage parenthood, based on the reported month and year of the birth of the respondent's first child. Births and birthdates are reported retrospectively in the NLSY panels, allowing us to capture births that occurred even if a respondent was not interviewed in every panel year. Consistent with the National Center for Health Statistics, we defined teenage parenthood as being age 19 or younger at the birth of their first child, based on the definition by National Center for Health Statistics, where calculate teen birth rate as births per 1000 females aged 15–19. Indeed, previous studies on teenage pregnancy using NLSY 1979 and 1997 followed this definition (Argys and Peters 2003; Chafel 1994; Furstenberg et al. 1990; Geronimus and Korenman 1993; Hofferth and Reid 2002; Hoffman et al. 1993; Levine et al. 2001; Su et al. 2015) The second dependent variable is an indicator variable equal to one if the respondent received a college degree by age 29, and zero if the respondent did not. The third dependent variable is the respondents' labor earnings at age 29. The independent variables include the educational attainment of the respondents' parents, family structure, family income in constant 2017 dollars, and the respondents' ethnic background.

Among independent variables, family structure is constructed using questions about respondents' childhood household composition. The surveys asked respondents with whom they lived at age 14 (NLSY79) and at age 12 (NLSY97), and these data provide information on the household structure during the respondent's teenage years. Family structure is measured with five variables: living with both biological parents; living with either a stepfather or stepmother; living with a biological mother only or mother's marital status is unknown; living with a biological father only or father's marital status is unknown, and living with other family arrangements such as adoptive or foster parents.

It is well documented that childhood family structure is closely linked to the life course of children, and structural disadvantages associated with single parent households influence social and economic hardship for children (Amato 2005; Aquilino 1996; Bumpass and Lu 2000; Cherlin 2010; Musick 2002; Seltzer 2000; Teachman 2003; Wu and Martinson 1993). Previous literature mainly focused on childhood living arrangements with single mothers and their children's behavioral, cognitive, or educational outcomes (Brown

2004, 2006; Carlson and Corcoran 2001). Since 1990, scholars have increasingly recognized that changing demography of single fatherhood and its influence on children needs to be studied (Carlson 2006; Marsiglio 1994; Marsiglio et al. 2000). However, single father families are still less common than single mother households (Brown et al. 2015; Hofferth 2006; Hofferth and Anderson 2003), and despite the relative richness of the NLSY for analyzing single father families, the data on this type of household is too limited for us to analyze once we restrict the sample to 15–17 year olds at the baseline. For example, less than 2 and 4% of our sample in NLSY79 and NLSY97 are composed of single father-head family (see more details in Table 2). For this reason, we chose to examine how family structure relates to the risk of teen parenthood, particularly focusing on single mother-head families. In our regression, the reference group (i.e., omitted category) of family structure is living with both biological parents. We also control for race and include Hispanic and Black indicator variables in our model, leaving all other races (predominately Whites) as the reference group.

In terms of family income, Both NLSY79 and NLSY97 have contain repeated measures of family income. Beginning 1979, NLSY79 annually collected 'Total Net Family Income', measuring sources of family members' income in the household. NLSY97 also annually asks gross family income. We used the family income information recorded at the first year of survey, 1979 for NLSY79 and 1997 for NLSY97 and they are adjusted in 2017 dollars. Details on variables for our analyses are described in Table 1. Also, standard summary statistics are included in Table 2.

Also, we constructed a cohabitation variable to see changes of marriage and cohabitation among teenagers. To do that, we built a series of living arrangement variables using the NLSY's household relationship records. In every year of the NLSY79 panel, household members are enumerated and categorized into 66 different relationships relative to the youth respondent, such as respondent him(her)self, married spouse, unmarried partner, father or mother (both biological and step), etc. (For more information, please find codebook of NLSY79 household record: http://nlsinfo.org/content/cohorts/nlsy79/topical-guide/household/household-composition). Similarly, in every year of the NLSY97 panel, the household roster used 87 categorizations of relationships to the respondent for every person living in the household. (For more information please find codebook of NLSY97 household record: https://www.nlsinfo.org/content/cohorts/nlsy97/topical-guide/household/household-composition/page/0/1). Even though NLSY97 panel has more detailed categories of relationship among household members, we found that household relationships in both panel can be collapsed into a few broader categories in the same manner.

Based on household relationship data, we built the same yearly living arrangements of respondents for members of both cohort using the following categories: living with married spouse, unmarried partners, biological mother (and father), step mother (and father), grandparents, brothers and sisters, older relatives (aunts or uncles), and other relatives. This yearly living arrangement data allows us to investigate cohabitation relationship histories using comparable data for respondents in both the NLSY79 and NLSY97 panels.

Data Analyses

This study examines the relationships between teens' socio-economic backgrounds and their status as teen parents, using logit estimation with marginal effects of an independent variable, holding other variables at their observed values. We also examine the absolute changes in educational attainment and labor earnings between the NLSY79 and NLSY97

Table 1 Descriptions of variables

	Descriptions
Dependent variables	
Teen parenthood	Information on parenthood is drawn from the reported month and year of the birth of the respondent's first child. NLSY79 and NLSY97 ask, "When was your (first) child born?" Based on this information, respondents were considered to be parents at the date of the first live birth reported. Since respondents retrospectively answered this question, the reported year of the birth of the child was sometimes two or three before the data was collected. We define teen fathers and mothers as those who were age 19 or younger at the birth of their first child
College degree by age 29	Education attainments of teen parents were created by using a combination of two variables: highest grade completed and enrollment status. The Highest Grade Completed variable (HGC) was created at the beginning year of NLSY79 and NLSY97, checking each subsequent year whether the respondent reported completing a higher grade in school. At the same time, the enrollment status variable measured enrollment status on May 5 of the survey year, whether respondents enrolled in high school or college or received a General Educational Development (GED). From these data, we created a dummy variable indicating whether teen parents received a college degree or not, by age 29
Earnings at age 29	Both NLSY79 and NLSY97 ask for income levels, referring to the total in the previous calendar year. Each respondent was asked, "How much did you receive from wages, salary, commission, or tips from all jobs, before deduction of taxes or anything else?" We converted these amounts to 2007 dollars using the Consumer Price Index from the U.S. Bureau of Labor Statistics
Control variables	
Highest grade completed by teen's parents	In 1979 and 1997, at the beginning year of NLSY79 and NLSY97, respondents were asked, "What was the highest grade or year of school that your mother (father) completed?" Based on this information, we have built two variables capturing the highest grade completed by each of the respondent's parents. In our analysis, we created a single "parents' education" variable that reflects the highest grade completed by the parents with the highest educational attainment
Family structure	Using childhood living arrangements at age 14 (NLSY79) and at age 12 (NLSY97), we constructed family structure variable into five categories: living with both biological parents; living with either a stepfather or stepmother; living with a biological mother only or mother's marital status unknown; living with a biological father only or father's marital status unknown, and living with other arrangements
Family income	Both NLSY79 and NLSY97 contain comprehensive measures of family income. We used variables that measured youths' family income at 1979 for NLSY79 and at 1997 for NLSY97. Ages of youths will vary from 15 to 17, because we restrict our sample to youth aged 15–17 at the baseline year
Race	For ethnic background variables, we created three categories: White = 1 if ethnic group is White; 0 if otherwise. Black = 1 if ethnic group is Black; 0 if otherwise. Hispanic = 1 if ethnic group is Hispanic; 0 if otherwise

cohorts. Then, we examine the relative changes of these outcomes between teen parents and non-teen parents (i.e., those who did not become parents in their teenage years). To examine absolute and relative changes, we first estimate changes in educational attainment

Table 2 Summary statistics

	Men			Women		
	Mean	SD	N	Mean	SD	N
NLSY79						
Living arrangement at age 14, with both biological parents	0.64	0.48	2257	0.62	0.49	2146
Living arrangement at age 14, with either a stepfather or stepmother	0.09	0.29	2257	0.09	0.29	2146
Living arrangement at age 14, with a biological mother only or mother's marital status unknown[a]	0.20	0.40	2257	0.23	0.42	2146
Living arrangement at age 14, with a biological father only or father's marital status unknown[b]	0.02	0.15	2257	0.01	0.10	2146
Living arrangement at age 14, with other arrangements[c]	0.04	0.20	2257	0.05	0.21	2146
Highest grade completed by one of teen's parents	11.67	3.33	2165	11.48	3.27	2091
Real family income at the baseline	49,593.17	37,686.24	1863	50,208.48	39,080.49	1786
Race, White	0.57	0.50	2262	0.54	0.50	2153
Race, Hispanic	0.17	0.37	2262	0.19	0.39	2153
Race, Black	0.26	0.44	2262	0.27	0.44	2153
NLSY97						
Living arrangement at age 12, with both biological parents	0.46	0.50	2380	0.43	0.50	2301
Living arrangement at age 12, with either a stepfather or stepmother	0.06	0.23	2380	0.07	0.26	2301
Living arrangement at age 12, with a biological mother only or mother's marital status unknown[a]	0.37	0.48	2380	0.40	0.49	2301
Living arrangement at age 12, with a biological father only or father's marital status unknown[b]	0.04	0.20	2380	0.03	0.16	2301
Living arrangement at age 12, with other arrangements[c]	0.07	0.25	2380	0.07	0.25	2301
Highest grade completed by one of teen's parents	11.48	3.27	2616	13.07	3.03	2485
Real family income at the baseline	62,815.23	56,649.42	1962	61,306.44	56,137.07	1931
Race, White	0.53	0.50	2754	0.52	0.50	2652
Race, Hispanic	0.21	0.41	2754	0.21	0.41	2652
Race, Black	0.26	0.44	2153	0.27	0.44	2652

[a] This category includes children living with: (1) a biological mother only; (2) a biological mother and other man but mother's marital status is unknown

[b] This category includes living with: (1) biological father only; (2) a biological father and other woman but father's marital status is unknown

[c] This category includes other family structures, such as children living with foster of adoptive parents, male or female relatives, male or female whose marital status unknown, their own, other arrangements, or missing male and other women

and labor earnings among individuals who were childless in their teen years between the NLSY79 and NLSY97 cohort. The same comparisons are then made for teen parents in the two cohorts.

In the analysis of the educational attainment and labor earnings of teen and non-teen parents, the selection into teen parenthood is the focal concern. Confounding factors, such as personal and family backgrounds, may influence the likelihood of becoming teen parenthood, as well as educational attainment and labor earnings. To address this selection issue, we use the difference-in-differences approach in our analyses (Angrist and Pischke 2008). The difference-in-difference estimates compare the differences in mean outcomes between NLSY79 and NLSY97 cohorts for teen parents, as well as for non-teen parents. It allows us to identify the effects of becoming teen parents on their educational attainment and labor earnings, so long as both teen and non-teen parents are subject to the same time trends over the years of the NLSY79 and NLSY97 panels. In our analysis, we assume that the pre-existing differences between teen parents and non-teen parents were similar over time. Based on this assumption, the difference-in-difference estimates can control confounding unobserved time-constant factors, such as trends among the teen and non-teen parents' personal and family backgrounds, that may influence both the likelihood of becoming a teen parent and later educational and employment outcomes.

Although we are using the difference-in-difference method to limit time-constant confounding factors, we acknowledge that unobserved time-varying confounding factors could still bias our estimates. For example, the PRWORA provisions enacted in 1996 may discourage teen parenthood in the NLSY97 cohort. If this is the case, the difference-in-difference estimates would be biased upwards.

Findings

Changes in Parenting Patterns

Cumulative rates of teenage paternity and maternity for all teenage parents are shown in the top panel of Fig. 1. The cumulative rates of teenage parenting for unmarried teenagers are shown in the lower section of Fig. 1. First, we find that teen fatherhood is more common in the NLSY97 cohort (about 8.8% at age 19) compared to the NLSY79 cohort (about 7% at age 19). The differences are statistically significant throughout the teen years, as indicated along the horizontal axis. Therefore, a higher proportion of male teenagers reported having children in the NLSY97 cohort, compared to male teenagers in the NLSY79 cohort. For female teenagers, the two cohorts show very similar cumulative rates of parenting over all ages. In both cohorts, female teenagers were much more likely than male teenagers to report becoming parents.

As seen in the lower panel of Fig. 1, we find that the cumulative rate of births to unmarried male teenagers is consistently higher in the 1997 cohort than in the 1979 cohort. A similar pattern holds for unmarried female teenagers, but the difference in the cumulative birth rates becomes larger at older ages. Using the cumulative rate at age 19, we also calculate the non-marital birth rate among teen mothers, dividing all unmarried teen mothers by all teen mothers. The same calculation method was done for teen fathers. In the 1979 cohort, 77.2% of births to male teenagers and 66.5% of births to female teenagers were non-marital. These percentages increased to 84.0% for teen fathers and 77.2% for teen mothers in the NLSY97 cohort. This increase suggests that our data accurately reflect
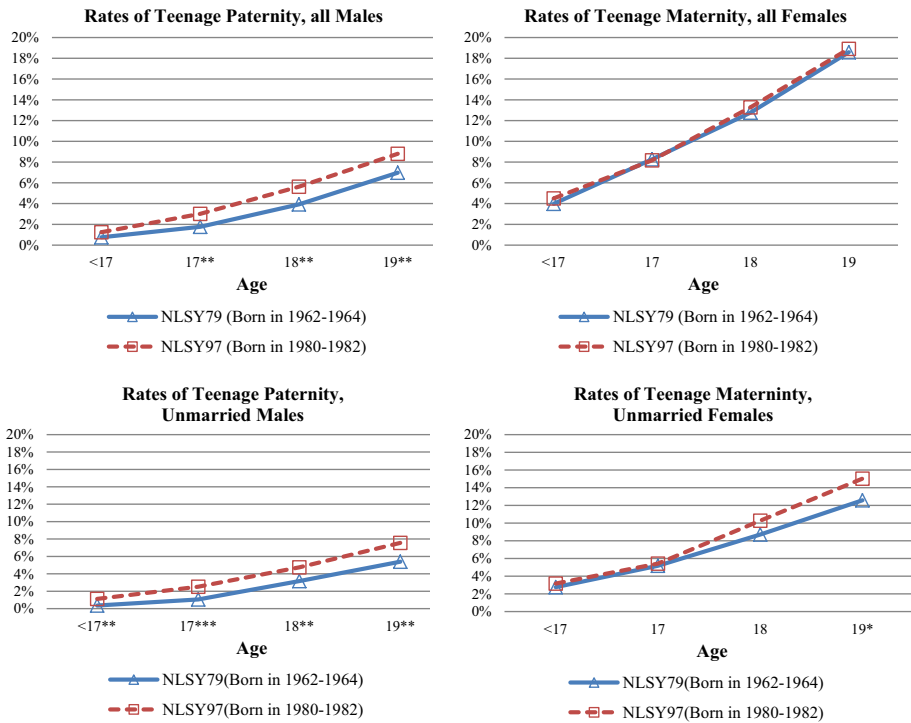
Fig. 1 Cumulative rate of early parenthood by age (N = 5016 males and 4805 females). *Notes* All data are weighted by the customized longitudinal weights for the two cohorts. Men and women in our analysis sample from NLSY79 and NLSY97 were aged 15–17 at the first year of survey (N = 5016 for Men and N = 4805 for Women). ***p < 0.01; **p < 0.05; *p < 0.1

national trends regarding birthrates outside of marriage, which have increased in the United States (Guzzo and Furstenberg 2007; Smith et al. 1996; Ventura and Bachrach 2000; Wu 2008).

One possible issue in our analysis is the possibility of under-reporting of teen parenting during the survey. In particular, the issue of under-reporting of teenage paternity is longstanding and has been discussed in previous literature (Cherlin et al. 1983; Joyner et al. 2012; Stykes et al. 2013). Some scholars suggest that under-reporting of teenage paternity is due to the lack of representation of incarcerated fathers in household surveys (Marsiglio et al. 2000; Hernandez and Brandon 2002). However, under-reporting due to incarceration is likely to be less problematic in the NLSY79 and NLSY97 data, because both surveys consist of representative samples of non-institutionalized youth who are followed annually. Even if fathers are at some point incarcerated and are absent from a number of NLSY panels, retrospective questions on the ages of their children allow us to capture early parenting better than simple cross-sectional data. Joyner et al. (2012) found that the NLSY teenage paternity data was superior to that found in the National Survey of Family Growth (NSFG). The researchers attributed the difference to the fact that NSFG respondents' first opportunity to report having a child might occur up to a decade after the birth. In contrast, NLSY respondents were queried about children and their birthdates in all survey years. Both of the NLSY panels are nationally representative and have been used extensively to study young parents (Geronimus and Korenman 1993; Guzzo and Furstenberg 2007; Hynes
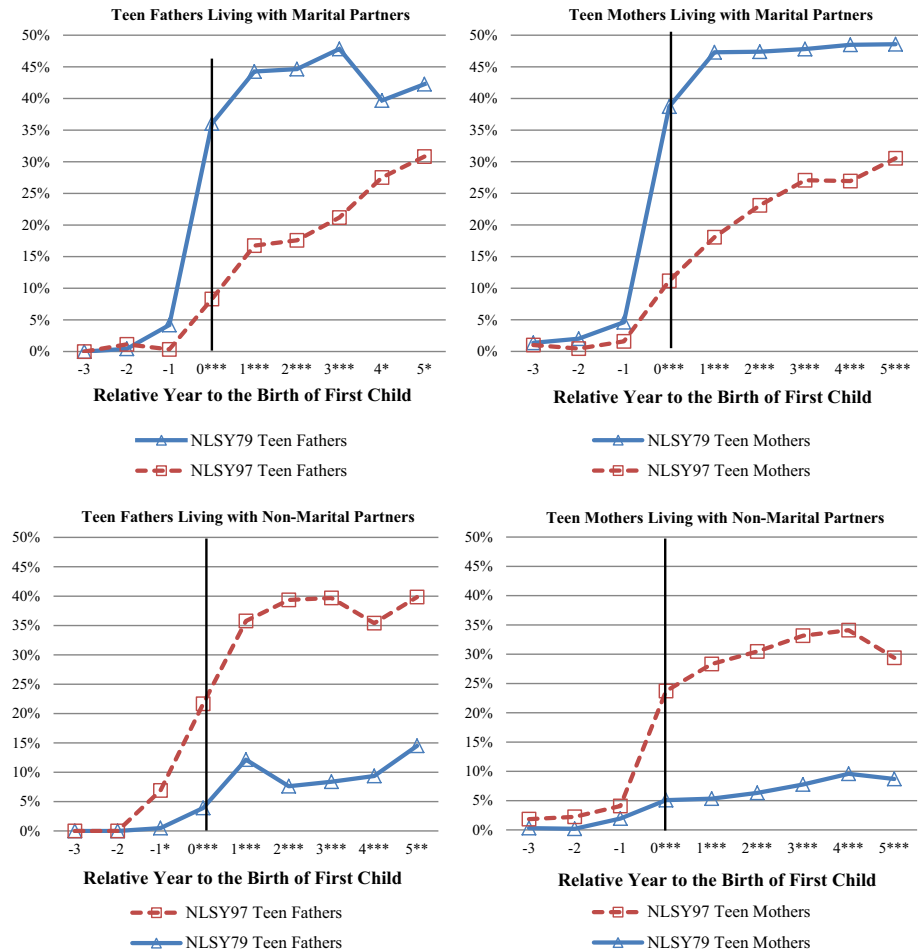
Fig. 2 Percentage of teen parents living with married and unmarried partners (N = 5016 males and 4805 females). *Notes* Data are weighted by yearly sample weights. These weights provided us with information to reflect U.S. population as a whole. Relative year to the birth of first child is the year difference between the birth of first child and the time of survey in the data. ***p < 0.01; **p < 0.05; *p < 0.1

et al. 2008; Manlove et al. 2013). Additionally, between the two birth cohorts, there was serious improvements in genetic testing and paternity establishment rates. Better knowledge of paternity is likely to have reduced under-reporting in the 1997 birth cohort. Despite these possible issues, the NLSY are arguably the best available data on teenage paternity.

Changes in Marriage and Cohabitation

Figures 2 shows a pronounced shift from marriage to non-marital cohabitation between the two NLSY panels. In Fig. 2, marital and non-marital partners are not restricted to the biological parents of the child. The NLSY data do not provide this level of detail. Nonetheless, we can clearly see the shift from marriage to non-marital cohabitation that has been previously described in the literature (Hynes et al. 2008; Ventura and Bachrach

2000; Wu 2008). Also, because the NLSY follows individuals for many years, we are additionally able to identify shifts in cohabitation before and after the birth of children. In Fig. 2, we displayed the percentage of teen parents living with married or unmarried partners, relative to the birth year of their first child. We create the relative year to the birth of the first child by calculating the differences between the birth of the first child and the interview date of survey. For example, information at the relative year zero indicates what percentage of teen fathers/mothers lived with married/unmarried partners or not, at the time of child birth. Figure 2 shows our finding that a very small percentage (less than 10%) of teen mothers and fathers in both cohorts lived with a partner a year before the birth of the first child, irrespective of marital status. In the NLSY79 birth cohorts, during the pregnancy year and afterwards, there were sharp increases in rates of marital cohabitation seen among both teenage fathers and mothers. These increases were much more subdued in the NLSY97 birth cohorts. The magnitudes of these differences are striking, given that only 18 years elapsed between the two cohorts. Cohabitation with a non-marital partner among teenage fathers and mothers was much more common in the NLSY97 cohort than in the NLSY79 cohort. Non-marital teenage cohabitation, 2 years after the birth of the first child, rose roughly 30% points between the two cohorts. Across the two cohorts, the proportion of (married or unmarried) parents living together is roughly the same, about 50–60%, but there has been a sharp shift from marriage to non-marital cohabitation between the two cohorts. We also find that teen mothers remained more likely than teen fathers to live with their biological children.

Predicting for Teen Pregnancy

In Table 3, we examine how family structure relates to the risk of teen parenthood. Previous research has shown that adolescents who live in non-traditional families without two married parents have higher chances of becoming teen parents because of the structural disadvantages associated with single parent and step-parent families (Bumpass and Lu 2000; Cherlin 2010; Teachman 2003; Wu and Martinson 1993). To see how the influence of family structure on teen parenthood has changed between NLSY79 and NLSY97, we created an interaction term between family structure and the NLSY97 cohort indicator variable. This interaction term allows us to investigate whether or not family structure has a stronger or weaker effect on the probability of becoming a teen parent over time. This question is salient as single parent households and other non-traditional families became increasingly common over our study period.

Table 3 shows that teen fatherhood is more common in the NLSY97 cohort than the NLSY79 cohort. The estimated coefficient of the NLSY97 dummy indicates that the NLSY97 cohort has more teen fathers by 7.9% points compared to the NLSY79 cohort, controlling for family structure, ethnic background, teens' parents' level of education, and family income. The difference between cohorts is noticeable: a higher proportion of male teenagers reported having children in the more recent cohort, compared to teenage males born in the NLSY79 cohort. It also appears that teen motherhood is less common in the NLSY97 cohort and this difference is statistically significant.

Table 3 reveals an apparent anomaly in our findings. Between the two cohorts, rates of teenage paternity increased while rates of teenage maternity decreased. One possible explanation for this is that teenage girls are more likely to partner with young men closer to their own ages in the NLSY 1997 panel. Age differences between teen mothers and their older partners was a topic of concern among some researchers and policymakers (Landry and Forrest 1995; Males and Chew 1996; Taylor et al. 1999) in the 1980s and 1990s.

Table 3 Prediction for teen parenthood, with interaction (sample size = 5016 men and 4805 women)

	Father	Mother
Family structure: living with either a stepfather or stepmother	0.061* (0.032)	0.041 (0.038)
Family structure: living with biological mother only or mother's marital status unknown	0.006 (0.018)	0.019 (0.028)
Family structure: living with biological father only or father's marital status unknown	0.149* (0.078)	0.112 (0.141)
Family structure: living with other arrangements	0.081 (0.070)	0.299*** (0.079)
Highest grade completed by one of teen's parents	−0.006*** (0.002)	−0.020*** (0.003)
Real family income at the baseline	−0.002 (0.002)	−0.011*** (0.002)
Race, Hispanic	0.063*** (0.024)	0.055 (0.034)
Race, Black	0.050** (0.020)	0.107*** (0.028)
NLSY97 (NLSY79 = 0, NLSY97 = 1)	0.079* (0.047)	−0.121* (0.072)
Living with either a stepfather or stepmother * NLSY97	−0.052 (0.045)	−0.005 (0.051)
Living with biological mother only or mother's marital status unknown * NLSY97	0.020 (0.025)	0.110*** (0.036)
Living with biological father only or father's marital status unknown * NLSY97	−0.134 (0.085)	−0.065 (0.154)
Living with other arrangements * NLSY97	−0.049 (0.077)	−0.151 (0.097)
Highest grade completed by one of teen's parents * NLSY97	−0.005 (0.003)	0.007 (0.005)
Real family income at the baseline * NLSY97	0.001 (0.002)	0.002 (0.003)
Race, Hispanic * NLSY97	−0.044 (0.030)	−0.013 (0.045)
Race, Black * NLSY97	0.042 (0.029)	−0.041 (0.039)
Constant	0.140*** (0.029)	0.467*** (0.047)
R^2	0.039	0.103
Number of observations	3643	3547

For family structure variables, omitted reference category is living with both biological parents. For ethnic background variable, we exclude the White group as a baseline group

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Concerns about age differences have included issues of meaningful consent in sexual relationships and behavioral problems of teen mothers (Boyer and Fine 1992; Larson et al. 1996; Lamb et al. 1986; Moore et al. 1989). However, in spite of the common assumption that adult men play a significant role in teen pregnancy, studies found that only a small percentage of births to teen mothers involved older partners (Lindberg et al. 1997). It is also worth noting that despite the concerns raised, older male partners are normative in

American society, regardless of mother's age, and older fathers are likely to have more economic stability than teen fathers (Hardy et al. 1989).

Another possibility is that more male teenagers were partnering with somewhat older women in the NLSY97. The popularization of older, female "cougars" in television and the popular press may make it more acceptable for younger males to partner with older females. Unfortunately, data on the ages of partners are not collected in the NLSY panels, so we cannot verify either of these possibilities.

A third possible explanation for our finding is that young men may more accurately report their paternity in the NLSY97. This change might occur if the stigma associated with early or non-marital parenting declined over time. And finally, it may be that young fathers in the later cohort are better informed about their paternity, a likely outcome of greater child support enforcement. We suspect that all of these factors are at play in explaining the increased rate of teenage paternity and a constant rate of teenage maternity.

We should also stress here that the panel nature of the NLSY surveys in both panels does allow us to capture the birthdates of children even many years after they are born (in subsequent surveys) and hence to obtain more precise measures of adolescent paternity. The issue of under-reporting of teenage paternity is longstanding and has been discussed in previous literature (Cherlin et al. 1983; Garfinkel et al. 1998; Joyner et al. 2012; Sorensen 1997; Stykes et al. 2013). Some scholars suggest that under-reporting of teenage paternity is due to the lack of representation of incarcerated fathers in household surveys (Marsiglio et al. 2000; Hernandez and Brandon 2002). However, under-reporting due to incarceration is likely to be less problematic in the NLSY79 and NLSY97 data, because both surveys consist of representative samples of non-institutionalized youth who are followed annually. Even if fathers are at some point incarcerated and are absent from a number of NLSY panels, retrospective questions on the ages of their children allow us to capture early parenting better than simple cross-sectional data. Joyner et al. (2012) found that the NLSY teenage paternity data was superior to that found in the National Survey of Family Growth (NSFG). The researchers attributed the difference to the fact that NSFG respondents' first opportunity to report having a child might occur up to a decade after the birth. In contrast, NLSY respondents were queried about children and their birthdates in all survey years. Also, we use the reporting of children in all survey years to retrospectively calculate the parent's age at first birth and thus generate the most accurate possible teenage paternity rate given the data available. Although we acknowledge that the NLSY data may not be without bias, we do apply comprehensive coding to retrospectively capture late reports of births to obtain the best available estimates.

Table 3 also shows that the influence of family structure on teenage motherhood is greater in the NLSY97 cohort than in the previous cohort. For both NLSY79 and NLSY97 cohorts, living with a single mother and other family members predicts higher risk of teen motherhood compared to those living with both biological parents. However, this risk was much greater for the NLSY97 cohort. The risk of becoming a teenage mother increased by 11% points for female teenagers living with a single motherhood family across the two cohorts. There were no significant patterns of family structure risk for male teenagers across the two cohorts. This contrast suggests that disadvantaged family structure has become more strongly associated with risk of teen motherhood, but not of teen fatherhood.

Educational Outcomes by Age 29

We also investigate whether the intervening period between the two cohorts mitigated some of the educational deficits of teen fathers and mothers. First, we examine the absolute changes of educational outcomes, comparing teen parents between NLSY79 and NLSY97. Second,

Table 4 Predicted absolute and relative change in education attainment and labor earnings (sample size = 5016 men and 4805 women)

	College degree by age 29	Labor earnings at age 29[a] (in $1000)
Absolute change between NLSY79 and NLSY97		
Teen fathers		
NLSY97 (NLSY79 = 0, NLSY97 = 1)	0.081 (0.055)	9.972*** (2.413)
Constant	−0.476*** (0.135)	2.139 (6.727)
R^2	0.164	0.155
Number of observations	326	222
Teen mothers		
NLSY97 (NLSY79 = 0, NLSY97 = 1)	0.173*** (0.047)	8.565*** (2.243)
Constant	−0.322*** (0.089)	0.154 (5.795)
R^2	0.122	0.180
Number of observations	688	409
Relative changes between childless teens and teen parents using the difference-in-differences method		
Teen fathers		
NLSY97 (NLSY79 = 0, NLSY97 = 1)	0.137*** (0.021)	14.910*** (1.110)
Teen fathers	−0.203*** (0.034)	−2.924** (1.362)
Teen fathers * NLSY97	−0.044 (0.051)	−3.628 (2.669)
Constant	−0.238*** (0.044)	13.251*** (2.183)
R^2	0.218	0.185
Number of observations	2943	2389
Teen mothers		
NLSY97 (NLSY79 = 0, NLSY97 = 1)	0.192*** (0.021)	13.231*** (1.065)
Teen mothers	−0.265*** (0.032)	−4.141*** (0.977)
Teen mothers * NLSY97	−0.003 (0.044)	−2.917 (2.064)
Constant	−0.112** (0.047)	7.613*** (2.227)
R^2	0.242	0.203
Number of observations	2953	2131

The four regressions controlled for family structure, ethnic background, parents' level of education, and family income

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

[a] Labor earnings are in 2017 dollars

we examine the relative changes of educational outcomes, comparing changes of teen parents between NLSY79 and NLSY97 to changes between those who did not become teen parents.

The estimated coefficient of the NLSY97 dummy in Table 4 indicates that teen parents made absolute progress in their educational attainments over the years, in terms of earning a college degree by age 29. The progress of teen mothers is particularly impressive. Teen mothers' who completed a college degree by age 29 in the NLSY97 cohort is higher by 17.3% points, compared with teen mothers in the NLSY79 cohort (statistically significant at $p < 0.01$).

Despite this progress, the educational attainment of teen parents by age 29 has regressed compared to individuals who did not parent in their teen years. In Table 4, the estimated coefficient of the difference-in-difference indicator (the interaction term between teen fathers and NLSY97) indicates that the difference in earning a college degree for teen fathers versus male respondents who were childless in their teens was lower by 4.4% points in the NLSY97 compared to the NLSY79. While this pattern is similar for females, in neither case do these differences reach traditional levels of statistical significance.

Labor Earnings at Age 29

We turn to our attention to teen parents' labor earnings at age 29, though this type of data can often be limited. Young men and women who leave school early and enter the labor force are likely to out-earn their counterparts who remain in school, but only for a few years in their early 20s. As those counterparts complete high school or college and enter the labor force, they are likely to increase their earnings quickly and later exceed those with less education (Becker 1981; Card 1995, 1999, 2001; Goldin and Katz 2009; Pirog-Good 1996). Thus, more educated groups in our analysis may show faster earnings growth in the later years of our study period.

In terms of absolute change in earnings, teen parents in the NLSY97 cohort are better off than those of NLSY79 cohort. The estimated coefficient of NLSY97 in Table 3 indicates that the earnings of NLSY97 teen fathers at age 29 are $9972 per year higher than those of NLSY79 teen fathers at age 29 (in constant 2007 dollars). The earnings of teen mothers in NLSY97 cohort are also higher than those of the NLSY79 cohort, by $8565. Both coefficients are statistically significant at $p < 0.01$.

However, even though teen parents' labor earnings improved over the years, they still earned less than their peers who delayed parenting. In Table 3, dummy variables for teen fathers indicate that teen fathers earned $2924 per year less than other male respondents in the NLSY97 cohort. The difference is much greater for teen mothers, by $4141 per year. Findings for both groups are statistically significant. This result implies that early parenthood has suppressed women's earnings more than men's earnings, at least in the early stages of their careers. The reduced earnings of teen mothers in their early 20s may be explained by their role as primary caregivers for their children, as well as the number of children teen mothers has during teenage years (Beutel 2000; Boden et al. 2008; Davis 2002; de Fátima Rato Padin et al. 2009; Furstenberg 1976; Hoffman et al. 1993; Hofferth et al. 2001; McDermott and Graham 2005; Teti and Lamb 1989; Thrane and Chen 2012). Also, our finding above implies that teen mothers became more likely to obtain a college degree and may be spending more time in school rather than working.

Although the signs of the difference-in-difference indicator (i.e., the interaction terms between the teen parent and the NLSY97 variables) suggest that the earning gaps at age 29 have grown between those who become parents in their teenage years and those who delayed parenting, these coefficients do not meet traditional thresholds for statistical significance.

Discussion and Conclusion

The two decades from 1980 to 2000 saw many changes in social phenomena including fertility rates, marriage rates, divorce rates, non-marital birthrates, cohabitation rates, and educational attainment (Ellwood and Jencks 2004; Isen and Stevenson 2011; Musick et al. 2012; Smock and Greenland 2010). Furthermore, employment-oriented welfare reform and more coercive and coordinated child support enforcement altered incentives and consequences for becoming teenage mothers and fathers (Huang and Han 2012; Nepomnyaschy and Garfinkel 2010; Plotnick et al. 2007). These rapid changes motivated our study of successive generations of teen parents in recent decades using matched panel data cohorts in NLSY79 and NLSY97 to assess whether changes had occurred in teen parenting outcomes.

Findings from this study have meaningful implications for public policies and programs related to teenage fathers and mothers and their children. First, the reported birth rates for teenage motherhood remained stable across the two cohorts, but the reported rates of teenage fatherhood increased. At first glance, these two findings seem somewhat contradictory. This finding can be explained by a combination of reasons.

First, teenage males may be more likely to partner with older women in the NLSY 1997 panel than in prior decades. Recently, the popular press and television has been popularizing the partnering of older women with younger men as exemplified by shows like The Cougar, Extreme Cougar Wives, Cougar Town, dating websites like CougarLife.com and a long series of articles on female cougars in the Huffington Post. From a more academic perspective, partnering between young males and older females is less common than is partnering between young females and older males. However, when it does occur, the age gap tends to be larger. According to the 2002 National Survey of Family Growth (NSFG 2002), more than one-quarter of teen males whose first sexual intercourse occurred before age 16 partnered with females who were three or more years females (Manlove et al. 2006). Even though data limitation in the NLSY surveys prevent further researches to calculate age difference between teen parents, younger males partnering with older female could play a certain role in the increased rate of teenage fatherhood.

Second, it is also possible that teenage girls are selecting male partners who are closer to their own ages. While Lindberg et al. (1997) found that only a small percentage of births to teen mothers involved older partners, any further shift towards men still in their teens could also contribute to our overall finding.

Third, the increase in teenage paternity could also be partially attributed to the overall increase in states' paternity establishment rates over the relevant years. Researchers have found that advances in genetic testing, voluntary in-hospital paternity establishment mandated by Congress, and more coordinated child support enforcement have been major reasons of increase in paternity establishment (Miller and Garfinkel 1999; Sorensen and Hill 2004). In the 1995 Annual Report to Congress, the Office of Child Support Enforcement (OCSE) noted a 2658% increase in recorded paternities between 1976 and 1995 (OCSE 1995). Also, in 1998, the Child Support Performance Incentive Act (CSPIA) modernized the child support enforcement incentive, including paternity establishment rates as part of the formula for distributing funding to states (Solomon-Fears 2013). Previous research indicates that CSPIA improved child support outcomes (Gerrish 2017; Huang and Edwards 2009; Pirog and Gerrish 2015), and changes in the child support enforcement could also contribute to increase paternity establishment and reported rates of teen fatherhood.

Finally, the stigma associated with nonmarital parenting has diminished between the NLSY 1979 and the NLSY 1997. Both better knowledge of the parenthood via paternity establish procedures as well as greater acceptance of unmarried parents as normative could lead to better reporting of paternity and also partially explain our findings.

We also find that the proportions of both teenage fathers and mothers who were unmarried at the time of their children's birth increased significantly between the two cohorts, reflecting the broader increasing pattern of non-marital births. Particularly, our examination of the marital and non-marital cohabitation of teenage mothers and fathers with their partners suggests that there was a significant shift from marital cohabitation to non-marital cohabitation, although the overall partner cohabitation rates were steady across the cohorts (Chandra et al. 2005; Martinez et al. 2012). Such trends imply that the increased number of children who are born to teenage fathers may be less likely to have sufficient financial support from their fathers, because teenage fathers are less likely to work or pay child support (Cancian et al. 2011, 2013; Nepomnyaschy and Garfinkel 2010; Pirog-Good and Good 1995). Also, an increase in non-marital cohabitation suggests increasingly unstable family environments for children of teen parents, because non-marital cohabitation is less likely to provide the full legal protection to children that marital cohabitation provides (Bartfeld 2000; Cancian et al. 2011, 2013).

Our additional findings on changes in educational attainment and labor earnings of teenage parenthood provide more insights into the changing socio-economic circumstances of teenage parents. The absolute rate of college degree attainment for teen fathers and mothers in the NLSY97 cohort has increased compared to the rate in the NLSY79 cohort. However, the real change is close to nil compared with men who were not teen fathers. The average inflation-adjusted income of teen fathers and mothers at age 29 was higher (both statistically significant) in the NLSY97 cohort compared with the NLSY79 cohort. However, accounting for the progress made by men and women who delayed parenthood between cohorts, the labor earnings of those who parented in their teens regressed. In many critical respects, this analysis paints a picture of increasingly disadvantaged socio-economic circumstances for teenage parents, which is consistent with previous findings (Barber et al. 1999; Becker 1981; Cancian et al. 2011, 2013; Fletcher and Wolfe 2012; Hotz et al. 2005; Manning et al 2014).

In sum, it seems that more coercive and coordinated child support enforcement did not discourage teenage fatherhood (see, for example, Cancian et al. 2011, 2013; Nepomnyaschy and Garfinkel 2010), though it may have encouraged more mothers to inform the fathers of their paternity. Increasing paternity establishment rates undoubtedly account for part of the increase in reports of paternity by young men between the two NLSY panels. The work-oriented welfare reform passed in the latter half of the 1990s seemed to improve labor market and education outcomes of teenage fathers and mothers in absolute terms, but these outcomes regressed compared with those of peers who were not teen parents. The same pattern was observed with the incomes of young adults who did and did not become parents in their teen years. Coupled with the insecurity of increased non-marital cohabitation, these patterns point to an increase in relative disadvantages for children born to teenagers.

As a direct and immediate aid to children of teenage fathers and mothers, government funded Head-Start programs and free pre-K programs may support children's early development and provide more time and resources for teenage mothers to resume their study or work. Additionally, the increased absolute education levels of teenage fathers and mothers suggest that those at risk of becoming teen parents are more likely to remain in high school than in previous years, which indicates that schools have a greater opportunity

to design and implement programs targeted toward those at greatest risk of unintended pregnancy and unprepared parenting. For those who are already teen parents, there are opportunities to create better programs to facilitate continued educational attainment. To date, many of the programs targeted at teen parents have been at the high school level, but the increasing rates of college degree obtainment suggest that institutions of higher education should also consider programmatic improvements to facilitate enrollment by students who became parents in their teens.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Appendix

See Table 5.

Table 5 Cumulative rate of early parenthood by age

Age	NLSY79 (born in 1962–1964)		NLSY97 (born in 1980–1982)	
	Male (%)	Female (%)	Male (%)	Female (%)
<17	0.76	3.97	1.24	4.50
17	1.76	8.27	3.02	8.17
18	3.92	12.76	5.63	13.27
19	6.97	18.59	8.80	18.91
20	10.67	24.49	12.01	24.06
21	14.85	29.40	15.64	28.28
22	19.66	34.89	19.44	32.83
23	24.10	39.21	22.75	36.37
24	27.82	43.65	26.25	39.87

All data are weighted by the customized longitudinal weights for the two cohorts. Men and women in our analysis sample from NLSY79 and NLSY97 were aged 15–17 at the first year of survey (N = 5016 for men and N = 4805 for women)

References

Abma, J. C., & Sonenstein, F. L. (2001). Sexual activity and contraceptive practices among teenagers in the United States, 1988 and 1995. *Vital and Health Statistics Series 23, Data from the National Survey of Family Growth, 21,* 1–79.

Acs, G., & Nelson, S. (2004). Changes in living arrangements during the late 1990s: Do welfare policies matter? *Journal of Policy Analysis and Management, 23*(2), 273–290. doi:10.1002/pam.20004.

Althaus, F. A., & Henshaw, S. K. (1994). The effects of mandatory delay laws on abortion patients and providers. *Family Planning Perspectives, 26*(5), 228–233. doi:10.2307/2135944.

Amato, P. R. (2005). The impact of family formation change on the cognitive, social, and emotional well-being of the next generation. *The Future of Children, 15*(2), 75–96.

Angrist, J. D., & Pischke, J. S. (2008). *Mostly harmless econometrics: An empiricist's companion.* Princeton, NJ: Princeton University Press.

Aparicio, E. M., Gioia, D., & Pecukonis, E. V. (2016). "I Can Get Through This and I Will Get Through This": The unfolding journey of teenage motherhood in and beyond foster care. *Qualitative Social Work.* doi:10.1177/1473325016656047.

Aquilino, W. S. (1996). The life course of children born to unmarried mothers: Childhood living arrangements and young adult outcomes. *Journal of Marriage and Family, 58*(2), 293–310. doi:10.2307/353496.

Argys, L. M., & Peters, H. E. (2003). Can adequate child support be legislated? Responses to guidelines and enforcement. *Economic Inquiry, 41*(3), 463–479. doi:10.1093/ei/cbg021.

Barber, J. S., Axinn, W. G., & Thornton, A. (1999). Unwanted childbearing, health, and mother-child relationships. *Journal of Health and Social Behavior, 40*(3), 231–257.

Barr, A. B., & Simons, R. L. (2012). College aspirations and expectations among new African-American mothers in late adolescence. *Gender and Education, 24*(7), 745–763. doi:10.1080/09540253.2012.712097.

Bartfeld, J. (2000). Child support and the post-divorce economic well-being of mothers, fathers, and children. *Demography, 37*(2), 203–213. doi:10.2307/2648122.

Becker, G. S. (1981). *A treatise on the family.* Cambridge, MA: Harvard University Press.

Beutel, A. M. (2000). The relationship between adolescent nonmarital childbearing and educational expectation: A cohort and period comparison. *Sociological Quarterly, 41*(2), 297–314. doi:10.1111/j.1533-8525.2000.tb00097.x.

Bitler, M., & Zavodny, M. (2001). The effect of abortion restrictions on the timing of abortions. *Journal of Health Economics, 20*(6), 1011–1032. doi:10.1016/S0167-6296(01)00106-0.

Boden, J. M., Fergusson, D. M., & John Horwood, L. (2008). Early motherhood and subsequent life outcomes. *Journal of Child Psychology and Psychiatry, 49*(2), 151–160. doi:10.1111/j.1469-7610.2007.01830.x.

Booth, A., Rustenbach, E., & McHale, S. (2008). Early family transitions and depressive symptom changes from adolescence to early adulthood. *Journal of Marriage and Family, 70*(1), 3–14. doi:10.1111/j.1741-3737.2007.00457.x.

Boyer, D., & Fine, D. (1992). Sexual abuse as a factor in adolescent pregnancy and child maltreatment. *Family Planning Perspectives, 24*(1), 4–19. doi:10.2307/2135718.

Brown, S. L. (2004). Family structure and child well-being: The significance of parental cohabitation. *Journal of Marriage and Family, 66*(2), 351–367.

Brown, S. L. (2006). Family structure transitions and adolescent well-being. *Demography, 43*(3), 447–461.

Brown, S. L., Manning, W. D., & Stykes, J. B. (2015). Family structure and child well-being: Integrating family complexity. *Journal of Marriage & Family, 77*(1), 177–190. doi:10.1111/jomf.12145.

Bumpass, L., & Lu, H. H. (2000). Trends in cohabitation and implications for children's family contexts in the United States. *Population Studies, 54*(1), 29–41. doi:10.2307/2584631.

Cancian, M., Heinrich, C. J., & Chung, Y. (2013). Discouraging disadvantaged fathers' employment: An unintended consequence of policies designed to support families. *Journal of Policy Analysis and Management, 32*(4), 758–784. doi:10.1002/pam.21707.

Cancian, M., Meyer, D. R., & Han, E. (2011). Child support: Responsible fatherhood and the quid pro quo. *The ANNALS of the American Academy of Political and Social Science, 635*(1), 140–162. doi:10.1177/0002716210393640.

Card, D. (1995). Using geographic variation in college proximity to estimate the return to schooling. In L. N. Christopher, E. Kenneth Grant, & R. Swidinsky (Eds.), *Aspects of Labour Market Behaviour: Essays in Honour of John Vanderkamp* (pp. 201–221). Toronto: University of Toronto Press.

Card, D. (1999). The Causal Effect of Education on Earnings. In C. A. Orley & C. David (Eds.), *Handbook of Labor Economics* (Vol. 3, Part A, pp. 1801–1863). Amsterdam: Elsevier.

Card, D. (2001). Estimating the return to schooling: Progress on some persistent econometric problems. *Econometrica, 69*(5), 1127–1160.

Card, J. J., & Wise, L. L. (1978). Teenage mothers and teenage fathers: The impact of early childbearing on the parents' personal and professional lives. *Family Planning Perspectives, 10*(4), 199–205. doi:10.2307/2134267.

Carlson, M. J. (2006). Family structure, father involvement, and adolescent behavioral outcomes. *Journal of Marriage and Family, 68*(1), 137–154.

Carlson, M. J., & Corcoran, M. E. (2001). Family structure and children's behavioral and cognitive outcomes. *Journal of Marriage and Family, 63*(3), 779–792.

Case, A. C., Lin, I. F., & McLanahan, S. S. (2003). Explaining trends in child support: Economic, demographic, and policy effects. *Demography, 40*(1), 171–189. doi:10.2307/3180817.

Cassetty, J. H., & Hutson, R. (2005). Effectiveness of federal incentives in shaping child support enforcement outcomes. *Children and Youth Services Review, 27*(3), 271–289.

Chafel, J. A. (1994). Meeting the developmental needs of young children of teen parents: A critique of social policy and implications for advocacy. *Child & Youth Care Forum, 23*(5), 297–314. doi:10.1007/bf02209064.

Chandra, A., Martinez, G. M., Mosher, W. D., Abma, J. C., & Jones, J. (2005). Fertility, family planning, and reproductive health of US women: Data from the 2002 National Survey of Family Growth. *Vital and Health Statistics. Series 23, Data from the National Survey of Family Growth, 25,* 1–160.

Cherlin, A., Griffith, J., & McCarthy, J. (1983). A note on maritally-disrupted men's reports of child support in the June 1980 Current Population Survey. *Demography, 20*(3), 385–389. doi:10.2307/2061249.

Cherlin, A. J. (2010). *The marriage-go-round: The state of marriage and the family in America today*. New York, NY: Knopf Doubleday Publishing Group.

Chumbler, N. R., Sanetmatsu, H., & Parrish-Sprowl, J. (2014). The implementation of public health communication messages to promote teenage mothers' sense of self and avert stigma. In J. J. Kronenfeld (Ed.), *Research in the sociology of health care: Technology, communication, disparities and government options in health and health care services* (Vol. 32, pp. 61–89). Bingley: Emerald Press.

Colman, S., & Joyce, T. (2011). Regulating abortion: Impact on patients and providers in Texas. *Journal of Policy Analysis and Management, 30*(4), 775–797. doi:10.1002/pam.20603.

Cooksey, E. C. (1997). Consequences of young mothers' marital histories for children's cognitive development. *Journal of Marriage and Family, 59*(2), 245–261. doi:10.2307/353468.

Davis, T. M. (2002). An examination of repeat pregnancies using problem behavior theory: Is it really problematic? *Journal of Youth Studies, 5*(3), 337–351. doi:10.1080/1367626022000006018.

de Fátima Rato Padin, M., de Souza e Silva, R., Chalem, E., Mitsuhiro, S. S., Barros, M. M., Guinsburg, R., et al. (2009). Brief report: A socio-demographic profile of multiparous teenage mothers. *Journal of Adolescence, 32*(3), 715–721. doi:10.1016/j.adolescence.2009.01.008.

Dennis, A., Henshaw, S. K., Joyce, T. J., Finer, L. B., & Blanchard, K. (2009). *The impact of laws requiring parental involvement for abortion: A literature review*. New York: Guttmacher Institute.

Ellis-Sloan, K. (2014). Teenage mothers, stigma and their 'Presentations of Self'. *Sociological Research Online, 19*(1), 9.

Ellwood, D. T., & Jencks, C. (2004). The uneven spread of single-parent families: What do we know? Where do we look for answers? In K. M. Neckerman (Ed.), *Social inequality* (pp. 3–78). New York: Russell Sage Foundation.

Eshbaugh, E. M. (2008). Teen mothers: Marriage, cohabitation, and educational achievement. *Journal of Family Social Work, 11*(1), 3–16. doi:10.1080/10522150802007162.

Fergusson, D. M., & Woodward, L. J. (2000). Teenage pregnancy and female educational underachievement: A prospective study of a New Zealand birth cohort. *Journal of Marriage and Family, 62*(1), 147–161. doi:10.1111/j.1741-3737.2000.00147.x.

Fletcher, J. M., & Wolfe, B. L. (2012). The effects of teenage fatherhood on young adult outcomes. *Economic Inquiry, 50*(1), 182–201. doi:10.1111/j.1465-7295.2011.00372.x.

Frost, J. J. (2013). *US Women's use of sexual and reproductive health services: Trends, sources of care and factors associated with use, 1995–2010*. New York: Guttmacher Institute.

Furstenberg, F. F. (1976). The social consequences of teenage parenthood. *Family Planning Perspectives, 8*(4), 148–164. doi:10.2307/2134201.

Furstenberg, F. F., Brooks-Gunn, J., & Morgan, S. P. (1987). *Adolescent mothers in later life*. New York: Cambridge University Press.

Furstenberg, F. F., Levine, J. A., & Brooks-Gunn, J. (1990). The children of teenage mothers: Patterns of early childbearing in two generations. *Family Planning Perspectives, 22*(2), 54–61. doi:10.2307/2135509.

Garfinkel, I., Meyer, D. R., & McLanahan, S. S. (1998). A brief history of child support policies in the United States. In I. Garfinkel, S. S. McLanahan, D. R. Meyer, & J. A. Seltzer (Eds.), *Fathers under fire: The revolution in child support enforcement* (pp. 14–30). New York: Russell Sage.

Geronimus, A., & Korenman, S. (1993). The socioeconomic costs of teenage childbearing: Evidence and interpretation. *Demography, 30*(2), 281–290. doi:10.2307/2061842.

Gerrish, E. (2017). The effect of the child support performance and incentive act of 1998 on rewarded and unrewarded performance goals. *Journal of Policy Analysis and Management, 36*(1), 65–96. doi:10.1002/pam.21957.

Glikman, H. (2004). Low-income young fathers: Contexts, connections, and self. *Social Work, 49*(2), 195–206. doi:10.1093/sw/49.2.195.

Goldin, C. D., & Katz, L. F. (2009). *The race between education and technology*. Cambridge, MA: Harvard University Press.

Graefe, D. R., & Lichter, D. T. (2008). Marriage patterns among unwed mothers: Before and after PRWORA. *Journal of Policy Analysis and Management, 27*(3), 479–497. doi:10.2307/30163437.

Grossman, D., Baum, S., Fuentes, L., White, K., Hopkins, K., Stevenson, A., et al. (2014). Change in abortion services after implementation of a restrictive law in Texas. *Contraception, 90*(5), 496–501. doi:10.1016/j.contraception.2014.07.006.

Guzzo, K., & Furstenberg, F. (2007). Multipartnered fertility among American men. *Demography, 44*(3), 583–601. doi:10.1353/dem.2007.0027.

Hao, L., & Cherlin, A. J. (2004). Welfare reform and teenage pregnancy, childbirth, and school dropout. *Journal of Marriage and Family, 66*(1), 179–194. doi:10.1111/j.0022-2445.2004.00012.x-i1.

Hardy, J. B., Duggan, A. K., Masnyk, K., & Pearson, C. (1989). Fathers of children born to young urban mothers. *Family Planning Perspectives, 21*(4), 159–187. doi:10.2307/2135806.

Hardy, J. B., Shapiro, S., Astone, N. M., Miller, T. L., Brooks-Gunn, J., & Hilton, S. C. (1997). Adolescent childbearing revisited: The age of inner-city mothers at delivery is a determinant of their children's self-sufficiency at age 27 to 33. *Pediatrics, 100*(5), 802–809.

Hernandez, D. J., & Brandon, P. D. (2002). Who are the fathers of today? In C. S. Tamis-LeMonda & N. Cabrera (Eds.), *Handbook of father involvement: Multidisciplinary perspectives* (pp. 33–62). Mahwah, NJ: Lawrence Erlbaum.

Hofferth, S. L. (2006). Residential father family type and child well-being: Investment versus selection. *Demography, 43*(1), 53–77. doi:10.1353/dem.2006.0006.

Hofferth, S. L., & Anderson, K. G. (2003). Are all dads equal? Biology versus marriage as a basis for paternal investment. *Journal of Marriage and Family, 65*(1), 213–232. doi:10.1111/j.1741-3737.2003.00213.x.

Hofferth, S. L., & Moore, K. A. (1979). Early childbearing and later economic well-being. *American Sociological Review, 44*(5), 784–815. doi:10.2307/2094528.

Hofferth, S. L., & Reid, L. (2002). Early childbearing and children's achievement and behavior over time. *Perspectives on Sexual and Reproductive Health, 34*(1), 41–49. doi:10.2307/3030231.

Hofferth, S. L., Reid, L., & Mott, F. L. (2001). The effects of early childbearing on schooling over time. *Family Planning Perspectives, 33*(6), 259–267. doi:10.2307/3030193.

Hoffman, S. D., Foster, E. M., & Furstenberg, F. F. (1993). Reevaluating the costs of teenage childbearing. *Demography, 30*(1), 1–13. doi:10.2307/2061859.

Hotz, V. J., McElroy, S. W., & Sanders, S. G. (2005). Teenage childbearing and its life cycle consequences: Exploiting a natural experiment. *The Journal of Human Resources, 40*(3), 683–715. doi:10.2307/4129557.

Huang, C. C. (2010). Trends in child support from 1994 to 2004: Does child support enforcement work? *Journal of Policy Practice, 9*(1), 36–53. doi:10.1080/15588740903389434.

Huang, C. C., & Edwards, R. L. (2009). The relationship between state efforts and child support performance. *Children and Youth Services Review, 31*(2), 243–248.

Huang, C. C., & Han, K. Q. (2012). Child support enforcement in the United States: Has policy made a difference? *Children and Youth Services Review, 34*(4), 622–627. doi:10.1016/j.childyouth.2011.12.006.

Hynes, K., Joyner, K., Peters, H. E., & DeLeone, F. Y. (2008). The transition to early fatherhood: National estimates based on multiple surveys. *Demographic Research, 18*(12), 337–376.

Isen, A., & Stevenson, B. (2011). Women's education and family behavior. *Demography and the Economy*, 107.

Joyce, T., Henshaw, S., Dennis, A., Finer, L., & Blanchard, K. (2009). *The impact of state mandatory counseling and waiting period laws on abortion: A literature review*. New York: Guttmacher Institute.

Joyce, T., Henshaw, S., & Skatrud, J. (1997). The impact of Mississippi's mandatory delay law on abortions and births. *JAMA, 278*(8), 653–658. doi:10.1001/jama.1997.03550080063040.

Joyce, T., & Kaestner, R. (2001). The impact of mandatory waiting periods and parental consent laws on the timing of abortion and state of occurrence among adolescents in Mississippi and South Carolina. *Journal of Policy Analysis and Management, 20*(2), 263–282. doi:10.2307/3325799.

Joyner, K., Peters, H. E., Hynes, K., Sikora, A., Taber, J., & Rendall, M. (2012). The quality of male fertility data in major U.S. surveys. *Demography, 49*(1), 101–124. doi:10.1007/s13524-011-0073-9.

Kaestner, R., Korenman, S., & O'Neill, J. (2003). Has welfare reform changed teenage behaviors? *Journal of Policy Analysis and Management, 22*(2), 225–248. doi:10.1002/pam.10115.

Kalil, A., & Kunz, J. (1999). First births among unmarried adolescent girls: Risk and protective factors. *Social Work Research, 23*(3), 197–208. doi:10.1093/swr/23.3.197.

Kearney, M. S., & Levine, P. B. (2015). Investigating recent trends in the U.S. teen birth rate. *Journal of Health Economics, 41,* 15–29. doi:10.1016/j.jhealeco.2015.01.003.

Ketterlinus, R. D., Lamb, M. E., Nitz, K., & Elster, A. B. (1992). Adolescent nonsexual and sex-related problem behaviors. *Journal of Adolescent Research, 7*(4), 431–456. doi:10.1177/074355489274003.

Lamb, M. E., Elster, A. B., & Tavaré, J. (1986). Behaviorial profiles of adolescent mothers and partners with varying intracouple age differences. *Journal of Adolescent Research, 1*(4), 399–408. doi:10.1177/074355488614005.

Landry, D. J., & Forrest, J. D. (1995). How old are U.S. fathers? *Family Planning Perspectives, 27*(4), 159–165. doi:10.2307/2136260.

Larson, N., Hussey, J., Gillmore, M. R., & Gilchrist, L. (1996). What about dad? Fathers of children born to school-age mothers. *Families in Society: The Journal of Contemporary Social Services, 77*(5), 279–289.

Levine, J. A., Pollack, H., & Comfort, M. E. (2001). Academic and behavioral outcomes among the children of young mothers. *Journal of Marriage and Family, 63*(2), 355–369. doi:10.1111/j.1741-3737.2001.00355.x.

Lichter, D. T., & Qian, Z. (2008). Serial cohabitation and the marital life course. *Journal of Marriage and Family, 70*(4), 861–878. doi:10.1111/j.1741-3737.2008.00532.x.

Lindberg, L. D., Sonenstein, F. L., Ku, L., & Martinez, G. (1997). Age differences between minors who give birth and their adult partners. *Family Planning Perspectives, 29*(2), 61–66. doi:10.2307/2953363.

Lopoo, L. M., & DeLeire, T. (2006). Did welfare reform influence the fertility of young teens? *Journal of Policy Analysis and Management, 25*(2), 275–298. doi:10.1002/pam.20173.

Males, M., & Chew, K. S. V. (1996). The ages of fathers in California adolescent births, 1993. *American Journal of Public Health, 86*(4), 565–568.

Manlove, J. (1997). Early motherhood in an intergenerational perspective: The experiences of a British cohort. *Journal of Marriage and Family, 59*(2), 263–279. doi:10.2307/353469.

Manlove, J., Steward-Streng, N., Peterson, K., Scott, M., & Wildsmith, E. (2013). Racial and ethnic differences in the transition to a teenage birth in the United States. *Perspectives on Sexual and Reproductive Health, 45*(2), 89–100. doi:10.1363/4508913.

Manlove, J., Terry-Humen, E., & Ikramullah, E. (2006). Young teenagers and older sexual partners: Correlates and consequences for males and females. *Perspectives on Sexual and Reproductive Health, 38*(4), 197–207. doi:10.1363/3819706.

Manning, W. D., Brown, S. L., & Payne, K. K. (2014). Two decades of stability and change in age at first union formation. *Journal of Marriage and Family, 76*(2), 247–260. doi:10.1111/jomf.12090.

Manning, W. D., & Cohen, J. A. (2015). Teenage cohabitation, marriage, and childbearing. *Population Research and Policy Review, 34*(2), 161–177. doi:10.1007/s11113-014-9341-x.

Marsiglio, W. (1988). Commitment to social fatherhood: Predicting adolescent males' intentions to live with their child and partner. *Journal of Marriage and Family, 50*(2), 427–441. doi:10.2307/352008.

Marsiglio, W. (1994). Young nonresident biological fathers. *Marriage & Family Review, 20*(3–4), 325–348. doi:10.1300/J002v20n03_02.

Marsiglio, W., Amato, P., Day, R. D., & Lamb, M. E. (2000). Scholarship on fatherhood in the 1990s and beyond. *Journal of Marriage and Family, 62*(4), 1173–1191. doi:10.1111/j.1741-3737.2000.01173.x.

Martinez, G., Copen, C. E., & Abma, J. C. (2011). Teenagers in the United States: sexual activity, contraceptive use, and childbearing, 2006–2010 national survey of family growth. *Vital and Health Statistics Series 23. Data from the National Survey of Family Growth, 31,* 1–35.

Martinez, G., Daniels, K., & Chandra, A. (2012). Fertility of men and women aged 15–44 years in the United States: National Survey of Family Growth, 2006–2010. *National Health Statistics Reports, 51,* 1.

McDermott, E., & Graham, H. (2005). Resilient young mothering: Social inequalities, late modernity and the 'Problem' of 'Teenage' motherhood. *Journal of Youth Studies, 8*(1), 59–79. doi:10.1080/13676260500063702.

Medoff, M. H. (2007). Price, restrictions and abortion demand. *Journal of Family and Economic Issues, 28*(4), 583–599. doi:10.1007/s10834-007-9080-9.

Meier, K. J., Haider-Markel, D. P., Stanislawski, A. J., & McFarlane, D. R. (1996). The impact of state-level restrictions on abortion. *Demography, 33*(3), 307–312. doi:10.2307/2061763.

Miller, B. C., & Moore, K. A. (1990). Adolescent sexual behavior, pregnancy, and parenting: research through the 1980s. *Journal of Marriage and Family, 52*(4), 1025–1044. doi:10.2307/353317.

Miller, C., & Garfinkel, I. (1999). The determinants of paternity establishment and child support award rates among unmarried women. *Population Research and Policy Review, 18*(3), 237–260. doi:10.1023/a:1006137601213.

Moore, K. A., Nord, C. W., & Peterson, J. L. (1989). Nonvoluntary sexual activity among adolescents. *Family Planning Perspectives, 21*(3), 110–114. doi:10.2307/2135660.

Musick, K. (2002). Planned and unplanned childbearing among unmarried women. *Journal of Marriage and Family, 64*(4), 915–929. doi:10.1111/j.1741-3737.2002.00915.x.

Musick, K., Brand, J. E., & Davis, D. (2012). Variation in the relationship between education and marriage: Marriage market mismatch? *Journal of Marriage and Family, 74*(1), 53–69. doi:10.1111/j.1741-3737.2011.00879.x.

Nayak, A., & Kehily, M. J. (2014). 'Chavs, chavettes and pramface girls': Teenage mothers, marginalised young men and the management of stigma. *Journal of Youth Studies, 17*(10), 1330–1345. doi:10.1080/13676261.2014.920489.

Nepomnyaschy, L., & Garfinkel, I. (2010). Child support enforcement and fathers' contributions to their nonmarital children. *Social Service Review, 84*(3), 341–380. doi:10.1086/655392.

Office of Child Support Enforcement (1995). FY1995 annual report to congress. Office of Child Support Enforcement, Administration for Children, Families, U.S. Department of Health, and Human Service.

Pirog, M. A., & Gerrish, E. (2015). Impact of the child support performance and incentive act on child support order establishment. *Children and Youth Services Review, 58,* 104–117. doi:10.1016/j.childyouth.2015.09.006.

Pirog, M. A., & Ziol-Guest, K. M. (2006). Child support enforcement: Programs and policies, impacts and questions. *Journal of Policy Analysis and Management, 25*(4), 943–990. doi:10.1002/pam.20215.

Pirog-Good, M. A. (1988). Teenage paternity, child support, and crime. *Social Science Quarterly, 69*(3), 527–546.

Pirog-Good, M. A. (1995). The family background and attitudes of teen fathers. *Youth & Society, 26*(3), 351–376. doi:10.1177/0044118x95026003004.

Pirog-Good, M. A. (1996). The education and labor market outcomes of adolescent fathers. *Youth & Society, 28*(2), 236–262. doi:10.1177/0044118x96028002005.

Pirog-Good, M. A., & Good, D. H. (1995). Child support enforcement for teenage fathers: Problems and prospects. *Journal of Policy Analysis and Management, 14*(1), 25–42. doi:10.2307/3325431.

Plotnick, R. D., Garfinkel, I., McLanahan, S. S., & Ku, I. (2007). The impact of child support enforcement policy on nonmarital childbearing. *Journal of Policy Analysis and Management, 26*(1), 79–98. doi:10.1002/pam.20228.

Robbins, C., Kaplan, H. B., & Martin, S. S. (1985). Antecedents of pregnancy among unmarried adolescents. *Journal of Marriage and Family, 47*(3), 567–583. doi:10.2307/352259.

Rozie-Battle, J. (2003). Economic support and the dilemma of teen fathers. *Journal of Health & Social Policy, 17*(1), 73–86.

Santelli, J. S., & Melnikas, A. J. (2010). Teen fertility in transition: recent and historic trends in the United States. *Annual Review of Public Health, 31,* 371–383.

Schoen, R., Landale, N., & Daniels, K. (2007). Family transitions in young adulthood. *Demography, 44*(4), 807–820. doi:10.1353/dem.2007.0044.

Seltzer, J. A. (2000). Families formed outside of marriage. *Journal of Marriage and Family, 62*(4), 1247–1268. doi:10.1111/j.1741-3737.2000.01247.x.

Smith, H. L., Morgan, S. P., & Koropeckyj-Cox, T. (1996). A decomposition of trends in the nonmarital fertility ratios of blacks and whites in the United States, 1960-1992. *Demography, 33*(2), 141–151. doi:10.2307/2061868.

SmithBattle, L. (2007). "I Wanna Have a Good Future": Teen mothers' rise in educational aspirations, competing demands, and limited school support. *Youth & Society, 38*(3), 348–371. doi:10.1177/0044118x06287962.

Smock, P. J., & Greenland, F. R. (2010). Diversity in pathways to parenthood: Patterns, implications, and emerging research directions. *Journal of Marriage and Family, 72*(3), 576–593. doi:10.1111/j.1741-3737.2010.00719.x.

Solomon-Fears, C. (2013). *Child support enforcement program incentive payments: Background and policy issues.* Washington: Congressional Research Office.

Sorensen, E. (1997). A national profile of nonresident fathers and their ability to pay child support. *Journal of Marriage and Family, 59*(4), 785–797. doi:10.2307/353782.

Sorensen, E., & Hill, A. (2004). Single mothers and their child-support receipt: How well is child-support enforcement doing? *Journal of Human Resources, 39*(1), 135–154. doi:10.3368/jhr.XXXIX.1.135.

Stouthamer-Loeber, M., & Wei, E. H. (1998). The precursors of young fatherhood and its effect on delinquency of teenage males. *Journal of Adolescent Health, 22*(1), 56–65. doi:10.1016/s1054-139x(97)00211-5.

Stykes, J. B., Manning, W. D., & Brown, S. L. (2013). Nonresident fathers and formal child support: Evidence from the CPS, the NSFG, and the SIPP. *Demographic Research, 29,* 1299–1330. doi:10.1007/s10834-009-9172-9.

Su, J., Dunifon, R., & Sassler, S. (2015). Better for baby? The retreat from mid-pregnancy marriage and implications for parenting and child well-being. *Demography, 52*(4), 1167–1194. doi:10.1007/s13524-015-0410-5.

Taylor, D. J., Chavez, G. F., Adams, E. J., Chabra, A., & Shah, R. S. (1999). Demographic characteristics in adult paternity for first births to adolescents under 15 years of age. *Journal of Adolescent Health, 24*(4), 251–258. doi:10.1016/S1054-139X(98)00122-0.

Teachman, J. (2003). Childhood living arrangements and the formation of coresidential unions. *Journal of Marriage and Family, 65*(3), 507–524. doi:10.2307/3600019.

Teti, D. M., & Lamb, M. E. (1989). Socioeconomic and marital outcomes of adolescent marriage, adolescent childbirth, and their co-occurrence. *Journal of Marriage and Family, 51*(1), 203–212. doi:10.2307/352381.

Thornberry, T. P., Smith, C. A., & Howard, G. J. (1997). Risk factors for teenage fatherhood. *Journal of Marriage and Family, 59*(3), 505–522. doi:10.2307/353942.

Thrane, L. E., & Chen, X. (2012). Impact of running away on girls' pregnancy. *Journal of Adolescence, 35*(2), 443–449. doi:10.1016/j.adolescence.2011.07.011.

Upchurch, D. M., & McCarthy, J. (1990). The timing of a first birth and high school completion. *American Sociological Review, 55*(2), 224–234.

Ventura, S. J., & Bachrach, C. A. (2000). Nonmarital childbearing in the United States, 1940–99. *National vital statistics reports, 48*(16), 1–40.

Vinnerljung, B., Franzén, E., & Danielsson, M. (2007). Teenage parenthood among child welfare clients: A Swedish national cohort study of prevalence and odds. *Journal of Adolescence, 30*(1), 97–116. doi:10.1016/j.adolescence.2005.12.002.

Waite, L. J., & Moore, K. A. (1978). The impact of an early first birth on young women's educational attainment. *Social Forces, 56*(3), 845–865. doi:10.2307/2577222.

Wilkinson, D. L., Magora, A., Garcia, M., & Khurana, A. (2009). Fathering at the margins of society. *Journal of Family Issues, 30*(7), 945–967. doi:10.1177/0192513x09332354.

Wu, L. L. (2008). Cohort estimates of nonmarital fertility for U.S. women. *Demography, 45*(1), 193–207. doi:10.1353/dem.2008.0001.

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

Yardley, E. (2008). Teenage mothers' experiences of stigma. *Journal of Youth Studies, 11*(6), 671–684. doi:10.1080/136762608023.