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Impacts of Access to Contraception and Abortion Services on Men's Life Course Outcomes: Results of Add Health Analyses

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Executive Summary

A great deal of research demonstrates effects of access to contraception and abortion for women and their children, but much less research has considered the impacts of these developments for men. In this analysis, we leverage data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) to explore the possibility of "spillover" effects on male high school classmates related to women's access to contraception during adolescence and young adulthood. We use school-based surveys of sexual activity and use of birth control pills to ask whether males who attend schools with higher proportions of contracepting young women classmates have different adult outcomes than those attending schools with lower proportions. We hypothesized that higher rates of birth control use would lower the likelihood of pregnancy during the adolescent years, which would in turn increase young men's future education levels, income levels, and age at first birth.

Our analyses did not reveal statistically significant associations between birth control use and young men's longer-term education, income, and family formation outcomes. However, we speculate that these null results are more likely to reflect low statistical power and data limitations than a true lack of association between these factors. Specifically, because surveys only gather information on birth control use when women report being sexually active, the measure may not fully reflect the range of contraceptive users. Additionally, findings of "spillover" effects are expected to be smaller than main effects of contraception for women, limiting our ability to uncover these effects in modest-sized samples. Future research should explore whether larger samples allow more precision in estimates, but most data may suffer from an inability to measure "peer" young women of men under study. Nonetheless, it is important to continue examining the role of contraceptive access in men's lives as it is a potentially important element to understanding the full range of impacts of contraceptive access on people's life outcomes.

Background

A large body of research from many disciplines including economics, sociology, public policy, gender and women's studies, and health sciences has demonstrated the impacts of access and use of contraceptive methods and abortion services on the life course outcomes of women[1] in the U.S. Having more control over one's fertility has been associated with women's ability to invest in educational attainment, diversify career and marriage choices, and increase relationship satisfaction, among many other dimensions. Bailey

[1] Contraception is used by individuals who do not identify as women, including trans men and gender nonconforming individuals. However, the research we review here uses the term 'women' and does not include trans or other expansive gender identities.

(2006) documents that early access to *Enovid* (the first birth control pill) in 1960 reduced the likelihood of first birth before age 22, increased the number of women in the paid work force and increased the number of annual hours worked. Guldi (2008) and others have expanded this work to focus on state laws that gave minors access to abortion and birth control pills prior to *Roe v. Wade* to show reductions in birth rates among young women. In other work, Bailey et al. (2012) documents that access to the Pill accounted for 10% of the shrinking of the gender gap in pay in the 1980s and 30% in the 1990s. Myers (2017) shows evidence that access to abortion services in the 1960s and 1970s substantially influenced delays in childbearing. In particular, she documents that, in policy environments in which abortion was legal and readily accessible, young women experienced a 34 percent reduction in first births, a 19 percent reduction in first marriages, and a 63 percent reduction in the incidence of marriage prior to age 19 in which the young woman was likely pregnant at the time of the wedding. Bailey (2013) has gone on to show that family planning programs in the 1960s also impacted the *next generation*, increasing children's college completion, labor force participation, and family income decades later.

While the life-course impacts of contraceptive and abortion access for women as well as the next generation are well documented, much less research has explored the impacts of these developments for men. It is possible that this oversight has led policymakers and the public to substantially undervalue the total impacts of access to contraception and abortion.

Indeed, Steingrimdottier (2016) provides some initial evidence that the careers of men were shaped by legal access to the Pill and abortions in the 1960s and 1970s, stating that her results on family income and occupations "suggest that men were significantly and positively affected by increased access to the birth control pill and abortions, and may have been the ones who really gained from these policy changes." The author speculates that increases in age at first birth for men is likely an important component of the explanation of these findings. However, that study does not test this hypothesis.

In this analysis, we attempt to fill in these major gaps in knowledge about the potential impacts of contraceptive and abortion access among men in the U.S. To do so, we leverage the National Longitudinal Study of Adolescent to Adult Health (Add Health). This study collects detailed information—including on social networks, sexual and contraceptive behaviors, and abortion—on over 20,000 students in grades 7-12 in approximately 90 high schools in the U.S. These students are then re-surveyed at ages 22 and 30, allowing analysis of both adolescence and young adulthood. Because these data are collected in schools, they are highly clustered, meaning that we can measure the use of contraception by young women classmates for over 10,000 male respondents. This unique data structure allows us to examine how young men's peers' contraceptive use affects the men's future income, investment in education, and the age at which they have their first child. We hypothesized that men whose young women classmates (i.e., their potential partners) use birth control at a higher rate will be less likely to experience pregnancy during the adolescent years. This lower likelihood of adolescent pregnancy in turn may change how these men make decisions about their human capital investment, increasing their years of education and their eventual income.

Methods

Data source

We use Add Health Waves I-IV. Wave I was conducted in 1995, with participants in grades 7-12 at selected schools. The sample was selected from 80 geographically distributed high schools and 52 middle schools

in the U.S. Wave II occurred one year later, and Wave III occurred the year after the youngest respondents had just graduated from high school. We use the data in Waves I-III to create measures of young women's contraceptive use and to obtain baseline data on respondents' demographic characteristics. Wave IV was conducted in 2008, when participants were between 24 and 34 years old.

We exclude respondents who were not interviewed in both Wave I and Wave IV; due to the study design, some of these respondents were not interviewed in Wave II or Wave III. We also exclude respondents without a sufficient number of peers at their school to construct a reliable peer measure. We have set the benchmark at five or more women in the grade and 15 or more total students at the school to achieve the desired level of variation after fixed effects.

Measures

To quantify **peer contraceptive use**, we use the percentage of young women classmates in the same grade and school as a given male respondent who use birth control pills and/or are sexually active. Since men typically have sexual relationships with relatively younger partners, we also investigated variations in this definition of peers to include women in grades lower than the respondent rather than those in the same grade, but results were substantively very similar.

We focused on use of birth control pills in this analysis because that was the most effective and widely used method for which there is Add Health data available, and in order to produce results that could be compared to earlier work, including by Bailey (2006, 2012, 2013), and Steingrimdottier (2016). Importantly, Waves I and II occurred long before the introduction of the newest generation of long-acting reversible contraceptive methods. By nature of the survey design in Waves I and II, respondents were not asked whether they regularly use birth control pills unless they previously indicated being sexually active. This aspect of data collection means that the peers' birth control measure represents the percentage of peers who are using birth control pills *and* who are sexually active. In order to control for the effects of sexual activity alone, we also include the percentage of young women who indicate that they are sexually active and *not* using birth control pills. These data are available in each of the four waves. To obtain a longer-term picture of the peer environment throughout the adolescent years, we take the maximum of the Wave I, Wave II, and, for respondents who were younger in Wave I, Wave III peer measures.

The outcomes of interest are primarily measured in Wave IV of the survey, which takes place well after respondents have graduated from high school. **Years of education** is a count of years in school. **Household income** is missing for many respondents, either because they are not in the workforce during Wave IV or do not wish to disclose their income. We constructed **age at first birth** from Wave III and Wave IV retrospective question responses detailing dates for all pregnancies and births. By respondent ID, we identify the earliest birth. We excluded a small number of births where the birth date indicated a parent less than fourteen years old and the birth date was inconsistent across Waves III-IV; in these cases, we list the second-youngest birth (over age 14) as the first birth.

Analysis

Income

We investigated the effect of young women's contraceptive use on men's income using a school-level fixed effects approach. This strategy adjusts for the average household income of students in the school

in order to eliminate bias from unobserved local characteristics, while controlling for individual characteristics, peers' contraceptive use, and peers' sexual activity.

The reduced form specification is loosely based on work in the "peer effects" literature (Bifulco, Fletcher, and Ross 2011; Fletcher and Yakusheva 2016; Steingrimsdottir 2016):

$$Y_{ist} = \beta 1 X_{is} + \beta 2 Peers_{ist-1} + S_s + \varepsilon_{ist}$$

Here, Y_{ist} is log income at Wave IV; X_{is} is a vector of characteristics including age, race, presence of parental figures in the household, parental education level, whether the respondent's mother was in the work force, whether the respondent reported being Catholic, standardized Peabody Picture Vocabulary Test (PVT) score, indicator variables for grade-level, high school, and college graduation, and occupation; $Peers_{ist}$ is a school- and grade-level percentage of young women using birth control; S_s is a school-level fixed effect; and ε_{ist} is an individual-level error term. There are two time periods: a "during school" first period including Waves I-III and an outcomes period including data from Waves III and IV.

Years of education

We used a similar approach to model years of education. The regression equation is as follows:

$$Ed_{ist} = \gamma 1 X_{is} + \gamma 2 Peers_{ist-1} + S_s + v_{ist}$$

The vector X_{ist} includes age, race, presence of parental figures in the household, parental education level, whether the respondent's mother was in the work force, whether the respondent reported being Catholic, standardized PVT score, and grade point average (GPA). S_s is a school-level fixed effect; and v_{ist} is an individual-level error term.

Age at first birth

We modeled age at first birth using a Cox proportional hazard regression analysis. This approach allows us to include the total sample of individuals, as opposed to only those who had children by Wave IV. The Cox proportional hazard analysis estimates the hazard ratio for childbirth, such that a high hazard ratio indicates a high likelihood of birth, and an earlier expected first birth. The regression equation is as follows:

$$\lambda(t|\delta, S) = \lambda 0(t) \exp(\delta 1 X_{is} + \delta 2 Peers_{ist-1} + Ss + \omega_{ist})$$

Here λ is the hazard ratio and t is age at first birth. The characteristics vector X includes age, race, presence of parental figures in the household, parental education level, whether the respondent's mother was in the work force, whether the respondent reported being Catholic, standardized PVT score, and indicator variables for grade-level, high school, and college graduation. S_s is a school-level fixed effect; and ω_{ist} is an individual-level error term.

Results

Sociodemographic characteristics of analytic sample

Table 1 below presents sociodemographic characteristics of our analytic sample. Women's mean age was 28.4 years old in Wave IV. Ninety percent of women graduated from high school and 40% had graduated from college. Women's mean age at first birth was 21.8, and 20% had a pregnancy before the age of 19. Men's mean age was 28.6 years old. Ninety percent of men had graduated from high school and 30% had graduated from college. Men's mean age at partner's first birth was 23.5, and 10% had a pregnant partner before they were 19 years old. We observed no substantial gender differences in these characteristics.

Table 1. Sociodemographic characteristics of analytic sample, by gender

	Women (N=7,839)	Men (N=6,722)
	Mean (SD)	*Mean (SD)*
Wave I peers using birth control pills (%)	-	0.10 (0.08)
Wave I peers sexually active, not using birth control pills (%)	-	0.3 (0.18)
Sexually active in Wave I (%)	-	0.4 (0.23)
Age (years) in Wave IV	28.4 (1.77)	28.6 (1.78)
Black (%)	0.20 (0.43)	0.20 (0.41)
High school graduates (%)	0.90 (0.24)	0.90 (0.30)
College graduates (%)	0.40 (0.48)	0.30 (0.45)
Years of education	14.0 (2.45)	13.4 (2.31)
Age at first birth	21.8 (3.92)	23.5 (3.71)
Own/partner pregnancy under age 19 (%)	0.20 (0.40)	0.10 (0.27)
Own/partner birth under age 19 (%)	0.10 (0.34)	0.0 (0.20)

Women's use of birth control pills

Table 2 below presents correlates of young women's use of birth control pills by Wave II. Catholic women and women whose mothers were not in the labor force were less likely to report using birth control in Wave II; being sexually active in Wave I was highly associated with use of birth control pills in Wave II.

Table 2. Women's Propensity to Report Use of Birth Control Pills by Wave II (N=7,838)

	Wave I Peers[†]
Wave I peers using birth control pills	0.793* (0.360)
Wave I peers sexually active, not using birth control pills	-0.354* (0.157)
Sexually active in Wave I	0.482*** (0.0520)
Age	0.145 (0.480)
Age squared	-0.00360 (0.00834)
Mother figure	0.161 (0.0996)
Mother has college degree	0.0363 (0.0565)
Mother not in labor force	-0.154* (0.0630)
Father figure	-0.0122 (0.0578)
Father has college degree	0.0803 (0.0639)
Catholic	-0.100* (0.0502)
Grade point average (GPA)	0.0398 (0.0331)
Standardized Peabody Picture Vocabulary Test (PVT) score	0.00316 (0.00188)
Constant	-1.991 (6.832)

[†] Regression coefficient (standard error). Standard errors grouped at school level. Controls include grade level and imputation indicators.
* p < 0.05, ** p < 0.01, *** p < 0.001

Women's years of education

As shown in **Table 3** below, the effect of peers' birth control pill use on education was not significant for women, neither before nor after inclusion of school-level fixed effects. A 10% increase in the proportion of peers using birth control pills was associated with 0.11 fewer years in the baseline model and 0.015 additional years of education in the fixed effects model.

Table 3. Comparison of Fixed Effects vs. No Fixed Effects, Wave I Measures in Education Regression, Women (N=7,838)

	Wave I, No FE†	Wave I, FE†
Wave I peers using birth control pills	-1.080 (.553)	0.153 (0.510)
Wave I peers sexually active, not using birth control pills	-1.180*** (0.349)	-0.234 (0.376)
R^2	0.388	0.428

† Regression coefficient (standard error) (except R^2). Standard errors grouped at school level. Controls include age, age^2, grade indicators, Black, presence of mother figure, whether mother had college degree, whether mother was in labor force, presence of father figure, whether father had college degree, Catholic, GPA, standardized PVT score, births under age 19, pregnancies under age 19, and imputation indicators.
* p < 0.05, ** p < 0.01, *** p < 0.001

Women's income

As shown in **Table 4** below, the effect of peers' birth control pill use on household income was non-significant, both before and after inclusion of school level fixed effects. A 10% increase in the proportion of peers using birth control pills was associated with a 3.3% decrease in income in the baseline model and a 5.7% increase in income in the fixed effects model.

Table 4. Comparison of Fixed Effects vs. No Fixed Effects, Wave I Peer Measures in Income Regression, Women (N=6,682)

	Wave I, No FE†	Wave I, FE†
Wave I peers using birth control pills	-0.325 (0.268)	0.574 (0.355)
Wave I peers sexually active, not using birth control pills	-0.0963 (0.144)	0.0725 (0.221)
R^2	0.219	0.255

† Regression coefficient (standard error) (except R^2). Standard errors grouped at school level. Controls include age, age^2, grade indicators, occupation indicators, Black, presence of mother figure, whether mother had college degree, whether mother was in labor force, presence of father figure, whether father had college degree, Catholic, GPA, standardized PVT score, high school graduate, college graduate, births under age 19, pregnancies under age 19, and imputation indicators.
* p < 0.05, ** p < 0.01, *** p < 0.001

Women's age at first birth

For women, the coefficients on peers in the age at first birth regression were significant and positive before fixed effects are incorporated, as shown in **Table 5** below. In the Cox proportional hazard model, the positive coefficient indicates an increase in the estimated hazard rate (i.e., greater likelihood of birth) and thus a lower expected age at first birth.

Table 5. Comparison of Fixed Effects vs. No Fixed Effects, Wave I Peer Measures in Age at First Birth, Women (N=7,839)

	Wave I, No FE[†]	Wave I, FE[†]
Wave I peers using birth control pills	0.832**	0.574
	(0.298)	(0.355)
Wave I peers sexually active, not using birth control pills	-0.437	0.0725
	(0.178)	(0.221)

[†] Regression coefficient (standard error). Standard errors grouped at school level. Controls include grade indicators, Black, presence of mother figure, whether mother had college degree, whether mother was in labor force, presence of father figure, whether father had college degree, Catholic, ever married, GPA, standardized PVT score, high school graduate, college graduate, school level, and imputation indicators.
* p < 0.05, ** p < 0.01, *** p < 0.001

Men's years of education

As shown in **Table 6** below, the effect of peers' birth control pill use on income was non-significant, both before and after inclusion of school level fixed effects. A 10-percentage point increase in the proportion of peers who are sexually active and using birth control pills was associated with a decrease of 0.08 years of education in the baseline model and an increase of 0.07 years of education in the fixed effects model.

Table 6. Comparison of Fixed Effects vs. No Fixed Effects, Wave I Measures in Education Regression, Men (N=6,721)

	Wave I, No FE[†]	Wave I, FE[†]
Wave I peers using birth control pills	-0.767	0.673
	(0.586)	(0.627)
Wave I peers sexually active, not using birth control pills	-1.355***	-0.0661
	(0.315)	(0.381)
R^2	0.355	0.409

[†] Regression coefficient (standard error) (except R^2). Standard errors grouped at school level. Controls include age, age^2, grade, Black race, presence of mother figure, mothers' college degree, mother' presence in labor force, presence of father figure, fathers' college degree, Catholic denomination, GPA, standardized PVT score, births under age 19, pregnancies under age 19, and imputation indicators.
* p < 0.05, ** p < 0.01, *** p < 0.001

Men's income

As shown in **Table 7** below, the effect of peers' birth control pill use on household income was significant in the baseline model, where a 10% increase in the proportion of peers using birth control pills was associated with a 6.5% decrease in income. After inclusion of fixed effects, the effect was no longer significant: a 10% increase in the proportion of peers using birth control was associated with a 3.6% decrease in income.

Table 7. Comparison of Fixed Effects vs. No Fixed Effects, Wave I Peer Measures in Income Regression, Men (N=6,174)

	Wave I, No FE†	Wave I, FE†
Wave I peers using birth control pills	-0.654***	-0.356
	(0.186)	(0.272)
Wave I peers sexually active, not using birth control pills	-0.265	-0.122
	(0.141)	(0.183)
R^2	0.167	0.207

† Regression coefficient (standard error) (except R^2). Standard errors grouped at school level. Controls include age, age^2, grade indicators, occupation indicators, Black, presence of mother figure, whether mother had college degree, whether mother was in labor force, presence of father figure, whether father had college degree, Catholic, GPA, standardized PVT score, high school graduate, college graduate, births under age 19, pregnancies under age 19, and imputation indicators.
* p < 0.05, ** p < 0.01, *** p < 0.001

Men's age at first birth

Table 8 shows estimates for age at first birth by Wave IV. The positive coefficients in both the baseline and fixed effects models indicate an increase in the estimated hazard rate and a lower expected age at first birth, but neither was significantly different from zero.

Table 8. Comparison of Fixed Effects vs. No Fixed Effects, Wave I Peer Measures in Age at First Birth, Men (N=6,722)

	Wave I, No FE†	Wave I, FE†
Wave I peers using birth control pills	0.573	0.353
	(0.341)	(0.473)
Wave I peers sexually active, not using birth control pills	0.448	0.174
	(0.248)	(0.288)

† Regression coefficient (standard error). Standard errors grouped at school level. Controls include grade indicators, Black, presence of mother figure, whether mother had college degree, whether mother was in labor force, presence of father figure, whether father had college degree, Catholic, ever married, GPA, standardized PVT score, high school graduate, college graduate, school level, and imputation indicators.
* p < 0.05, ** p < 0.01, *** p < 0.001

Men's (partner's) births before age 19

Table 9 below shows the probit regression estimates for men's propensity to have a birth or pregnancy (of a partner) before age 19. Here we also see a strong positive association between peers' sexual activity and the propensity to have a birth or pregnancy.

Table 9. Men's Propensity to Have a Pregnancy or Birth (of a Partner) Before Age 19 (N=6,688)

	Wave I, No FE[†]	Wave I, FE[†]
Wave I peers using birth control pills	-0.278 (0.529)	0.353 (0.473)
Wave I peers sexually active, not using birth control pills	0.666* (0.278)	0.995*** (0.300)
Sexually active in Wave I	0.546*** (0.0803)	0.561*** (0.0873)
Age	-0.0444 (0.677)	-0.240 (0.857)
Age squared	-0.000879 (0.0116)	0.00334 (0.0147)
Black	0.161* (0.0777)	0.0908 (0.0960)
Mother figure	-0.540*** (0.112)	-0.528*** (0.132)
Mother has college degree	-0.150 (0.0976)	-0.197 (0.126)
Mother not in labor force	0.0633 (0.0865)	0.0849 (0.0972)
Father figure	-0.0934 (0.0790)	-0.0989 (0.0911)
Father has college degree	-0.0811 (0.0960)	-0.339* (0.163)
Catholic	0.0158 (0.0910)	0.0937 (0.116)
Grade point average (GPA)	-0.0540 (0.0539)	-0.0263 (0.0636)
Standardized Peabody Picture Vocabulary Test (PVT) score	-0.00409 (0.00299)	-0.00618 (0.00358)
Constant	1.569 (9.728)	3.530 (12.35)
Pseudo R^2	0.0919	0.118

[†] Regression coefficient (standard error) (except R^2). Standard errors grouped at school level. Controls include grade indicators and imputation indicators.
* p < 0.05, ** p < 0.01, *** p < 0.001

Conclusion

In this analysis, we used Add Health data to explore the possibility of "spillover" effects on male high school classmates related to women's access to birth control pills during adolescence and young adulthood. We sought to build on results from Steingrimdottier (2016) suggesting that legal access to birth control pills and abortion in the 1960s-1970s significantly impacted men's education and incomes, potentially through increased age at first birth. We predicted that men whose young women classmates—their potential partners—use birth control pills at a higher rate will be less likely to have a pregnancy during the adolescent years, which may in turn increase their education and earnings. Our results were

less informative about these patterns than we hoped; associations between peers' birth control pill use and our outcomes were not statistically significant.

We speculate that these null findings are largely attributable to limitations inherent in Add Health's measure of peers' birth control use as well as a lack of statistical power. Peers' behavior is a noisy measure, and the question on birth control use is contingent on being sexually active. Thus, the peers' birth control measure reflects the percentage of young women who are using birth control pills *and* are sexually active. We included an analogous variable to measure the percentage of young women who were sexually active and *not* using birth control pills, in order to isolate the effect of pill use, but this approach results in a less straightforward interpretation. Further, Add Health measures contraceptive behavior by use of birth control pills only, rather than including the full range of contraceptive methods (e.g., condoms, intrauterine devices, permanent contraception). We also acknowledge potential selection effects due to the structure of our outcome measures. For example, we can only explore estimates of income effects on respondents who were employed during Wave IV and reported their income. We also are unable to examine impacts of respondents not followed in Wave IV. Strengths of this analysis include the Add Health's longitudinal data structure, large sample size, and detailed information about social networks and contraceptive use. Throughout our analyses, we made efforts to reduce selection bias wherever possible; for example, we used Cox proportional hazard regression to model age at first birth, which allowed us to include the entire sample as opposed to limiting it to those who had children by Wave IV.

Although data constraints may have limited the current analysis, our research question—the extent to which men benefit from access to contraception and abortion—remains an extremely important one. In thinking about the total impact of reproductive health care access on people's lives, it is essential to consider not only the demonstrated effects on women and children, but also the potential spillover effects for men, which may be substantial at the population level. In future longitudinal surveys, researchers should ask all young people—not only those who are sexually active—about their contraceptive behavior, inquire about the full range of contraceptive methods, and gather even more detailed data about the members of young people's peer groups. Researchers should continue to investigate this research question. Especially in light of continued legislative threats to reproductive health care, it is critical to gather the full range of evidence on how access to contraception and abortion influence Americans' life outcomes (Guttmacher Institute, 2021).

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