Rethinking "Early" Childbearing:
Motherhood and Educational Attainment in the United States

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Abstract

In this paper we hypothesize that, in the 21st century America, childbearing in early twenties is the "new teenage childbearing" in the sense that it is similarly disadvantageous to have a baby in early twenties today compared to having a baby as a teenager in the past decades. Given the present context of childbearing in the U.S., with a continuous marked delay of fertility, women who have children early in the life course accumulate less human capital prior to child birth <u>relative to</u> women who wait until late twenties or early thirties to become mothers. We examine educational attainment of women from the Add Health cohort estimating multivariate logistic regression and propensity score weighting models. We report similarities in terms of educational attainment for women who become mothers in their teens and early twenties, i.e. until age 22, and pronounced differences between both of these groups and women who delay childbearing past age 25.

Extended Abstract

Research Objective
In this paper, we hypothesize that in the 21st century America, childbearing in early twenties becomes the "new teenage childbearing" in the sense that, given the present context of the United States, it is similarly disadvantageous to have a baby in early twenties compared to having a baby as a teenager in the past decades.

Motivation
Social norms about when events in life course should occur exist in many societies (Neugarten et al. 1965; Hagestad and Neugarten 1985; Settersten and Hagestad 1996). Western norms for desirable periods of life when family formation and childbearing should occur are consistent, especially for women. Teenage childbearing is often considered as falling too early in the life course (Furstenberg 2005) while childbearing past age of forty is often considered too late (Billari et al. 2011). However, the discussion about appropriate timing of childbearing is always contextualized within cultural settings and general fertility trends of a specific period/region (e.g. Furstenberg 1998).

In the United States, norms of childbearing have been challenged over the past decades with a pronounced shift toward later childbearing: the mean age at first birth has reached 26.3 years old in 2014, the highest levels ever recorded and an increase of over four years compared to 22.1 years old in 1970 (Matthews and Hamilton, 2002; 2016). In addition, birth rates of women aged 30-44 are on the rise while births to women aged 15-29 have stagnated or even declined (Hamilton et al. 2015). Given the marked delay in transition to motherhood in the 21st century, not only teenage childbearing but also childbearing in early twenties might be considered as "too early" as a birth at age 20 falls now over six years ahead of the mean.

Why would childbearing in early twenties be detrimental to young mothers and their children within the context of delayed fertility? We argue that the negative consequences of childbirth in early twenties have emerged specifically due to changes in general fertility trends and parallel changes in educational and labor market settings. As women postpone childbearing, they accumulate more human capital and thus women who have children much earlier have relatively fewer resources to provide for themselves and their children. While this argument has been often raised with regards to teenage childbearing (e.g. Hotz et al. 2008), in particular in relation to teenage childbearing and high school completion (Hoffman et al. 1993; Kane et al. 2013), recent evidence suggests that similar disadvantages are at present associated with childbearing in early twenties (McLanahan 2004).

In this paper, we focus on human capital accumulation in terms of educational attainment. We argue that there are differences in terms of levels of education between women who give birth at ages 19-22 (thereafter: young mothers) and mothers who delay childbearing. While previous work investigates teenage childbearing and high school completion, we focus on early twenties childbearing and post-secondary education. In modern American specialized economy, post-secondary education is increasingly important in relation to personal achievement and earnings. Not only post-secondary education earning premiums are on the rise since 1980s (Oreopoulos and Petronijevic 2013) but also post-secondary degrees are increasingly required to secure even an entry level position (Carnevale, Smith and Strohl 2010). In addition, recent work recorded growing disparities in health and well-being between those with and without college education (e.g. Bor et al. 2017).

In recent years, college enrollment stagnated and the rates of participation in higher education still remain uneven across social groups in the United States (National Center for Education Statistics 2017). At the same time, premiums associated with college education, in terms of income advantage and even health are rising. Because college completion is beneficial for the individual as well as the society and government, assuring equal participation in college education among disparate social groups is of high importance for policy makers. Understanding the educational pathways of young mothers will have implications for how the educational system in the United States can best accommodate young women of all backgrounds and assure their participation in higher education.

Research Aims

We investigate differences in educational attainment based on the age when women transitioned to motherhood. We examine differences in educational attainment accumulated by ages 26-32 (average age 28) in the National Longitudinal Study of Adolescent to Adult Health (Add Health) cohort. Students aged 30 or older constitute only 18% of all students enrolled in post-secondary education in the United States (U.S. Department of Education, National Center for Education Statistics 2016) and therefore this time point can provide us with a proxy of the final educational level of the individual.

We expect that childbearing between 19 and 22 has a negative effect on educational attainment and on college attendance: young mothers are less likely to obtain a college degree (or any post-secondary degree) by age 26-32 than women who delay childbearing past the age of 23 years old. We also compare the level of educational attainment of young mothers to that of teenage mothers. We hypothesize that the educational attainment of these two groups of mothers is similar.

We explore multiple educational outcomes, including high school completion, four year college completion versus any post-secondary education completion as well as realization of one's educational plans formed in adolescence.

The structural context of lived lives and personal characteristics can shape the effects of an early child birth and attenuate its consequences (Elder 1974). In this paper, we account for the effects of social structure and individual traits through a set of measures, including measures of race and ethnicity, socioeconomic status, union status at first birth, religiosity and self-efficacy. In addition, we include contextual influences through measures of neighborhood poverty and educational attainment at the census tract level. We also control for intendedness of the first birth because unintended births might have different effects on educational trajectories than planned motherhood. Women, who intend having children early might intentionally finish their education prior to childbirth. This assumption however needs to be carefully investigated as women might not *prefer* motherhood over education but rather *have no means* to attend college or *be discouraged* from enrolling in college (Edin and Kefalas 2005).

Data, measures and methods

We use data from Add Health, a school-based, nationally representative sample of 20,745 seventh through twelfth graders in 1994-1995. Respondents were re-interviewed in 1996 (Wave II), 2001-2002 (Wave III), and 2008-2009 (Wave IV) (Harris et al. 2009; Harris 2010). Our subsample consists of only female respondents, aged 26-32 at Wave IV who participated in Waves I and IV, have a valid sampling weight and complete pregnancy and birth histories (N= 4,275). Missing data on analytic variables are minimal and we first conduct a complete case analysis.

We investigate five measures of educational attainment by ages 26-32:
- High school completion (1 if respondent said they received a certificate of high school completion, high school diploma or a GED, 0 if otherwise),
- College degree completion (1 if respondent received BA/MA/PhD/Professional Doctorate, 0 otherwise),
- Any post-secondary degree completion (1 if respondent received BA/MA/PhD/Professional Doctorate, Associate's, vocational/technical/post-baccalaureate degree, 0 otherwise),
- Discontinuation of post-secondary education (1 if respondent's highest level of education reported at Wave IV is "some college", "some vocational" or "some post-secondary" and they are not enrolled in school at Wave IV, 0 otherwise),
- Mismatch between educational goals and educational achievement ("Did respondent achieve their educational goals by Wave IV?", 1 if yes, 0 otherwise).

We first include a limited set of covariates including five categories of race/ethnicity; four categories of parental education, a dummy variable indicating an unintended first birth and a scale of self-efficacy constructed using four planning and effort dimensions from Wave I.

We estimate separate models for each of the five outcomes. As recently suggested by Kane and colleagues, the negative effects of childbearing reported in empirical analyses can be an artefact of estimation methods (Kane et al. 2013). To address this concern, we employ two different estimation methods: logistic regression and propensity score weighting. Comparing the estimates across two different estimation methods will lead to a more robust estimation of the negative effects

of early childbearing. We expect the coefficients obtained by using propensity score weighting to be smaller than those from the logistic regression, as indicated by previous analyses comparing these two approaches (Lee 2010; Kane et al. 2013).

Preliminary results

Preliminary descriptive statistics of the sample are included in Table 1. Table 2 includes educational outcomes of women in five motherhood categories based on the timing of first birth: <19, 19-22, 23-25, 26-30 and childless by age 30. There is a marked difference in high school graduation between teenage mothers and the rest of women in the subsample. 17% of teenage mothers and 7% of young mothers did not complete high school. The frequency of not completing high school among young mothers is nonetheless twice that of the next group – women who became mothers at ages 23-25. There is a startling division in terms of college completion between teenage and young mothers and women who delay childbearing. Only 6% of teenage mothers and 8% of young mothers completed four or more years of college education by ages 26-32. In comparison, half of women who had children after the age of 25 or still remain childless completed a college degree. When comparing levels of any degree completion, 30% of teenage mothers and 34% of young mothers completed any post-secondary degree by Wave IV, compared to 70% for childless women and women who delayed childbearing until late 20s.

About one in ten teenage mothers/young mothers reported at Wave IV that they did not achieve the desired level of education and they do not believe they will. However, the difference in these reports based on the timing of the first childbirth is not statistically significant. Interestingly, many teenage and young mothers still plan to achieve their desired level of education (78% of teenage mothers and 77% of young mothers). With regards to higher education discontinuation we again observe higher rates of discontinuation among teenage and young mothers but the rate of discontinuation for young mothers is similar to that of the next category: women having children at ages 23-25.

Results of multivariate logistic regression presented in Table 3 corroborate descriptive findings. We find statistically significant associations between age at first birth and four educational outcomes. Both teenage mothers and young mothers are less likely to have completed high school, college or any post-secondary training. While the odds ratios for completing high school are lower for teenage mothers than for young mothers (compared to 26-32 mothers), the odds ratios for completing college degrees or any post-secondary education are similar. Teenage mothers and young mothers are 10% and 12% less likely to have completed college degrees, respectively; and 23% and 27% less likely to have completed any post-secondary education respectively compared to women who have given first birth at ages 26-32. These results suggest a similarity between educational paths of teenage and young mothers but a wide divergence in educational paths between women who delay motherhood (past age 25) and women who experience childbirth early in the life course.

We also find effects of parental socioeconomic status on high school and post-secondary education completion and effects of self-efficacy on post-secondary education completion but no effects of racial/ethnic composition or experiencing an unintended birth were observed.

Next steps

We will examine the robustness of these preliminary analyses by using propensity score weighting estimation and including a wider set of controls, e.g. religiosity and union status at birth. Robustness checks will include narrowing the subsample to women aged 28-30, missing data imputation and measuring the educational attainment in terms of completed years of education. In addition, we will explore mediating and moderating effects of structural factors by including measures of the neighborhood context.

Table 1 Descriptive Statistics for the analytical sample.

Covariate	Proportion
Age (Mean)	29.4
Completed High School	95.1%
Completed 4+ years of college	33.5%
Completed any post-secondary degree	55.1%
Doesn't' believe she will obtain the desired level of education	7.9%
Plans to still obtain the desired level of education	64.7%
Discontinued education	27.9%
Age at first birth	
<19	11.9%
19-22	22.4%
23-25	12.2%
26-32	14.4%
Childless	40.0%
Race/Ethnicity	
Hispanic	11.6%
Black, Non-Hispanic	15.5%
Asian, Non-Hispanic	3.1%
American Indian, Non-Hispanic	0.9%
Other, Non-Hispanic	0.6%
White, Non-Hispanic	68.4%
Parental Education	
Less than high school	12.7%
High school graduate	27.9%
Some college	27.7%
Completed college degree	31.6%
First birth was intended	33.4%
Self-efficacy scale (Mean)	8.46
N	4,275

Table 2 Weighted proportions of specific educational outcomes by timing of birth for Add Health women aged 26-32 in Wave IV.

Age at first birth	Educational attainment at wave 4					
	No HS diploma	College degree [a]	Any degree [b]	Disbelief [c]	Belief [d]	Discont. [e]
Childless	3%	53%	70%	7%	58%	20%
<19	17%	6%	30%	10%	78%	29%
19-22	7%	8%	34%	9%	77%	36%
23-25	3%	23%	48%	9%	64%	38%
26-32	1%	49%	71%	6%	55%	27%

[a]:BA/MA/PhD | [b]: Any post-secondary degree: Associate's, BA, MA, PhD, Professional Doctorate, 1,2,3 year vocational/technical/post-baccalaureate | [c]: Respondent did not achieve the desired level of education and does not believe she will | [d]: Respondent did not achieve the desired level of education butbelieves she will | [e]: Respondent discontinued post-secondary education.

Table 3 Multivariate logistic regression results for educational outcomes for Add Health women aged 26-32 in Wave IV.

Outcome:	High School Completion		College Degree (BA/MA/PhD)		Any Post-Secondary [a]		Discontinuation[b]	
Measures:	OR	Std. Err.	OR	Std. Err.	OR	Std. Err.	OR	Std. Err.
Age 1st birth (ref: 26-32)								
Childless	0.59	0.33	1.22	0.22	1.07	0.17	.71*	0.11
FB<19	.11***	0.06	.1***	0.03	.23***	0.05	1.02	0.22
FB 19-22	.29*	0.16	.12***	0.02	.27***	0.04	1.34	0.22
FB 23-25	0.56	0.33	.39***	0.08	.46***	0.08	1.5*	0.29
Age	1.13	0.09	0.95	0.05	1.05	0.04	1.01	0.46
Race (ref: White, Non-Hisp)								
Hispanic, all races	1.79	0.81	0.74	0.15	0.99	0.17	1.06	0.15
Non-Hispanic Black	1.32	0.38	0.98	0.22	0.89	0.12	0.79	0.12
Non-Hispanic Asian	1.25	1.03	1.38	0.52	1.39	0.31	0.97	0.19
Non-Hispanic Native American	0.59	0.3	0.49	0.39	0.43	0.24	0.99	0.44
Non-Hispanic Other	8.07	9.04	1.13	0.78	2.27	0.99	1.05	0.5
Parental Ed (ref: No HS)								
2.HS grad/GED	2.95***	0.94	2.06**	0.56	1.65**	0.3	0.94	0.13
3.Some college or voc ed	7.74***	2.67	3.03***	0.86	2.4***	2.4	1.22	0.19
4.College grad or beyond	44***	24.3	6.9***	2.07	4.42***	4.42	0.73	0.13
FB intended	1.45	0.4	0.95	0.15	1.12	0.91	1.31	0.18
Self-efficacy scale	0.95	0.04	.91**	0.03	.95**	0.02	0.99	0.02
_cons	0.437	1.08	2.48	4.31	0.359	0.46	0.273	0.39

[a]: Any post-secondary degree: Associate's, BA, MA, PhD, Professional Doctorate, 1,2,3 year vocational/technical/post-baccalaureate | [b]: Respondent discontinued post-secondary education.

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