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The role of unwanted childbirths on female wages and education

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This paper documents how unwanted childbirths relate to women's education and wages. Unwanted childbirths, especially early in life, can affect women's education and labor market decisions. Using data from the National Longitudinal Survey of Youth 1979, I document that on average, mothers whose first childbirth was unwanted have lower levels of education, lower wages, and have their first childbirth at younger ages compared to the rest of the mothers. Results are stronger when using a self-reported question about unwantedness, compared with the definition that accounts for pregnancies while using contraception.

KEYWORDS
Unwanted childbirths, Wages, Education, Fertility

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El rol de los partos no deseados en el salario y la educación de las mujeres

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Este trabajo documenta como los partos no deseados se relacionan con los salarios y la educación de las mujeres. Los partos no deseados, especialmente en edades tempranas, puede afectar las decisiones sobre educación y trabajo. Usando la base de datos de National Longitudinal Survey of Youth 1979, para Estados Unidos, este trabajo documenta que las madres cuyo primer parto fue no deseado, tienen en promedio salarios más bajos, menos años de educación y tienen su primer/a hijo/a a edades más jóvenes, comparadas con madres cuyo primer parto es deseado. Los resultados son más fuertes si se utiliza una pregunta sobre el deseo de tener el parto, comparado con el caso en el que se utiliza una pregunta sobre el uso de contraceptivos al momento de que quedaran embarazadas.

KEYWORDS
Partos no deseados, Salarios, Educación, Fertilidad

1 | INTRODUCTION

The number of unintended childbirths, i.e. mistimed childbirths, which are those childbirths that happened earlier than planned, and unwanted childbirths, as in childbirths that were not wanted at all, is significant in the United States. A study from the National Center of Health Statistics (Mosher et al. (2012)) show that since 1982, the percentage of unintended childbirths among all childbirths has fluctuated around 30% to 40%, out of which unwanted childbirths has been around 10% to 15%. A Guttmacher Institute (Guttmacher (2019)) study shows an even higher number of unintended childbirths, being almost 60% in 1981 and reaching its minimum at 45% in 2011. According to this report, in 2011, 18% of all childbirths were unwanted, and 27% were mistimed.

In this paper I study how female wages are related to the birth of their first childbirth, comparing the case where the first childbirth was an unwanted childbirth compared to the rest of the mothers. To do this I use the National Longitudinal Survey of Youth 1979 (NLSY79). The NLSY79 is a panel of men and women who were between 14 and 21 years in 1979, who were surveyed annually from 1979 to 1994 and biennially from 1994 on. The richness of this database is that it not only provides good data on wages, education and some background information, but also has information on contraception use and a self-reported question about the wantedness of each childbirth.

Unintended childbirth are more frequent early in life. Mosher et al. (2012) show that between 2006 and 2010, around 77% of childbirths of women who were between 15 and 19 years old were unintended, 50% for women who were between 20 and 24, and only 25% for women older than 44. Having a child early in life can have many consequences on women's education and earning outcomes. For example, Miller (2011) estimates the effects of motherhood timing on female career paths using the NLSY79. She finds that motherhood delay increase earnings, wages and hours worked, and that this effect is largest for college-educated women. These two results suggest that woman whose first childbirth was unwanted can have lower wages than the rest of the mothers.

This paper is the first one using the NLSY79 to study how unwanted childbirths relates to women's wages and education. In this paper, I define unwanted childbirths, first by looking at a self-reported wantedness question in the NLSY79, and secondly by looking at the use of contraception of women in the months before their pregnancy, meaning women who got pregnant while reported not stopping the use of contraception. Then, I look at how unwanted childbirths relates to the educational attainment of these women and the timing of their childbirths. And finally, I look at how unwanted first childbirth relates to women's wages.

On average, mothers who self-reported having their first childbirth unwanted have significant lower wages, less years of education, and have their childbirth 3 years before the rest of the mothers. In particular, hourly wages from mothers who self-reported having their first childbirth unwanted are about 12% lower at age 40, and 7% lower ten years after the first childbirth, and these mothers probability of finishing high school is about 3-4% lower, and for college it is about 2% lower. However, when I look at mothers who got pregnant while reporting using contraceptive methods, the difference in wages is only significant at age 40 with wages being about 8% lower, while in education the difference is not significant for high school, but for college these mothers have a 3% lower probability than finishing college than the rest of the mothers. And finally these mothers have their first childbirth

only a year and a half before the mothers who got pregnant while not using contraceptive. This difference could mean that their is selection in the self-reported unwanted answer. Less educated women, or women who had their first childbirth early in life, over-report having an unwanted childbirth. This selection is especially relevant since the answer about the wantedness is ex-post, not during the pregnancy. However, this alternative definition talks more about accidental or unplanned pregnancies than about unwanted childbirths, and more to the economic "issue" of having a child not at the planned time. There is not enough data to know if some of these accidental pregnancies are wanted because of mothers who have safety nets that can buffer the impact of an early or unplanned childbirth, but this could be one of the reasons why we observe the differences in the characteristics of these mothers when using the original and the alternative definition. It is important to highlight at this moment that this paper does not talk about causality or address the issue of selection. The focus of this paper is to document this relationships between unwanted childbirths, education and wages.

Finally I show that when I control for education, experience and a proxy of non-cognitive skills, mothers that had their first childbirth unwanted do not show significant differences in hourly wages compared to the rest of the mothers. While the results are not significant, the point estimates remain negative and consistently show 4% lower wages at age 40, and 7% lower wages 10 years after the childbirth. This is important to mention here since we are not showing any causal relationships, and as Table 2 shows, there are only 889 mothers who self-reported having their first childbirth unwanted over a sample of 6,274 women, which might mean that when these sets of controls are added, the regression can lose power.

The main contribution of this paper is to document that mothers whose first childbirth was unwanted show slightly lower wages, slightly lower probabilities of finishing high school and college, and have their first childbirth one and a half to three years earlier than other mothers. These facts might not seem evident at first sight and this paper is the first one to document them. Future work can be done in trying to find causal effects of unwanted childbirths and wages and education, but in order to do this more detailed data needs to be collected to be able to address the issue of selection.

The remainder of the paper is developed as follows. Section 2, discuss the related literature. Section 3, show the data and the main descriptive statistics. Section 4, show the main results. And in section 5 I conclude.

2 | RELATED LITERATURE

There are two main reasons why a first unwanted childbirth can affect women's wages. The first one comes from the extensive margin of having a child when these women were not trying to become mothers. The presence of a child imposes time and financial costs on a household, and the burden of the time costs usually fall on the mother. The second reason comes from the timing of the childbirth. An early childbirth can affect educational decisions or make these women be absent from the labor market for some time in a time where they are building human capital.

There are several papers that have studied the effect of motherhood on labor supply. Correll et al. (2007) run a laboratory experiment to test a motherhood discrimination hypothesis. They find that employers discriminate against mothers when making hiring and salary

decisions. Lundborg et al. (2014) estimate the effect of having children on women labor supply, by instrumenting the event of childbirth with in vitro fertilization. In doing so, they compare women who had a successful in vitro fertilization treatment, with those who did not have a successfully treatment. They find large and long-lasting negative effects of fertility on labor supply. Bloom et al. (2009) use cross-country panel data, to estimate the effect of fertility on female labor force participation, by instrumenting fertility with abortion legislation, and find a large negative effect of fertility on labor force participation. In summary, motherhood by itself has negative effects on labor supply of mothers. The goal of this paper is to analyze if this negative effect is higher for mothers whose first childbirth was unwanted, relative to the rest of the mothers.

An other aspect of childbearing that has been related to women career paths and wages, is the timing of childbirths. Miller (2011) estimates the effects of motherhood timing on female career paths using the NLSY79. She finds that motherhood delay increase earnings, wages and hours worked, and that this effect is largest for college-educated women. Blackburn et al. (1993) study the effect of the timing of childbirth on women wages and human capital investment. They find that a delay in childbirth is associated with higher wages, and these higher wages come from higher investment in human capital. Amuedo-Dorantes and Kimmel (2005), using data from the NLSY79, estimate the effect of fertility delay on college educated women in the U.S. They find that college-educated mothers do not experience a motherhood wage penalty, and in fact enjoy a wage boost when compared to college-educated childless women, and that this fertility boost is enhanced by fertility delays. Herr (2016) focus on the timing of first birth on wages, but defining timing in terms of labor force entry, rather than age. She finds that estimates based on age understate the return to fertility delay, and that obscured the negative return to fertility delay to a first birth after labor market entry for women who do not graduate from college. Given that mothers whose first childbirth was unwanted have their first childbirth at younger ages, one could think that these women would be more negatively affected than the rest of the mothers by the childbirth in this context.

Finally, there are some papers that have considered the economic implications of unwanted childbirths. Angrist and Evans (1996) study the effect of the 1970 state abortion reforms on schooling and labor market outcomes of women who had their childbirth when they were teenagers or out-of-wedlock. They find that there is no significant effect on white women, however, black women had significant reduction of teen fertility rates and out-of-wedlock childbirths, and these reductions had a positive effect on schooling and labor market outcomes. Schultz (2009) study a social experiment in family planning in Matlab, Bangladesh. They find that over two decades, this family planning program reduced fertility in more than 10% and increased women wages in about a third. Rosenzweig and Wolpin (1980) study the effect of unanticipated "extra" children, by looking at twin childbirths in the first pregnancy. They do not find significant differences among mothers of twins, regarding their labor supply. However, they find evidence suggesting that reducing the cost of contraception, increases female labor force participation. All these papers find positive effects of preventing unwanted childbirths on labor market outcomes. This paper does not consider abortion because of a lack of access to location data, that does not allow me to identify if the women are in states with restrictive or lax abortion laws.

This paper adds to this literature by considering how unwanted pregnancies affect the timing of the childbirths, and how these unplanned childbirths affect women education and wage paths later in life.

3 | DATA

The data set I use is the National Longitudinal Survey of Youth 1979 (NLSY79), a representative sample of 12,686 men and women, who were 14-22 year old at 1979. The survey is annual from 1979 to 1994, and it has been biennial since 1994. Almost 50% of the initial respondents are female (6,283).

The NLSY79 is a rich panel that has data on education, wages, number of children, age when women had their children, their parents education, their AFQT percentile score (frequently used in the literature as a proxy for non-cognitive skills), and also about women's use of contraception and a question directly related to unwanted childbirths. From 1982 to 2010, women who had a child were asked the following question:

"*Just before you became pregnant that time, did you want to become pregnant when you did? If no, did you want (a/another) baby but not at that time, or did you want (none/no more) at all?*".

This question is asked for each of the childbirths but only after they had that child. In this paper I focus on the first childbirth. The possible answers to that question are the following:

1 Yes
2 Didn't matter
3 No, not at that time
4 No (none/no more) at all

I define an **unwanted** childbirth, as every first childbirth that was declared as **not wanted at all** (fourth possible answer). For simplicity, I will refer to these mothers as "mothers whose first childbirth was unwanted" (MWFCU from now on), and I will refer to mothers who answered any of the other options as "other mothers" (OM). The third possible answer ("not at that time") could also be considered as an unwanted childbirth, however I am not going to include it for two main reasons. First, the answer is not well defined: "Not at that time" can also mean that these women were looking to get pregnant, but it actually took them longer than what they wanted. In addition, it is not specified how far was the pregnancy from the actual time when these women would have wanted to have it, it could have been few months or some years. The second reason why I am not including the third answer above as "unwanted", is because the number of mistimed childbirths (around 45% of all the childbirths) does not match the numbers provided by the Mosher et al. (2012) and Guttmacher (2019).

This measure of unwantedness is a subjective measure, since is asked to these women after they had the childbirth. The way that I address this is by analyzing also with a second definition of unwantedness. In NLSY79 women are also asked: "*had you stopped all methods* (of contraception) *before you became pregnant´´*. I will define a MWFCU according to this second definition (alt-MWFCU from now on), if a woman answered that she did not stop using contraceptive methods, but still became pregnant. This definition does not solve the issue of selection, but at least partially address it, by leaving out of this definition women who did not wanted to have a child but also did not take precautions to not to became pregnant. As mentioned before, this definition talks more about unexpected or unplanned pregnancies than about unwanted childbirths.

	Alternative Unwanted		
Original Unwanted	Other Mothers	MWFCU	Total
Other Mothers	79%	21%	100%
MWFCU	54%	46%	100%

TABLE 1 Unwantedness Definitions Frequency. *Notes:* Original Unwanted refers to the definition of unwantedness that is taken from the self-reported question from the NLSY. Alternative Unwanted refers to mothers who got pregnant while reporting not having stopped using contraceptive methods.

Table 1, reports the frequency among these two definitions. Notably, there is little coincidence among both definitions. Less than half of women that declared having their first child unwanted, were woman who were using contraceptive methods but still got pregnant. It is important to reinforce the fact that the original definition of unwantedness comes from an ex-post question on the desire to have the child. The fact that half of these women were not using contraceptive methods, also point in the direction that selection is relevant when using this definition. What is more remarkable from Table 1 is that among women who were using contraceptives and got pregnant, only about one fifth of them declared that they did not want to get pregnant. In this case is important to notice that mistimed women are excluded in this analysis. From those 80% pregnancies not declared as not wanted, some of them might actually be mistimed. When I look at the mistimed answer (answer 3. no, not at that time), out of the women who did not answer that the first child was unwanted, but were using contraceptive when they got pregnant, 83% of them declared that they did not wanted the child at that time. However, given that this answer does not seem reliable in the NSLY79, I can not properly divide mistimed women between unwanted and other.

The main focus in this paper is going to be differences in hourly wages and education between MWFCU and other mothers. Hourly wages are defined as yearly wages and salaries divided by total hours worked in the year. Wages are expressed in 2014 real US dollars. Table 2 shows the main descriptive statistics using the subjective definition of unwantedness, for the whole sample and for three sub-samples: every woman that had at least one child from 1979 to 2014, MWFCU and other mothers. Education is defined in three categories: women that dropped out of high school, women that finished high school or have some college, and women who finished college, defining college as any bachelor degree and above. Number of children, completed education and age at first childbirth are reported at the last observation available. Table 2 shows that around 18% of women who had any children are MWFCU, consistent with data from Mosher et al. (2012) and Guttmacher (2019). By comparing MWFCU and other mothers, MWFCU have their first child about three years younger and have around one more child than other mothers. They are also less likely to have finished high school and college, and at age 40 have hourly wages that are around 4 dollars lower, in 2014 real US dollars, and 10 years after their childbirth, have hourly wages that are around 5 dollar lower than other mothers. It is also noticeable that 43% of MWFCU are black, while only 22% of other mothers are black, and that difference is driven by less non-black non-hispanic mothers having unwanted children.

Table 3, shows the main descriptive statistics using the alternative definition of unwantedness based on women's use of contraception. The first thing to notice, is that the number of alt-MWFCU is higher with this definition. 25% of mothers had their first child unwanted. It is important to notice that some of these pregnancies can be mistimed (pregnancies that

Variable		Full Sample	All Mothers	MWFCU	OM	MWFCU-OM diff.
Number of children	Mean	1.83	2.33	2.90	2.21	0.69***
	Std. dev.	(1.42)	(1.18)	(1.48)	(1.06)	
Age in 1979	Mean	17.92	17.89	17.76	17.91	-0.15*
	Std. dev.	(2.28)	(2.27)	(2.28)	(2.27)	
Black	Mean	0.25	0.26	0.43	0.22	0.21***
	Std. dev.	(0.43)	(0.44)	(0.49)	(0.42)	
Hispanic	Mean	0.16	0.17	0.17	0.17	0.00
	Std. dev.	(0.37)	(0.38)	(0.38)	(0.38)	
Finished high school	Mean	0.85	0.83	0.76	0.85	-0.09***
	Std. dev.	(0.36)	(0.38)	(0.43)	(0.36)	
Finished college	Mean	0.22	0.19	0.10	0.21	-0.11***
	Std. dev.	(0.41)	(0.39)	(0.30)	(0.41)	
Age at first childbirth	Mean		23.44	20.96	23.99	-3.03***
	Std. dev.		(5.71)	(4.85)	(5.74)	
First child before age 19	Mean		0.20	0.35	0.16	0.19***
	Std. dev.		(0.40)	(0.48)	(0.37)	
First child age 19-26	Mean		0.55	0.54	0.55	-0.01
	Std. dev.		(0.50)	(0.50)	(0.50)	
First child age 27-39	Mean		0.24	0.11	0.27	-0.16***
	Std. dev.		(0.43)	(0.31)	(0.44)	
First child after age 39	Mean		0.01	0.00	0.02	-0.02***
	Std. dev.		(0.12)	(0.07)	(0.13)	
	N	6,274	4,930	889	4,041	
Hourly wages at age 40	Mean	21.20	20.75	17.64	21.44	-3.80**
(2014 dollars)	Std. dev.	(31.26)	(32.90)	(22.47)	(34.75)	
	N	3,072	2,549	461	2,088	
Hourly wages 10 years	Mean		17.01	12.64	18.00	-5.36***
after first childbirth	Std. dev.		(24.64)	(11.36)	(26.65)	
(2014 dollars)	N		2,711	499	2,212	

TABLE 2 Descriptive Statistics. *Notes:* MWFCU are mothers whose first childbirth was unwanted according to the original definition, while OM are the rest of the women who had at least one childbirth. MWFCU-OM diff show the difference between the mean for MWFCU and OM for each variable, and if this difference is statistically significant.

were not wanted at the time, but would have been wanted sometime in the future), while the original definition only accounts for declared unwanted pregnancies. The second thing to notice, is that using the alternative definition alt-MWFCU are more similar to other mothers than with the previous definition. The fraction of non-white mothers is quite similar, the fraction of educated mothers is almost the same, even being slightly higher the percentage of alt-MWFCU who finished high school. However, hourly wages are still lower for alt-MWFCU at age 40 and also 10 years after childbirth. Also alt-MWFCU have their first child one and a half years younger and have slightly more children. The difference in age at first childbirth might explain the difference in the high school completion results. While MWFCU have their first childbirth on average at age 21, alt-MWFCU have their first childbirth on average after age 22. There is a higher number of alt-MWFCU that had their first childbirth after finishing high school. The second to last column of Table 3, shows the differences between alt-MWFCU and other mothers, while the last column shows the differences between MWFCU and other mothers, for comparison. The biggest differences are in race, education, age at first childbirth and wages, being these last three variables, key variables for this paper. Table 3, shows that with the alternative definition, there are no noticeable differences in college education, the difference in the age at first childbirth is

Variable		Alt. MWFCU	OM	Alt. MWFCU-OM diff.	Orig. MWFCU-OM diff.
Number of children	Mean	2.81	2.17	0.64***	0.69***
	Std. dev.	(1.31)	(1.08)		
Age in 1979	Mean	17.78	17.92	-0.14**	-0.15*
	Std. dev.	(2.28)	(2.27)		
Black	Mean	0.30	0.24	0.06***	0.21***
	Std. dev.	(0.46)	(0.43)		
Hispanic	Mean	0.14	0.18	-0.04***	0.00
	Std. dev.	(0.35)	(0.38)		
Finished high school	Mean	0.85	0.82	0.03**	-0.09***
	Std. dev.	(0.36)	(0.38)		
Finished college	Mean	0.18	0.19	-0.01	-0.11***
	Std. dev.	(0.38)	(0.39)		
Age at first childbirth	Mean	22.32	23.83	-1.51***	-3.03***
	Std. dev.	(4.76)	(5.96)		
First childbirth before age 19	Mean	0.20	0.19	0.01	0.19***
	Std. dev.	(0.40)	(0.39)		
First childbirth age 19-26	Mean	0.63	0.53	0.10***	-0.01
	Std. dev.	(0.48)	(0.50)		
First childbirth age 27-39	Mean	0.17	0.26	-0.09***	-0.16***
	Std. dev.	(0.37)	(0.44)		
First childbirth after age 39	Mean	0.00	0.02	-0.02***	-0.02***
	Std. dev.	(0.06)	(0.13)		
	N	1,255	3,675		
Hourly wages at age 40	Mean	19.10	21.39	-2.28	-3.80**
(2014 dollars)	Std. dev.	(22.57)	(36.07)		
	N	706	1,843		
Hourly wages 10 years	Mean	16.00	17.38	-1.38	-5.36***
after first childbirth	Std. dev.	(25.17)	(24.44)		
(2014 dollars)	N	720	1,991		

TABLE 3 Descriptive statistics by alternative definition of unwantedness. *Notes:* Alt. MWFCU are mothers whose first childbirth was unwanted according to the alternative definition, while OM are the rest of the women who had at least one childbirth. Alt. MWFCU-OM diff show the difference between the mean for Alt. MWFCU and OM for each variable, and if this difference is statistically significant. While MWFCU-OM diff show the difference between the mean for MWFCU and OM for each variable, and if this difference is statistically significant.

reduced in half, and consequently, the difference in wages is also significantly reduced, not being significant.

As previously mentioned, the value of introducing this alternative definition, is to use a definition that does not rely on a subjective ex-post answer, but using a definition that relies on a more random event like getting pregnant while using contraceptive. As I showed, there are considerable differences in some key statistics when I use the subjective definition, compared to the alternative definition. One possible reason is that women who ex-post answered not wanting to have the child, have also significant differences in their background characteristics.

Table 4 summarize some background characteristics of MWFCU and other mothers. NLSY79 provides limited background information. The available information is on their parents level of education at 1979, parents employment situation during 1978, number of siblings at 1979 and AFQT[1] percentile score at 1980. Since some of these mothers had their first child

[1]The AFQT (Armed Forces Qualification Test) test is a test used by the US military to determine enlistment eligibility. The AFQT score is calculated using your standard scores from the Arithmetic Reasoning, Mathe-

before 1980, AFQT at 1980 is not necessarily a background variable, since it can be affected by the childbirth. I will define AFQT2 at 1980, as the AFQT score of all the women who had their first childbirth after 1980. The education and employment situation of the parents, are the closest proxies that I have for household income. In the case of number of siblings, it has been showed that low income low educated families have more children than high income high educated families (Jones and Schoonbroodt (2011), Lam (1986)). And finally, AFQT is frequently used as a proxy for non-cognitive skills. Table 4, shows that among MWFCU both parents are less educated compared to other mothers, have about 0.6 more siblings, and the AFQT percentile score[2] of the average MWFCU is 12.5 points lower than the average for other mothers, and this is consistent for both measures of AFQT.

However, when I look at these same statistics but using the alternative definition, the results change drastically. Table 5, shows the background variables using the alternative definition. In this case both groups look quite similar. There is no significant difference in their parents education, or participation in the labor market. The number of siblings is almost exactly the same in mean, and finally the AFQT percentile score is almost the same, being even a little bit higher for alt-MWFCU. This shows again that selection might be playing a big role in women answering that they did not want to have the child. When I use a definition based on failing contraception, both groups look quite similar.

4 | RESULTS

This section shows how having a first child unwanted relates to women's education and wages later in life. Section 4.1, show how unwantedness is related to the probability of MWFCU on finishing their education. Section 4.2, shows how unwantedness is related to the hourly wages of these mothers, and what are the main reasons why the data shows that MWFCU have lower hourly wages than other mothers. It is important to highlight that this section does not talk about causality or address the previously mentioned issues of selection. All results shown in this section reflect how unwanted pregnancies relate to education and hourly wages of these mothers.

4.1 | Unwanted first childbirths on women's education

Previous section shows that when self declared MWFCU are less likely to finish high school and college, however when I look at the alternative definition based on failed contraception, there are no significant differences in high school and college completion. This section looks at the educational attainment of every women that had at least one child, and address how having a first childbirth unwanted, relates to finishing high school or college.

First, I focus on high school. To do this I use the following OLS specification:

$$HS_t = \alpha_0 + \alpha_1 * unw + \alpha_2 * FCBA20 + \gamma * X + \varepsilon \quad (1)$$

Where HS_t is a dummy that is equal to 1 if the woman finished high school at age t and equal to 0 otherwise, unw is a dummy that is equal to 1 if the woman is an MWFCU and 0 if she is an other mother, X is a set of controls that include race (non-black non-hispanic is

matics Knowledge, Paragraph Comprehension, and Word Knowledge Subtests. This test is oftenly used as a non-cognitive measure

[2]The AFQT percentile score is created by NLSY, and it is calculated including men.

Variable		MWFCU	OM	Diff.
Father finished high school	Mean	0.44	0.56	-0.12***
	Std. dev.	(0.50)	(0.50)	
Father finished college	Mean	0.13	0.19	-0.06***
	Std. dev.	(0.40)	(0.33)	
	N	696	3,474	
Mother finished high school	Mean	0.43	0.55	-0.12***
	Std. dev.	(0.50)	(0.50)	
Mother finished college	Mean	0.08	0.12	-0.04***
	Std. dev.	(0.53)	(0.65)	
	N	820	3,823	
Father worked full time	Mean	0.73	0.79	-0.06***
	Std. dev.	(0.45)	(0.41)	
Father worked part time	Mean	0.14	0.10	0.04**
	Std. dev.	(0.34)	(0.31)	
	N	664	3,348	
Mother worked full time	Mean	0.38	0.41	-0.03
	Std. dev.	(0.49)	(0.49)	
Mother worked part time	Mean	0.19	0.21	-0.02
	Std. dev.	(0.39)	(0.40)	
	N	830	3,841	
Number of siblings	Mean	4.55	3.92	0.63***
	Std. dev.	(2.95)	(2.66)	
	N	889	4,041	
AFQT percentile score	Mean	28.37	40.87	-12.50***
	Std. dev.	(23.88)	(27.80)	
	N	839	3,840	
AFQT2 percentile score	Mean	28.22	40.71	-12.49***
	Std. dev.	(24.44)	(28.94)	
	N	613	3,320	

TABLE 4 Background Variables by Unwantedness. *Notes:* MWFCU are mothers whose first childbirth was unwanted according to the original definition, while OM are the rest of the women who had at least one childbirth. The last column "Diff." shows the difference between MWFCU and OM.

Variable		Alt. MWFCU	OM	Alt. MWFCU-OM diff.	Orig.-Alt. diff.
Father finished high school	Mean	0.54	0.54	0.00	-0.12
	Std. dev.	(0.50)	(0.50)		
Father finished college	Mean	0.37	0.36	0.01	-0.07
	Std. dev.	(0.78)	(0.77)		
	N	1,054	3,116		
Mother finished high school	Mean	0.52	0.53	-0.01	-0.11
	Std. dev.	(0.50)	(0.50)		
Mother finished college	Mean	0.21	0.23	-0.02	-0.02
	Std. dev.	(0.61)	(0.63)		
	N	1,179	3,464		
Father worked full time	Mean	0.79	0.78	0.01	-0.07
	Std. dev.	(0.41)	(0.41)		
Father worked part time	Mean	0.12	0.11	0.01	0.03
	Std. dev.	(0.49)	(0.31)		
	N	1,022	2,990		
Mother worked full time	Mean	0.41	0.40	0.01	-0.04
	Std. dev.	(0.49)	(0.49)		
Mother worked part time	Mean	0.20	0.20	0.00	-0.02
	Std. dev.	(0.40)	(0.40)		
	N	1,186	3,485		
Number of siblings	Mean	4.04	4.03	0.01	0.63
	Std. dev.	(2.86)	(2.68)		
	N	1,255	3,675		
AFQT percentile score	Mean	39.42	38.36	1.04	-13.54
	Std. dev.	(27.49)	(27.56)		
	N	1,190	3,489		
AFQT2 percentile score	Mean	38.88	38.72	-0.16	-13.31
	Std. dev.	(27.42)	(28.73)		
	N	993	2,940		

TABLE 5 Background variables by alternative definition of unwantedness *Notes:* Alt. MWFCU are mothers whose first childbirth was unwanted according to the alternative definition, while OM are the rest of the women who had at least one childbirth. Alt. MWFCU-OM diff show the difference between the mean for Alt. MWFCU and OM for each variable, and if this difference is statistically significant. While MWFCU-OM diff show the difference between the mean for MWFCU and OM for each variable, and if this difference is statistically significant.

omitted) and AFQT percentile score at 1980 (as a proxy of non-cognitive skills), and FCBA20 is a dummy that is equal to 1 if the first childbirth occur **before age 20 (20 not included)** and 0 otherwise. FCBA20 captures the effect of having the first childbirth when these women are still finishing high school. The reason why I use 20 ass the cutoff is because having the child at most at 19 years old, would mean that at least during the pregnancy these women would still probably be finishing high school. Table 6, shows this specification for finishing high school at age 20 and at age 30 (t=20 and 30) for the whole sample of mothers when unw is the original definition of unwantedness. For robustness, Appendix 5 show the results for specification (1) controlling for FCBA19, FCBA21 and FCBA22, and also for $t \in [21, 29]$ controlling for FCBA20.

Table 6, shows that MWFCU have about 4% lower probability of finishing high school compared to other mothers, when I look at finished high school at age 20, and that probability is 3% at age 30. The other three main variables are the AFQT percentile score, having an early childbirth and race. Each point of difference in the AFQT score, accounts for about

	Age 20	Age 30
Unwanted	-0.04**	-0.03*
	(0.02)	(0.02)
AFQT	0.01***	0.00***
	(0.00)	(0.00)
Black	0.20***	0.13***
	(0.02)	(0.02)
Hispanic	0.03	-0.02*
	(0.02)	(0.02)
Child before age 20	-0.32***	-0.24***
	(0.02)	(0.02)
R^2	0.23	0.17
N	3,277	3,915

TABLE 6 Unwantedness on finishing high school by age. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished high school at age t (20 or 30) or 0 otherwise. Unwanted is a dummy that is equal to 1 if the first childbirth was reported as unwanted, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 20 is a dummy that is equal to 1 if the first childbirth was before age 20 (20 not included), and 0 otherwise

0.5% to 1% of higher probability of finishing high school. Having a teenage childbirth decreases the probability of finishing high school in 33% at age 20 and about 24% at age 30. Finally, black women consistently have higher probability of finishing high school in about 17% compared to non-black non-hispanic women at age 20, and 11% at age 30. This results is surprising, but it means that once controlling for having an early childbirth and their own AFQT percentile score, black mothers actually have higher graduation rates.

When I look at the alternative definition of unwantedness, there is not significant difference in high school completion between MWFCU and other mothers. Table A.2, shows the result of specification (1) when I use the alternative definition of unwantedness. For robustness, Appendix 5 show the results for specification (1) controlling for FCBA19, FCBA21 and FCBA22, and also for $t \in [21, 29]$ controlling for FCBA20. Table A.2 shows how a first childbirth that was unwanted relates to finishing high school, using the alternative definition of unwantedness. As showed in the descriptive statistics using this new definition of unwantedness, a higher percentage of Alt. MWFCU finished high school compared to other mothers, however this difference is not significant when I control for race, AFQT percentile score, and having a first childbirth before age 20. This last variable might be key for this analysis. As can be seen in Table 3, Alt. MWFCU have on average their first chilbirth at age 22, when in most cases they should have finished high school.

This is the first relevant result from this paper. There is a small negative relationship between having a first childbirth unwanted and finishing high school when the definition of unwantedness is based on a subjective ex-post question about the desire to have the childbirth. But when the definition is based on accidental pregnancies, or women that got pregnant while using contraceptive, then there is no significant relationship between having a first childbirth unwanted and finishing high school.

	HS Age 20	HS Age 30
Unwanted	0.01	0.02
	(0.02)	(0.01)
AFQT	0.01***	0.00***
	(0.00)	(0.00)
Black	0.19***	0.12***
	(0.02)	(0.02)
Hispanic	0.03	-0.02
	(0.02)	(0.02)
Child before age 20	-0.33***	-0.24***
	(0.02)	(0.01)
R^2	0.23	0.17
N	3,277	3,915

TABLE 7 Alternative definition of unwantedness on finishing high school by ages 20 and 30. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished high school at age t (20 or 30) or 0 otherwise. Unwanted is a dummy that is equal to 1 if the mother is a MWFCU according to the alternative definition of unwantedness, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 20 is a dummy that is equal to 1 if the first childbirth was before age 20 (20 not included), and 0 otherwise.

The next step is to study how unwanted childbirths relate to finishing college. The specification used is similar to (1):

$$COL_t = \alpha_0 + \alpha_1 * unw + \alpha_2 * FCBA28 + \gamma * X + \varepsilon \tag{2}$$

Where COL_t is a dummy that is equal to 1 if the woman finished college at age t and 0 otherwise, and FCBA28 is a dummy that is equal to 1 if first childbirth was born before the mother was 28 years old (28 not included) and 0 otherwise. This dummy has the same interpretation than FCBA20, but I choose less than 28 to allow for a big span of time for women to finish college (the mean age of college graduation for women in the NLSY79 is about 27). And finally X is the same set of controls than in (1) (race and AFQT percentile score at 1980).

Table 8, shows the results for specification (2) at ages 28 and 35 for two groups. Column 2 and 3 show the regression for all mothers, while the last two columns show the regression for those mothers who finished high school by age 20. The interest in including columns 4 and 5, is that high school graduation is a necessary condition for enrolling into college. This last two columns show how having a first childbirth unwanted relates to finishing college, for the set of women who finished high school at the average age of high school graduation. For robustness, Appendix 5 show the results for specification (2) controlling for FCBA26, FCBA27, FCBA29 and FCBA30, and also for $t \in [29, 34]$ controlling for FCBA28. Looking at all mothers, the results show that having the first childbirth unwanted, is associated with a lower probability of finishing college by 2% with respect to other mothers at age 28, but is not significant anymore at age 35. This result might suggest that MWFCU graduate eventually, but later than other mothers, although point estimates remain the same. Similar to the results about high school attainment, the three other variables that are

	Age 28 (All)	Age 35 (All)	Age 28 (w/HS)	Age 35 (w/HS)
Unwanted	-0.02*	-0.02	-0.04*	-0.03
	(0.01)	(0.01)	(0.02)	(0.02)
AFQT	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Black	0.07***	0.08***	0.10***	0.11***
	(0.01)	(0.01)	(0.02)	(0.02)
Hispanic	0.03**	0.04**	0.04**	0.05**
	(0.01)	(0.01)	(0.02)	(0.02)
Child before age 28	-0.21***	-0.20***	-0.24***	-0.23***
	(0.02)	(0.01)	(0.02)	(0.02)
R^2	0.27	0.27	0.29	0.28
N	4,062	3,490	2,638	2,281

TABLE 8 Unwantedness on finishing college by age. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished college at age t (28 or 35) or 0 otherwise. Unwanted is a dummy that is equal to 1 if the first childbirth was reported as unwanted, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 28 is a dummy that is equal to 1 if the first childbirth was before age 28, and 0 otherwise. Column 2 and 3 are the regression for all mothers. The last two columns are the regressions for those mothers who finished high school by age 20.

always significant are the AFQT score, having an early childbirth (before age 28) and being black. Having a childbirth before age 28 decreases the probability of finishing college in about 20%, while each extra point in the AFQT score, increases the probability in about 0.5%. Finally, I observe again that black women have about 10% higher probability of finishing college, with respect to non-black non-hispanic women, once I control for unwantedness, AFQT and early childbirth, and that at later stages of life, hispanic women also have higher probabilities conditional on the same controls. The last two columns show the how having a first unwanted childbirth is related to finishing college, but only for those mothers who finished high school at age 20. Table 8, shows that the unwanted coefficient is twice as large as for all mothers at age 28, but this effect is not significant anymore at age 35. This result suggest again that MWFCU finish college with lower probability and later than other mothers.

The second result form this paper comes from using specification (2) but using the alternative definition of unwantedness. Table 9, shows how having a first unwanted childbirths relates to finishing college, using this alternative definition. Column 2 and 3 are the regression for all mothers, while the last two columns are the regressions for those mothers who finished high school by age 20. For robustness, Appendix 5 show the results for specification (2) controlling for FCBA26, FCBA27, FCBA29 and FCBA30, and also for $t \in [29, 34]$ controlling for FCBA28. The unwanted coefficient is always negative and significant, even at age 35, meaning that even with this alternative definition of unwantedness, having a first childbirth unwanted is associated with a lower probability of finishing college. As mentioned before, selection is still present even when the alternative definition is used. But is still relevant that under both definitions, it is consistent that there is a small negative relationship between having a first childbirth unwanted and finishing college. This significant difference might be by itself a driver of the observed differences in wages at age 40 and 10 years after the first

	Age 28 (All)	Age 35 (All)	Age 28 (w/HS)	Age 35 (w/HS)
Unwanted	-0.03***	-0.03**	-0.04***	-0.03*
	(0.01)	(0.01)	(0.02)	(0.02)
AFQT	0.00***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Black	0.07***	0.08***	0.10***	0.11***
	(0.01)	(0.01)	(0.02)	(0.02)
Hispanic	0.03**	0.04***	0.04**	0.05**
	(0.01)	(0.01)	(0.02)	(0.02)
Child before age 28	-0.21***	-0.20***	-0.24***	-0.23***
	(0.01)	(0.01)	(0.02)	(0.02)
R^2	0.28	0.27	0.29	0.28
N	4,062	3,490	2,638	2,281

TABLE 9 Alternative definition of unwantedness on finishing college by ages 28 and 35. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished college at age t (28 or 35) or 0 otherwise. Unwanted is a dummy that is equal to 1 if the mother is a MWFCU according to the alternative definition of unwantedness, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 28 is a dummy that is equal to 1 if the first childbirth was before age 28 (28 not included), and 0 otherwise. Column 2 and 3 are the regression for all mothers. The last two columns are the regressions for those mothers who finished high school by age 20.

childbirth, since education is one of the main responsible for wage growth.

In summary, I find a small negative relationship between having a first childbirth unwanted and finishing college. The evidence for finishing high school is not conclusive. While the definition based on self-reported unwantedness show a significant lower probability on finishing high school for mothers whose first childbirth was unwanted, this difference does not hold when I use a definition based on the use of contraception. Early childbirth is one of the main reasons why women do not finish their education, and as Tables 2 and 3 show, MWFCU have their first childbirth about 1.5 to 3 years younger than other mothers. To show how having a first childbirth unwanted relates with the age when these mothers have their first childbirth, I use the following specification:

$$AFC = \alpha_0 + \alpha_1 * unw + \gamma * X + \varepsilon \tag{3}$$

Where AFC is the age at first childbirth, unw is the same unwanted dummy than in specifications (1) and (2), and X is a set of controls that only includes race (non-black non-hispanic is omitted). In a second regression I will also include 1980 AFQT score to control for non-cognitive skills in the decision of having a child early in life.

Table 10, shows the coefficients for the estimation of specification (3). The results are not so different to what is showed in Table 2. When I do not control for AFQT, MWFCU have their first childbirth almost 3 years before other mothers, while black and hispanic mothers have their first childbirth almost two and one year before non-black non-hispanic mothers respectively. When I do control by AFQT score, the difference between MWFCU and other mothers is still significant but now is a two year difference. When I repeat this

	(1)	(2)
Unwanted	-2.63***	-2.22***
	(0.21)	(0.21)
Black	-1.91***	-0.02
	(0.19)	(0.21)
Hispanic	-0.78***	0.83***
	(0.22)	(0.23)
AFQT		0.07***
		(0.00)
R^2	0.06	0.15
N	4,930	4,679

TABLE 10 Unwantedness on age at first childbirth. *Notes:* The dependent variable is the age at first childbirth. Unwanted is a dummy that is equal to 1 if the first childbirth was reported as unwanted, and 0 otherwise. Regression (2) add the AFQT score as a control. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted.

analysis but using the alternative definition of unwantedness (see Table 11), MWFCU still have their first childbirth at younger ages, but the difference is smaller. With this alternative definition, the difference is about a year and a half.

As showed in Table 6 and Table 8, having an early childbirth has a high and significant negative relationship with finishing high school and college. The results showed in tables 10 and 11 suggest that MWFCU have their first childbirth at younger ages, and this can also reduce their probability of finishing their education. As mentioned in the result on college completion, this result on age at first childbirth can also be a driver of the difference in wages by itself.

In the remaining part of this section, I analyze a question from the NLSY79 that directly asks these women what was the main reason why they left their education. There are 13 possible answers to that question[3], including **"pregnancy"** as one of the options. However, there are four other possible answers that might be related to having a childbirth. I define **"child related"** reasons for leaving their education as women who answered either *"pregnancy"*, *"getting married"*, *"home responsibilities"*, *"chose to work"* or *"financial difficulties"*.

These questions are only asked when women drop out of their education. Since some women might take some time before deciding to drop out of their education, I look at this question in the year of the first childbirth and the next consecutive survey year. Until 1994 the NLSY79 is conducted annually and biannually thereafter. Therefore until 1994 this will be two consecutive years, and after 1994 this covers a time span of four years.

As mentioned before, to clarify I define a mother that dropped out of her education because of her pregnancy as a mother who answers "pregnancy" to this question. And I am going to define a mother that dropped out of education for pregnancy related reasons as a mother who answers this question with "pregnancy" or any of the four additional possible answers

[3]The possible answers are: 1. received degree, 2. getting married, 3. pregnancy, 4. did not like school, 5. poor grades, 6. home responsibilities, 7. chose to work, 8. financial difficulties, 9. entered military, 10. expelled or suspended, 11. school to dangerous, 12. moved away from school and 13. other

	(1)	(2)
Unwanted	-1.42***	-1.57***
	(0.18)	(0.18)
Black	-2.29***	-0.17
	(0.19)	(0.21)
Hispanic	-0.98***	0.77***
	(0.22)	(0.23)
AFQT		0.07***
		(0.00)
R^2	0.04	0.14
N	4,930	4,679

TABLE 11 Alternative unwantedness on age at first childbirth. *Notes:* The dependent variable is the age at first childbirth. Unwanted is a dummy that is equal to 1 if the first childbirth was reported as unwanted using the alternative definition, and 0 otherwise. Regression (2) add the AFQT score as a control. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted.

Variable	Full sample	MWFCu	OM	alt-MWFCU	alt-OM
Pregnancy	32%	36%	31%	34%	31%
Pregnancy (Never finished)	17%	16%	17%	16%	17%
Pregnancy related	63%	66%	61%	66%	61%
Pregnancy related (Never finished)	34%	32%	34%	33%	34%

TABLE 12 Reasons why dropout from high school or college. *Notes:* "Pregnancy related´´ applies when the reason they left education was either "pregnancy´´, "getting married´´, "home responsibilities´´, "chose to work´´ or "financial difficulties´´. "Never finished´´ is defined as not completing education by the end of the panel (2014).

listed before.

Table 12 shows that in the whole sample, conditional on dropping out of education, 32% reported dropping out because of their pregnancy, and 63% dropped out for pregnancy related reasons. Some of these women continued their education at later stages of their lives. 17% of the whole sample dropped out exclusively because of their pregnancy and never finished their education, and 34% dropped out and never finished their education for pregnancy-related reasons.

Columns three and four compare these results for MWFCU and other mothers. 36% of MWFCU dropped out because of their pregnancy, while 31% of other mothers dropped out because of their pregnancy. This difference is similar when I look at pregnancy-related reasons. However, when looking at the long run educational outcome as measured by eventual graduation, there is no significant difference between MWFCU and other mothers, meaning that MWFCU end up catching up with other mothers in terms of educational attainment eventually.

In summary, the main results from this section are the following. First, there is a small

negative relationship between a first childbirth unwanted and finishing college. However, the relationship between a first childbirth unwanted and finishing high school depends on the definition of unwantedness. Second, early childbirth seems to be what is most related to women not being able to finish either high school or college, and MWFCU have their first childbirth between one and a half to three years younger than other mothers. Finally, about 35% of MWFCU delayed their education due to childbirth, while 16% of them never finished their education due to childbirth. These percentages almost double when I look at other reasons that might be related to having a childbirth, but do not differ between MWFCU and other mothers. These results by itself can explain the differences observed in wages since, as shown in the literature, college education and age at first childbirth are strongly related to earnings later in life.

4.2 | Unwanted first childbirths on women wages

So far I showed that having an first childbirth unwanted has a small negative relationship with finishing college and age at first childbirth. This mild gap in education and the age when the mothers have their first child can translate into differences in wages among MWFCU and other mothers. In this section I show how the fact that the first childbirth is unwanted relates to women wages. To show this I use the following two specifications:

$$\ln wage_{i,40} = \alpha_0 + \alpha_1 * unw_i + \beta * X_{i,40} + \gamma * d_t + \varepsilon_i \quad (4)$$

$$\ln wage_{i,+10} = \alpha_0 + \alpha_1 * unw_i + \beta * X_{i,+10} + \gamma * d_t + \varepsilon_i \quad (5)$$

Where the sub index 40 means **at age 40**, and the sub index +10 means **10 years after the first childbirth**. The choice of estimating wages at age 40 corresponds to the facts that most of women already had their first childbirth at age 40, and also about the fact that according to the Bureau of Labor Statistics, wage "jumps" are more frequent before age 40 (between ages 25 to 34). Women have their first childbirth at different ages. In order to estimate the long run relationship between wages and having a first childbirth unwanted, I look at wages ten years after they have their first childbirth. Appendix 5 shows results for a wider number of ages for specification (4) and years after the first childbirth for specification (5), and results do not change qualitatively. Unwanted is a dummy that takes value 1 if the first child was unwanted and 0 otherwise, and d_t is a set of year dummies. X is a set of controls that include marital status, race (non-black non-hispanic is omitted) in every specification and in the regression 10 years after childbirth, it also includes age and age squared. This is the basic set of controls, it includes the main variable of interest, having a first childbirth unwanted, and a set of not correlated variables. To better understand the relationship between having a first childbirth unwanted with wages, in the following specifications I will also include other two set of controls. The first ones are the main controls that affect wages, as education, experience, number of children and in the case of wages at age 40, and also age at first childbirth. In the previous section I showed that unwantedness is correlated with education and with age at first childbirth, and Appendix 5 Table A.7 shows that it is also correlated with the number of children and weakly correlated with experience. The final set of controls are background controls, i.e. parents education and AFQT score. In the case of the regression at age 40, I restrict the sample to women who had their first child before age 40. These variables control for possible differences in women's background characteristics that could directly relate to their long run wages.

Table 13, shows the main results of the previous specifications were the dependent variable

is logarithm of hourly wages and Unwanted is the original definition of unwantedness. Appendix 5 Table A.8, shows the full table. The variables that are showed in the main text are those that are statistically significant, and are related to having a first childbirth unwanted. Column 2 and 3 show the results with the basic set of controls from specifications (4) and (5). The dummy unwanted is negative and significant in both specifications. This suggests that having an unwanted first childbirth is negatively correlated with hourly wages. The coefficient at age 40 is bigger than the coefficient for 10 years after the childbirth. Taking into account that the average age at first kid for all mothers in these sample is around 23, this suggests that the difference in wages gets bigger as women gets older.

Column 2, shows that hourly wages for MWFCU are approximately 12% lower at age 40 compared to other mothers. Looking at column 3, the only significant variable is the unwanted dummy, and it shows that ten years after the childbirth, MWFCU have hourly wages that are approximately 7% lower compared to other mothers. By looking at this reduced set of controls, where I do not include controls that might be affected by the first unwanted pregnancy, it suggest that MWFCU have wages that are between 7% to 12% lower than other mothers.

Columns 4 and 5 in Table 13, use the same specifications as column 2 and 3 respectively, but including experience, education, number of children and age at first childbirth, and as additional controls for the specification 10 years after the childbirth, the age and age squared are also added. All the coefficients corresponding to the unwanted dummy are still negative, but smaller and only significant in the specification 10 years after the first childbirth. As expected, college education is the variable that always remains significant and with the highest coefficient. The other variable that is always significant is experience. Each year of experience increases hourly wages between 4% to 6%. The age when women had their first childbirth is significant for specification (5), and each year delayed increases wages in 1%. Including these controls, shows that unwantedness is still negatively correlated with wages, but the drivers seem to be the differences in education, experience, and age at first childbirth. Unwantedness is only significant in the regression 10 years after the first childbirth, which could hint that the correlation is higher in the short term.

The last two columns of Table 13, include parents education and AFQT percentile score as controls. Table 4, shows that MWFCU have parents with lower education and lower AFQT scores, these differences might imply that MWFCU come from less educated backgrounds and might be less risk averse to getting pregnant or have a lower reservation value to getting pregnant while not looking for it. The main results of including this controls, is that the coefficient associated with finishing college is reduced (to 26%) and, that the each point in the AFQT percentile score has relates to women wages between 0.5% and 1%, where AFQT percentile score is a measure of non-cognitive skills. Also unwantedness now is not even significant 10 years after the first childbirth, but the point estimates remain unchanged. It is important to notice that even when the point estimates are not significant, they remain negative and consistently around 4% and 7%. This might be related to a small sample size, and since this paper does not attempt to show any causal relationship, the point estimates can not be disregarded.

The main result from these regressions is that having a first childbirth unwanted has a negative relationship with women wages, however that negative relationship seems to come from the relationship between unwantedness with education and age at first childbirth, rather than from the unwantedness of the first childbirth in itself. Once a broader set of

	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{40}$	$\ln w_{+10}$
Unwanted	-0.12***	-0.07*	-0.04	-0.07*	-0.04	-0.07
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)
Experience			0.04**	0.06***	0.05***	0.04***
			(0.02)	(0.01)	(0.02)	(0.01)
Experience squared			0.00	-0.00	-0.00	-0.00
			(0.00)	(0.00)	(0.00)	(0.00)
High School			0.10**	0.05	0.05	-0.05
			(0.04)	(0.04)	(0.05)	(0.04)
College			0.42***	0.47***	0.24***	0.24***
			(0.04)	(0.06)	(0.05)	(0.07)
No. children			-0.01	-0.03	-0.01	-0.02
			(0.02)	(0.02)	(0.02)	(0.02)
Age at first child			0.01***		0.01**	
			(0.00)		(0.00)	
AFQT score					0.01***	0.01***
					(0.00)	(0.00)
R^2	0.02	0.15	0.16	0.22	0.17	0.25
N	2,428	2,550	2,428	2,550	1,967	2,063

TABLE 13 Regressions of hourly wages. *Notes:* The dependent variable is hourly wages at age 40 for specifications in column 2, 4 and 6, and hourly wages 10 years after childbirth in columns 3, 5 and 7. Unwanted is a dummy that is equal to 1 if the first childbirth was reported as unwanted according to the original definition.One year of experience is defined as a year were a woman worked at least 20 hours per week in average.

controls is included, the unwanted dummy is not significant for any of the specifications, but the point estimates remain in similar negative values

As shown in Table 3, when I use the alternative definition of unwantedness the difference in mean wages for alt-MWFCU to other mother is negative but not significant. It is not surprising then, that when I use specifications (4) and (5) but using the alternative definition of unwantedness, most of the unwanted coefficients are not significant, but the pont estimates are consistently negative around 3% to 8%. Table 14, shows the same specifications than in Table 13 but now the unwanted dummy is equal to 1 if a mother is a alt-MWFCU according to the alternative definition, and equal to 0 for every other mother. The full table is reported in Appendix 5 Table A.9. The coefficient of unwantedness is still always negative, but now is only significant for the difference at age 40 in the main specification (column 2), however is not significant anymore for 10 years after the childbirth (column 3). The rest of the results remain quite similar. Not surprisingly, finishing college is the main contributor to hourly wages. Age at first childbirth, experience and AFQT percentile score are also relevant in the wage determination.

The main takeaway from these two tables is that there is a negative relationship between having a first childbirth unwanted and hourly wages. The main drivers of these difference in wages come from the fact that MWFCU and alt-MWFCU have their first childbirth earlier in life, and have lower probability of finishing college. Finally, as a robustness check Appendix 5 show the results for the unwanted coefficient, for specifications where the dependent variable is wages at ages from 30 to 50, and also for the specification where the dependent

	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{40}$	$\ln w_{+10}$
Unwanted	-0.08**	-0.03	-0.03	-0.03	-0.03	-0.06
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Experience			0.04**	0.06***	0.06***	0.05***
			(0.02)	(0.01)	(0.01)	(0.01)
Experience squared			0.00	-0.00	-0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)
High School			0.10**	0.05	0.05	-0.04
			(0.04)	(0.04)	(0.04)	(0.04)
College			0.42***	0.47***	0.24***	0.24***
			(0.04)	(0.06)	(0.05)	(0.07)
No. children			-0.01	-0.02	-0.01	-0.01
			(0.02)	(0.02)	(0.02)	(0.02)
Age at first child			0.01***		0.01**	
			(0.00)		(0.00)	
Mother finished HS					0.07*	0.07*
					(0.04)	(0.04)
AFQT score					0.00***	0.01***
					(0.00)	(0.00)
R^2	0.02	0.14	0.16	0.22	0.17	0.25
N	2,428	2,550	2,428	2,550	1,967	2,063

TABLE 14 Regressions of wages using the alternative definition of unwantedness. *Notes:* The dependent variable is hourly wages at age 40 for specifications in column 2, 4 and 6, and hourly wages 10 years after childbirth in columns 3, 5 and 7. Unwanted is a dummy that is equal to 1 if the mother is a MWFCU according to the alternative definition of unwantedness. One year of experience is defined as a year were a woman worked at least 20 hours per week in average.

variable is wage from 5 to 14 years after the first childbirth.

4.3 | Robustness

The set of background variables that is reported in the NLSY79 is not exhaustive, hence there might still be some background differences that are actually what drive future differences in wages. Meaning that no matter what would happen with the fertility of these women, they would have always ended up with lower wages. Another way to control for possible background differences, is to include the unwanted dummy in a regression of wages certain number of years before the childbirth. Given that all of these women are childless at that time, what this coefficient reflect is if there is some non-observed variable that affect wages, that is more present in MWFCU compared to OM. Appendix 5 Table A.10, shows the regression using specification (5), but measuring the variables 2 and 3 years before childbirth. Since I want to capture background variables that are not the ones that are already considered, parents education and own AFQT score are included as controls too.

Appendix 5 Table A.10, shows that the coefficient associated with unwantedness are never significant. Since these women are on average quite young 2 to 3 years before their childbirth, age is the most important variable that affect their wages in this specifications and explains around 24% of their wages. As a robustness check, I repeated the same specification but without controlling for age and age square, and the unwanted coefficient is still

non-significant. The result is also robust to the regressions 1 and 4 years before the childbirth.

So far I have showed that differences in education seem to be one of the main differences among MWFCU and other mothers. Appendix 5 Table A.11, shows how unwantedness and hourly wages are related for women who finished high school, never enrolled in college and had their first childbirth after finishing high school. By doing this I am analyzing a group of women who should not have their education decision affected by their childbirth. The results of this analysis shows that among these sub group of mothers, there is no significant difference in hourly wages among UM and OM. Most of the coefficients are positive, however with high standard errors. It is noticeable that the number of observations is quite small, which might cause identification problems. However, it seems that the main driver of the difference among MWFCU and other mothers is their educational attainment, particularly finishing college education. When I look at women with the same educational attainment, differences are not significant. For sample size reasons I can not repeat this analysis for dropout women or women who finished college.

In Appendix 5 Table A.12 I repeat this analysis for women who finished high school, had their first childbirth after finishing high school, enrolled in college, but never finished college. In this case the unwanted coefficient is always negative, and even significant in the regressions at age 40 without background controls. Again the number of observations for MWFCU is quite small, and sample size issues persist. For women who dropped out from college, having an unwanted childbirth seems to be uncorrelated or negatively correlated with their wages. This might be causes by some other mothers dropping out from college for better job opportunities, while some MWFCU dropping out from college because of their childbirth. Since the number of observations is so low in this sub group, and not all these mothers answered the question about the reasons why they left their education, I can not analyze that question for this sub group.

In summary, mothers whose first childbirth was unwanted show slightly lower wages, slightly lower probabilities of finishing high school and college, and have their first childbirth one and a half to three years earlier than other mothers. Not surprisingly, finishing college has the strongest relationship with these women wages. The fact that an first childbirth unwanted is negatively correlated with finishing college might be a possible main reason why I observe some small disparities in wages. When I look only at women who decided not to pursue college education and had their first childbirth after finishing high school, I also do not observe significant differences in hourly wages among MWFCU and other mothers. MWFCU who dropped out of college and never finished have slightly lower or equal wages than other mothers that dropped out from college and never finished. Experience seems to be also a relevant factor, and the fact that MWFCU have their first child when they are younger and have more children, might be related with the small negative relationship in wages. However, Appendix 5 shows that at age 40, MWFCU have less than a year of difference in experience compared to other mothers, and that 10 years after their childbirth, they do not have any difference in terms of experience.

5 | CONCLUSIONS

In this paper I look at the relationship between having a first childbirth unwanted and women's education and wages. This is the first paper that documents these relationships using the NLSY79. Given the richness of the NLSY79, I define a first childbirth as unwanted

in two different ways. First, by looking at a question asked after each childbirth, about the desire of having that child. Second, by looking at women's attitude towards contraceptive methods. Specifically, I look if women's got pregnant but answered that they were using contraceptive methods.

I find a small negative relationship between having a first childbirth unwanted and finishing college. However there is no significant relationship between finishing high school and having a first childbirth unwanted. One of the main reasons that causes these women to drop out of their education is having early childbirths. I found that having a first unwanted childbirth is associated with women having their first childbirth between one and a half to three years younger than the rest of the mothers.

Finally, I document on average women whose first childbirth was unwanted seem to have slightly lower wages to the rest of the mothers. This is consistent once I control for a set of rich variables, including education, experience, age at first childbirth and some background variables. Additionally, when I look at women with similar educational attainments, I do not observe significant differences in hourly wages.

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APPENDIX

Robustness: High School

	HS Age 20	HS Age 30	HS Age 20	HS Age 30	HS Age 20	HS Age 30
Unwanted	-0.05**	-0.03**	-0.03*	-0.03	-0.04**	-0.03*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
AFQT	0.01***	0.00***	0.01***	0.00***	0.01***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Black	0.20***	0.13***	.20***	0.13***	0.20***	0.13***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Hispanic	0.02	-0.02	0.03	-0.01	0.03	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Child before age 19	-0.33***	-0.25***				
	(0.02)	(0.02)				
Child before age 21			-0.30***	-0.23***		
			(0.02)	(0.01)		
Child before age 22					-0.25***	-0.20***
					(0.02)	(0.01)
R^2	0.22	0.16	0.23	0.17	0.21	0.15
N	3,277	3,915	3,277	3,915	3,277	3,915

TABLE A.1 **Unwantedness on finishing high school by ages 20 and 30**. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished high school at age t (20 or 30) or 0 otherwise. Unwanted is a dummy that is equal to 1 if the first childbirth was reported as unwanted, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 19, 20, or 21 are dummies that are equal to 1 if the first childbirth was **before** age 19, 20, and 21 respectively, and 0 otherwise.

	HS Age 20	HS Age 30	HS Age 20	HS Age 30	HS Age 20	HS Age 30
Unwanted	-0.01	0.00	0.01	-0.02	0.02	-0.02
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
AFQT	0.01***	0.00***	0.01***	0.00***	0.01***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Black	0.19***	0.12***	0.19***	0.13***	0.19***	0.12***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Hispanic	0.02	-0.02	0.03	-0.01	0.03	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Child before age 19	-0.34***	-0.25***				
	(0.02)	(0.02)				
Child before age 21			-0.31***	-0.23***		
			(0.02)	(0.01)		
Child before age 22					-0.26***	-0.20***
					(0.02)	(0.01)
R^2	0.22	0.16	0.23	0.17	0.21	0.15
N	3,277	3,915	3,277	3,915	3,277	3,915

TABLE A.2 Alternative unwantedness on finishing high school by ages 20 and 30. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished high school at age t (20 or 30) or 0 otherwise. Unwanted is a dummy that is equal to 1 if the is a MWFCU according to the alternative definition of unwantedness, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 19, 20, or 21 are dummies that are equal to 1 if the first childbirth was **before** age 19, 20, and 21 respectively, and 0 otherwise.

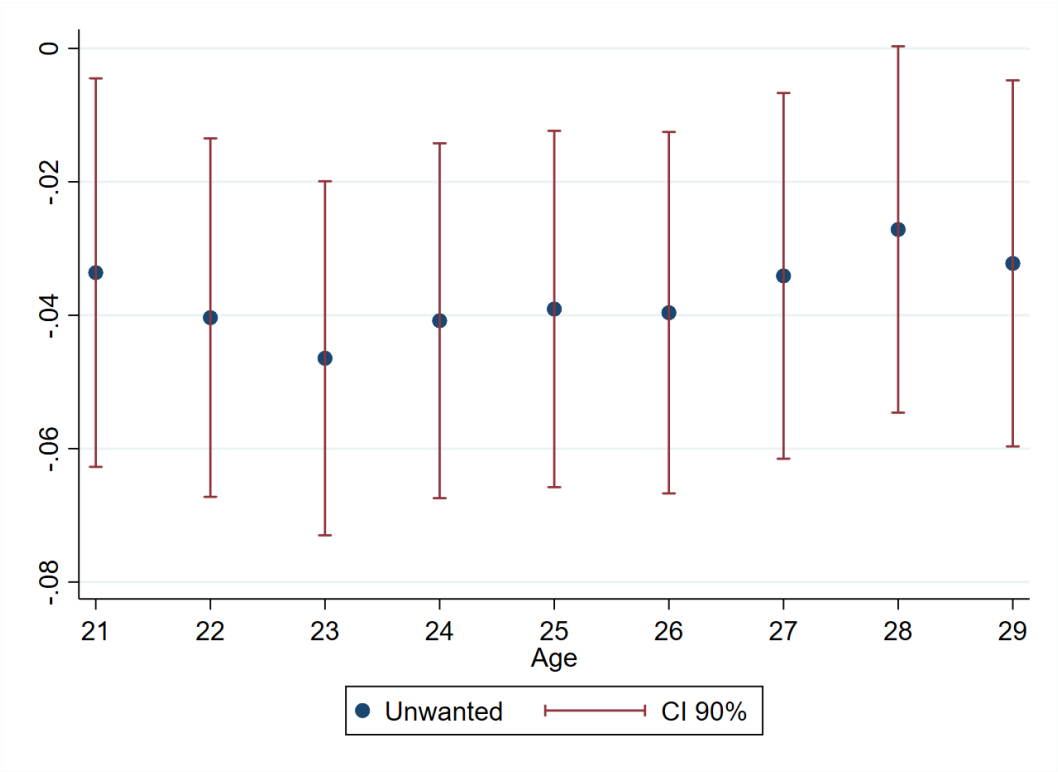

FIGURE A.1 Unwantedness on finishing high school for ages 21 to 29. *Notes:* This graph shows the coefficient for the control "unwanted" for the specification 1 and the confidence intervals at 90% where the dependant variable is a dummy that is equal to 1 if the woman finished high school at ages from 21 to 29, or 0 otherwise.

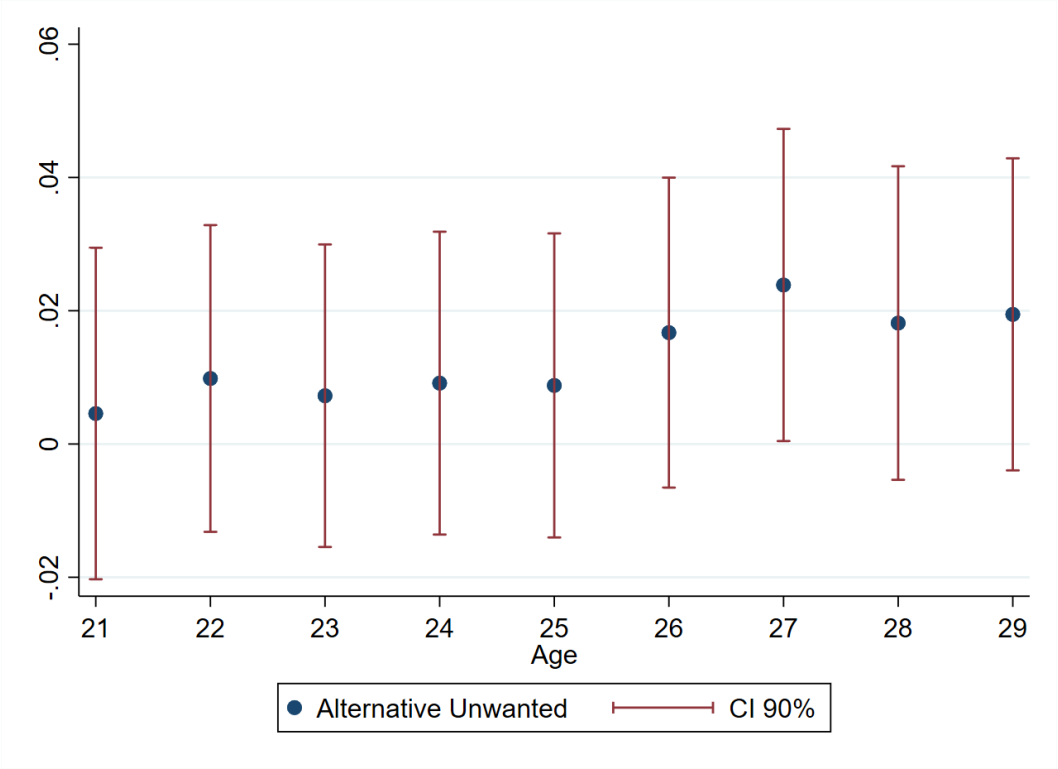

FIGURE A.2 Alternative definition of unwantedness on finishing high school for ages 21 to 29. *Notes:*This graph shows the coefficient for the control "unwanted" (for the alternative definition of unwantedness) for the specification 1 and the confidence intervals at 90% where the dependant variable is a dummy that is equal to 1 if the woman finished high school at ages from 21 to 29, or 0 otherwise.

Robustness: College

	COL Age 28	COL Age 35	COL Age 28	COL Age 35	COL Age 28	COL Age 35	COL Age 28	COL Age 35
Unwanted	-0.01	-0.01	-0.02	-0.02	-0.03**	-0.03*	-0.03**	-0.03**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
AFQT	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Black	0.08***	0.09***	0.07***	0.08***	0.07***	0.08***	0.07***	0.08***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Hispanic	0.03**	0.05***	0.03**	0.04***	0.03**	0.04***	0.03**	0.04**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Child before age 26	-0.21***	-0.20***						
	(0.01)	(0.01)						
Child before age 27			-0.21***	-0.21***				
			(0.01)	(0.01)				
Child before age 29					-0.18***	-0.18***		
					(0.01)	(0.01)		
Child before age 30							-0.16***	-0.17***
							(0.01)	(0.01)
R^2	0.29	0.28	0.28	0.28	0.26	0.25	0.24	0.24
N	4,062	3,490	4,062	3,490	4,062	3,490	4,062	3,490

TABLE A.3 Unwantedness on finishing college by ages 28 and 35. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished college at age t (28 or 35) or 0 otherwise. Unwanted is a dummy that is equal to 1 if the first childbirth was reported as unwanted, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 26, 27, 29, or 30 are dummies that are equal to 1 if the first childbirth was **before** age 26, 27, 29, or 30 respectively, and 0 otherwise.

	COL Age 28	COL Age 35	COL Age 28	COL Age 35	COL Age 28	COL Age 35	COL Age 28	COL Age 35
Unwanted	-0.02	-0.02	-0.03	-0.02	-0.04**	-0.03*	-0.05**	-0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
AFQT	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Black	0.12***	0.12***	0.10***	0.11***	0.10***	0.10***	0.10***	0.10***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Hispanic	0.04**	0.05***	0.04*	0.05***	0.04*	0.05**	0.04*	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Child before age 26	-0.26***	-0.25***						
	(0.01)	(0.02)						
Child before age 27			-0.25***	-0.25***				
			(0.01)	(0.02)				
Child before age 29					-0.21***	-0.21***		
					(0.02)	(0.02)		
Child before age 30							-0.18***	-0.19***
							(0.02)	(0.02)
R^2	0.31	0.30	0.30	0.29	0.27	0.27	0.25	0.25
N	2,638	2,281	2,638	2,281	2,638	2,281	2,638	2,281

TABLE A.4 Unwantedness on finishing college by ages 28 and 35 conditional on having finished high school by age 20. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished college at age t (28 or 35) or 0 otherwise. Unwanted is a dummy that is equal to 1 if the first childbirth was reported as unwanted, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 26, 27, 29, or 30 are dummies that are equal to 1 if the first childbirth was **before** age 26, 27, 29, or 30 respectively, and 0 otherwise. Mothers who did not finish high school by age 20 are dropped in these regressions.

	COL Age 28	COL Age 35	COL Age 28	COL Age 35	COL Age 28	COL Age 35	COL Age 28	COL Age 35
Unwanted	-0.02**	-0.02*	-0.03**	-0.02	-0.03***	-0.03**	-0.04***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
AFQT	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Black	0.08***	0.09***	0.07***	0.08***	0.07***	0.08***	0.07***	0.08***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Hispanic	0.03**	0.04***	0.03**	0.04***	0.03**	0.04***	0.03**	0.04**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Child before age 26	-0.21***	-0.20***						
	(0.01)	(0.01)						
Child before age 27			-0.21***	-0.21***				
			(0.01)	(0.01)				
Child before age 29					-0.18***	-0.18***		
					(0.01)	(0.01)		
Child before age 30							-0.16***	-0.17***
							(0.01)	(0.01)
R^2	0.29	0.29	0.28	0.28	0.26	0.26	0.25	0.24
N	4,062	3,490	4,062	3,490	4,062	3,490	4,062	3,490

TABLE A.5 Alternative unwantedness on finishing college by ages 28 and 35. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished college at age t (28 or 35), and 0 otherwise. Unwanted is a dummy that is equal to 1 if the mother is a MWFCU according to the alternative definition of unwantedness, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 26, 27, 29, or 30 are dummies that are equal to 1 if the first childbirth was **before** age 26, 27, 29, or 30 respectively, and 0 otherwise.

	COL Age 28	COL Age 35	COL Age 28	COL Age 35	COL Age 28	COL Age 35	COL Age 28	COL Age 35
Unwanted	-0.03*	-0.02	-0.03**	-0.03*	-0.05***	-0.04**	-0.05***	-0.04**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
AFQT	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Black	0.12***	0.12***	0.10***	0.11***	0.10***	0.10***	0.10***	0.10***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Hispanic	0.04**	0.05***	0.04*	0.05**	0.04*	0.05**	0.03*	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Child before age 26	-0.26***	-0.25***						
	(0.01)	(0.02)						
Child before age 27			-0.25***	-0.24***				
			(0.01)	(0.02)				
Child before age 29					-0.21***	-0.21***		
					(0.02)	(0.02)		
Child before age 30							-0.18***	-0.19***
							(0.02)	(0.02)
R^2	0.31	0.30	0.30	0.29	0.27	0.27	0.25	0.26
N	2,638	2,281	2,638	2,281	2,638	2,281	2,638	2,281

TABLE A.6 Alternative unwantedness on finishing college by ages 28 and 35 conditional on having finished high school by age 20. *Notes:* The dependent variable is a dummy that is equal to 1 if the woman finished college at age t (28 or 35) or 0 otherwise. Unwanted is a dummy that is equal to 1 if the mother is a MWFCU according to the alternative definition of unwantedness, and 0 otherwise. AFQT is the percentile score in the exam in 1980. Race non-black non-hispanic is omitted. Child before age 26, 27, 29, or 30 are dummies that are equal to 1 if the first childbirth was **before** age 26, 27, 29, or 30 respectively, and 0 otherwise. Mothers who did not finish high school by age 20 are dropped in these regressions.

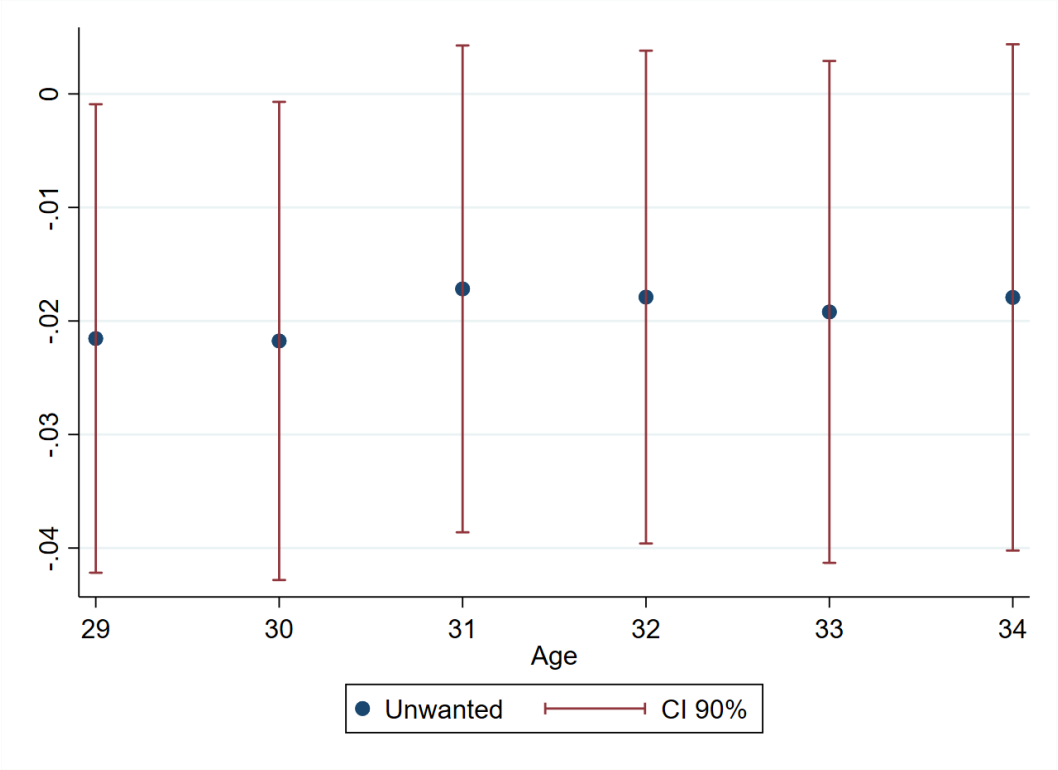

FIGURE A.3 Unwantedness on finishing college for ages 29 to 34. *Notes:* This graph shows the coefficient for the control "unwanted" for the specification 2 and the confidence intervals at 90% where the dependant variable is a dummy that is equal to 1 if the woman finished college at ages from 29 to 34, or 0 otherwise.

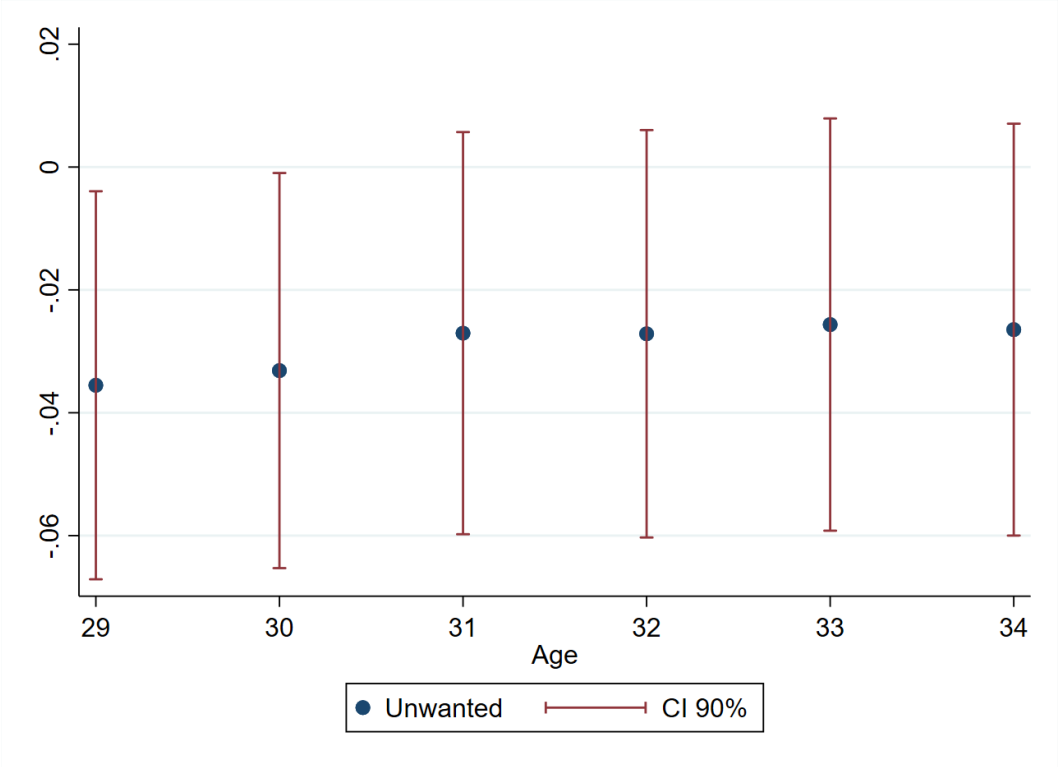

FIGURE A.4 Unwantedness on finishing college for ages 29 to 34 for women who finished high school by age 20. *Notes:* This graph shows the coefficient for the control "unwanted" for the specification 2 and the confidence intervals at 90% where the dependant variable is a dummy that is equal to 1 if the woman finished college at ages from 29 to 34, or 0 otherwise. Mothers who did not finish high school by age 20 are dropped in these regressions.

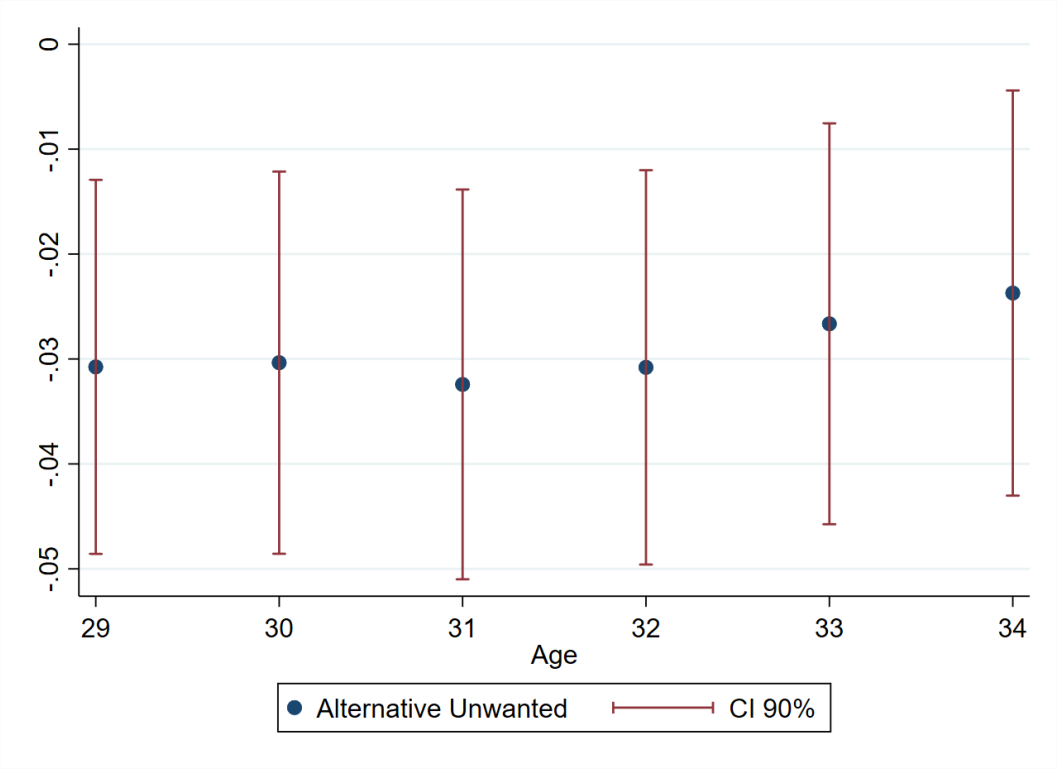

FIGURE A.5 Alternative definition of unwantedness on finishing college for ages 29 to 34. *Notes:* This graph shows the coefficient for the control "unwanted" (using the alternative definition of unwantedness) for the specification 2 and the confidence intervals at 90% where the dependant variable is a dummy that is equal to 1 if the woman finished college at ages from 29 to 34, or 0 otherwise.

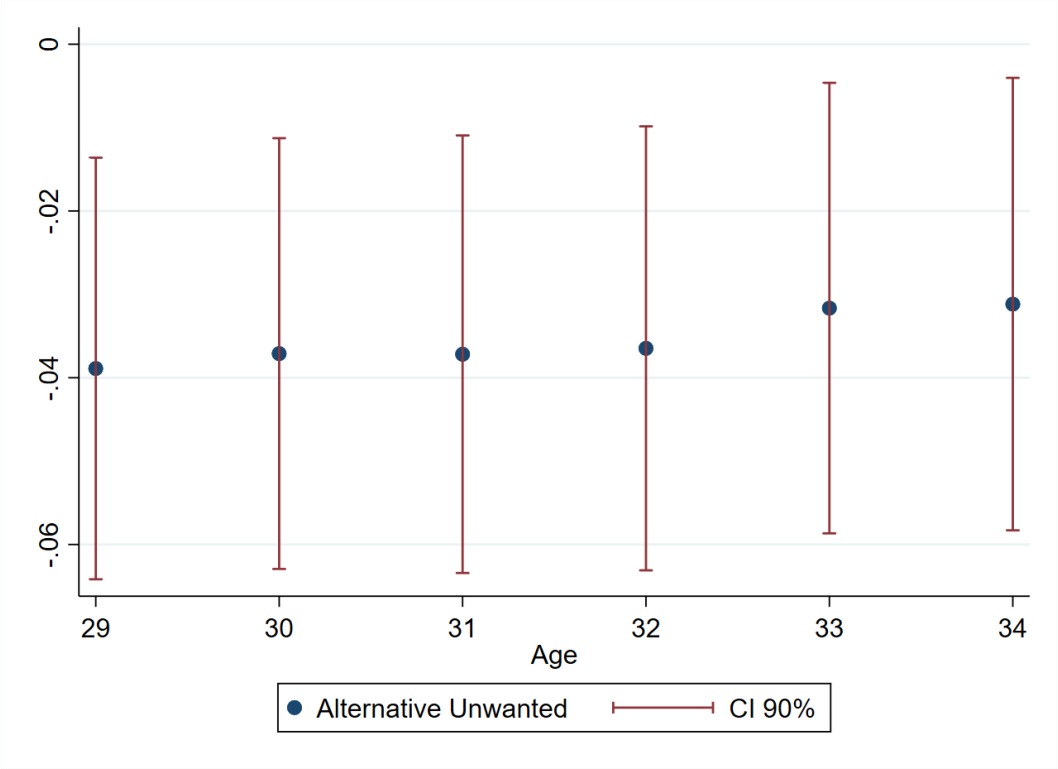

FIGURE A.6 Alternative definition of unwantedness on finishing college for ages 29 to 34 for women who finished high school by age 20. *Notes:* This graph shows the coefficient for the control "unwanted" (using the alternative definition of unwantedness) for the specification 2 and the confidence intervals at 90% where the dependant variable is a dummy that is equal to 1 if the woman finished college at ages from 29 to 34, or 0 otherwise. Mothers who did not finish high school by age 20 are dropped in these regressions.

Correlated variables

	Exp 40	Exp +10	No. child
Unwanted	-0.45**	0.01	0.60***
	(0.19)	(0.15)	(0.04)
Married	3.25***	1.72***	
	(0.15)	(0.11)	
Black	1.72***	0.66***	0.09**
	(0.19)	(0.15)	(0.04)
Hispanic	1.19	0.43***	0.29***
	(0.22)	(0.16)	(0.05)
Age		0.34**	
		(0.03)	
AFQT	0.04	0.02***	-0.00***
	(0.00)	(0.00)	(0.00)
R^2	0.15	0.51	0.08
N	4,614	4,656	4,679

TABLE A.7 Variables correlated with unwantedness

| Full tables

	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{40}$	$\ln w_{+10}$
Unwanted	-0.12***	-0.07*	-0.04	-0.07*	-0.04	-0.07
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)
Married	0.15***	0.04	0.07**	0.02	0.03	-0.01
	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)
Black	-0.09**	-0.04	-0.01	-0.01	0.15***	0.17***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)
Hispanic	-0.03	0.07	0.07**	0.10**	0.22***	0.22***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)
Age		0.05		0.02		-0.03
		(0.06)		(0.05)		(0.06)
Age squared		-0.00		-0.00		0.00
		(0.00)		(0.00)		(0.00)
Experience			0.04**	0.06***	0.05***	0.04***
			(0.02)	(0.01)	(0.02)	(0.01)
Experience squared			0.00	-0.00	-0.00	-0.00
			(0.00)	(0.00)	(0.00)	(0.00)
High School			0.10**	0.05	0.05	-0.05
			(0.04)	(0.04)	(0.05)	(0.04)
College			0.42***	0.47***	0.24***	0.24***
			(0.04)	(0.06)	(0.05)	(0.07)
No. children			-0.01	-0.03	-0.01	-0.02
			(0.02)	(0.02)	(0.02)	(0.02)
Age at first child			0.01***		0.01**	
			(0.00)		(0.00)	
Father finished HS					0.04	0.01
					(0.04)	(0.04)
Father finished Col.					0.05	-0.03
					(0.05)	(0.05)
Mother finished HS					0.07	0.07*
					(0.04)	(0.04)
Mother finished Col.					-0.03	0.05
					(0.06)	(0.06)
AFQT score					0.01***	0.01***
					(0.00)	(0.00)
R^2	0.02	0.15	0.16	0.22	0.17	0.25
N	2,428	2,550	2,428	2,550	1,967	2,063

TABLE A.8 Regressions of hourly wages

	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{40}$	$\ln w_{+10}$
Unwanted	-0.08**	-0.03	-0.03	-0.03	-0.03	-0.06
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Married	0.16***	0.04	0.07**	0.03	0.03	-0.01
	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
Black	-0.11**	-0.04	-0.02	-0.02	0.13***	0.14***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)
Hispanic	-0.04	0.06	0.07*	0.10**	0.19***	0.22***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)
Age		0.06		0.02		-0.02
		(0.05)		(0.05)		(0.06)
Age squared		-0.00		-0.00		-0.00
		(0.00)		(0.00)		(0.00)
Experience			0.04**	0.06***	0.06***	0.05***
			(0.02)	(0.01)	(0.01)	(0.01)
Experience squared			0.00	-0.00	-0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)
High School			0.10**	0.05	0.05	-0.04
			(0.04)	(0.04)	(0.04)	(0.04)
College			0.42***	0.47***	0.24***	0.24***
			(0.04)	(0.06)	(0.05)	(0.07)
No. children			-0.01	-0.02	-0.01	-0.01
			(0.02)	(0.02)	(0.02)	(0.02)
Age at first child			0.01***		0.01**	
			(0.00)		(0.00)	
Father finished HS					0.04	0.01
					(0.04)	(0.04)
Father finished Col.					0.05	-0.02
					(0.03)	(0.05)
Mother finished HS					0.07*	0.09**
					(0.04)	(0.04)
Mother finished Col.					-0.01	0.05
					(0.06)	(0.06)
AFQT score					0.00***	0.01***
					(0.00)	(0.00)
R^2	0.02	0.14	0.16	0.22	0.17	0.25
N	2,428	2,550	2,428	2,550	1,967	2,063

TABLE A.9 Regressions of wages using the alternative definition of unwantedness

	2 years before	3 years before
Unwanted	-0.04	-0.01
	(0.04)	(0.05)
Married	0.11***	0.10***
	(0.03)	(0.03)
Black	0.08**	0.08*
	(0.04)	(0.04)
Hispanic	0.08*	0.13***
	(0.04)	(0.04)
Age	0.23***	0.22***
	(0.04)	(0.05)
Age squared	-0.00***	-0.00***
	(0.00)	(0.00)
Father finished HS	0.03	0.10***
	(0.03)	(0.04)
Father finished Col	0.04	0.00
	(0.04)	(0.04)
Mother finished HS	0.04	-0.02
	(0.03)	(0.04)
Mother finished Col	-0.07	-0.03
	(0.04)	(0.04)
AFQT Score	0.01***	0.01***
	(0.00)	(0.00)
$R^{"}$	0.35	0.34
N	2,211	2,007

TABLE A.10 OLS regressions of wages 2 and 3 years before childbirth

Robustness: Wages

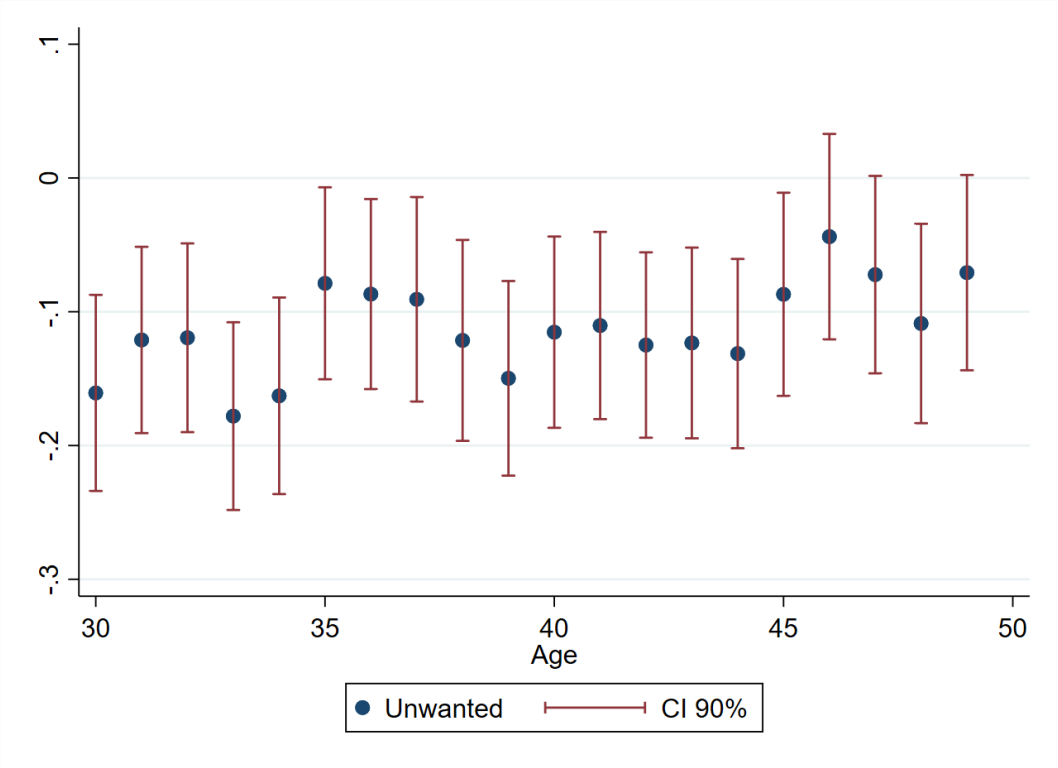

FIGURE A.7 Unwantedness on hourly wages from ages 30 to 49. *Notes:* This graph shows the coefficient for the control "unwanted" for the specification 4 and the confidence intervals at 90% where the dependant variable is hourly wages at ages from 30 to 49.

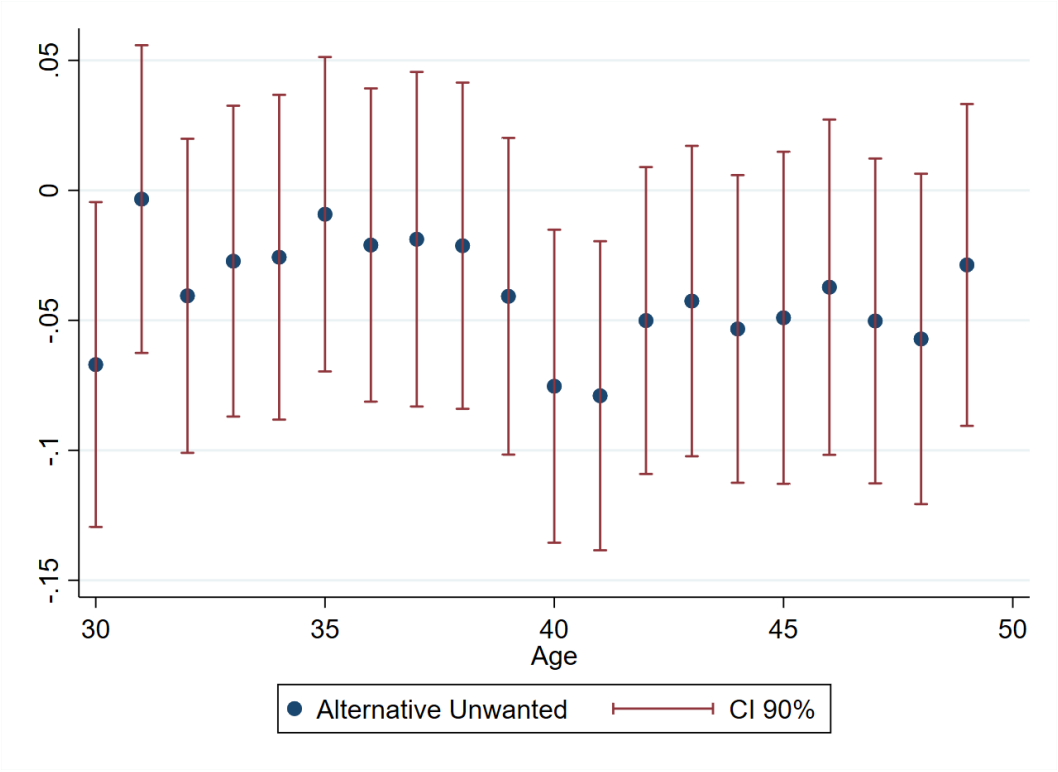

FIGURE A.8 Alternative definition of unwantedness on hourly wages from ages 30 to 49. *Notes:* This graph shows the coefficient for the control "unwanted" (using the alternative definition of unwantedness) for the specification 4 and the confidence intervals at 90% where the dependant variable is hourly wages at ages from 30 to 49.

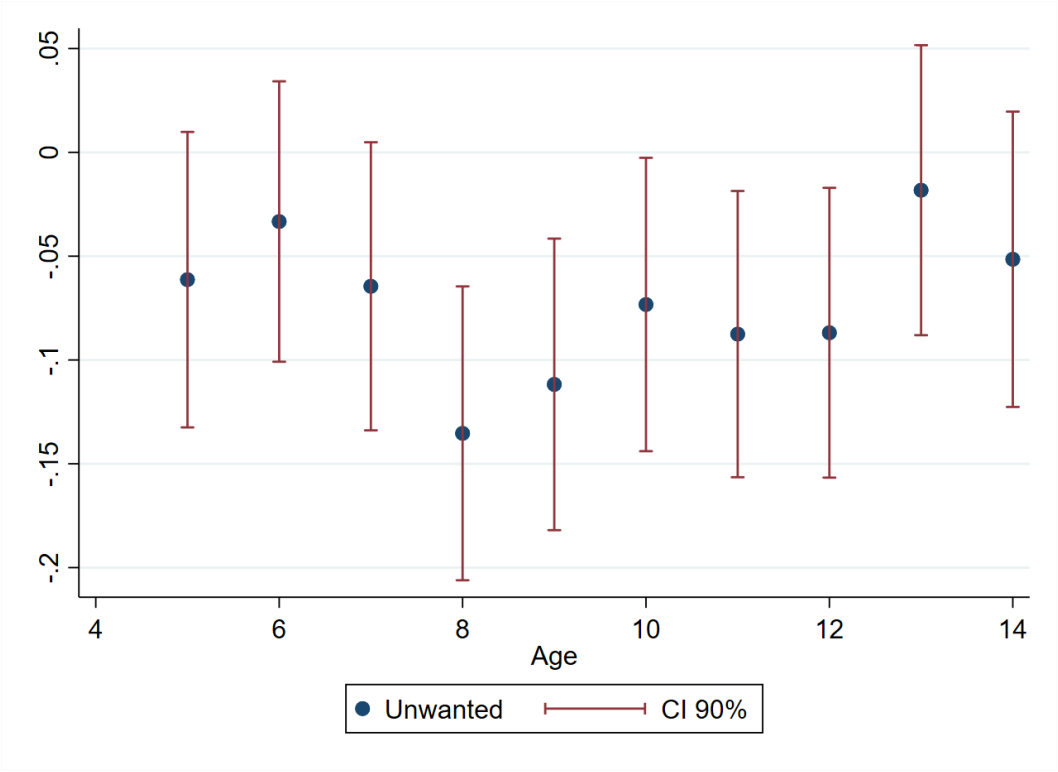

FIGURE A.9 Unwantedness on hourly wages 5 to 14 years after the childbirth. *Notes:* This graph shows the coefficient for the control "unwanted" for the specification 5 and the confidence intervals at 90% where the dependant variable is hourly wages 5 to 14 years after the first childbirth

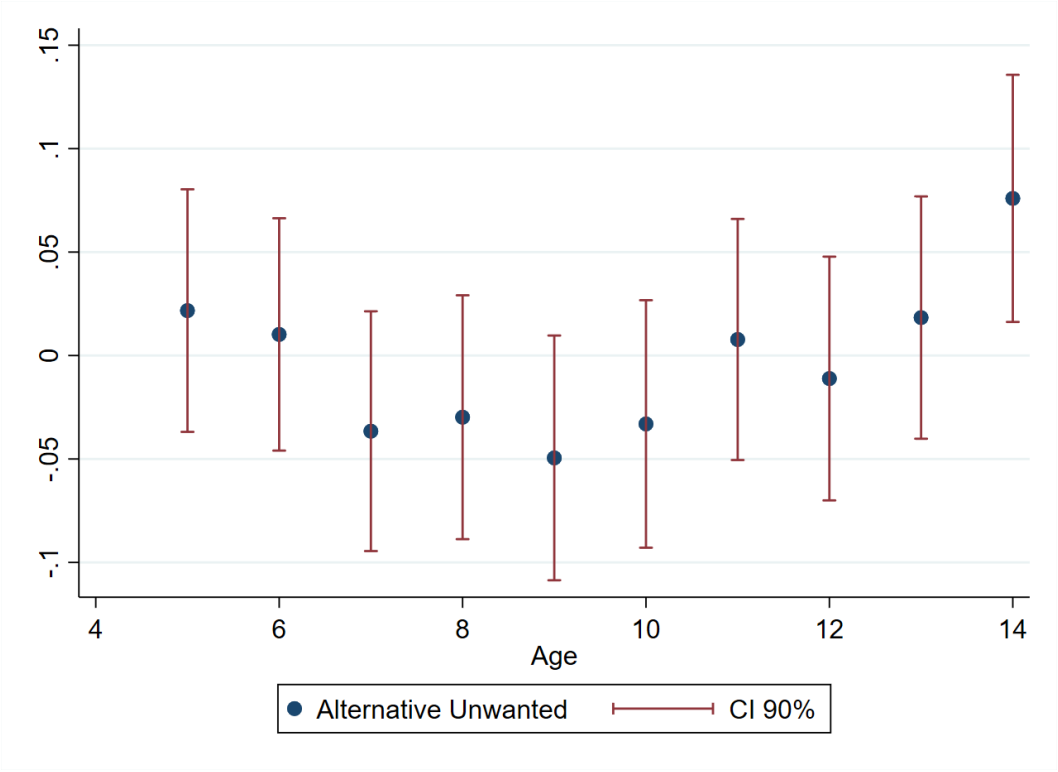

FIGURE A.10 Alternative definition of unwantedness on hourly wages 5 to 14 years after the childbirth. *Notes:* This graph shows the coefficient for the control "unwanted" (using the alternative definition of unwantedness) for the specification 5 and the confidence intervals at 90% where the dependant variable is hourly wages 5 to 14 years after the first childbirth

Effect on women with some education

	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{i,t}$	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{i,t}$	$\ln w_{40}$	$\ln w_{+10}$
Unwanted	0.03	0.09	0.01	0.04	0.14	0.04	-0.04	0.14
	(0.10)	(0.09)	(0.03)	(0.09)	(0.09)	(0.03)	(0.11)	(0.10)
Married	0.02	-0.02	-0.01	0.01	0.01	-0.02	-0.07	0.04
	(0.07)	(0.07)	(0.01)	(0.07)	(0.07)	(0.01)	(0.08)	(0.07)
Black	-0.06	-0.19**		-0.00	-0.17**		0.22*	-0.07
	(0.09)	(0.08)		(0.08)	(0.08)		(0.12)	(0.11)
Hispanic	0.03	0.32***		0.03	0.33***		0.08	0.39***
	(0.09)	(0.08)		(0.09)	(0.08)		(0.11)	(0.10)
Childbirth			-0.10***			-0.04*		
			(0.02)			(0.02)		
Experience				0.06***	0.06***	0.03***	0.05***	0.07***
				(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
Number of children				0.04	-0.04	-0.06***	0.04	-0.08*
				(0.04)	(0.04)	(0.01)	(0.04)	(0.05)
Age at first child				0.00			0.01	
				(0.01)			(0.01)	
Father finished HS							0.12	0.05
							(0.08)	(0.08)
Father finished Col.							-0.03	0.04
							(0.14)	(0.13)
Mother finished HS							0.05	0.04
							(0.09)	(0.08)
Mother finished Col.							-0.07	-0.03
							(0.18)	(0.15)
AFQT score							0.00	0.00**
							(0.00)	(0.00)
R^2	0.01	0.10	0.12	0.11	0.17	0.13	0.11	0.22
Fixed effect	NO	NO	YES	NO	NO	YES	NO	NO
N	551	574	21,271	551	574	21,271	441	459

TABLE A.11 Women that had their first childbirth after finishing high school and never enrolled in college

	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{i,t}$	$\ln w_{40}$	$\ln w_{+10}$	$\ln w_{i,t}$	$\ln w_{40}$	$\ln w_{+10}$
Unwanted	-0.19**	-0.10	-0.04	-0.20**	-0.13	-0.02	-0.13	-0.05
	(0.09)	(0.10)	(0.03)	(0.09)	(0.10)	(0.03)	(0.10)	(0.12)
Married	0.05	-0.01	0.01	0.03	0.03	0.01	-0.02	-0.01
	(0.07)	(0.08)	(0.01)	(0.07)	(0.08)	(0.01)	(0.08)	(0.09)
Black	0.00	0.04		0.01	0.08		0.17	0.27**
	(0.08)	(0.09)		(0.08)	(0.09)		(0.10)	(0.12)
Hispanic	0.26***	0.13		0.27***	0.12		0.46***	0.32***
	(0.09)	(0.10)		(0.09)	(0.10)		(0.11)	(0.13)
Childbirth			-0.08***			-0.03		
			(0.02)			(0.02)		
Experience				0.05***	0.06***	0.03***	0.04***	0.06***
				(0.01)	(0.01)	(0.00)	(0.01)	(0.02)
Number of children				-0.01	-0.00	-0.05***	-0.04	0.01
				(0.04)	(0.05)	(0.01)	(0.04)	(0.05)
Age at first child				-0.00			-0.01	
				(0.01)			(0.01)	
Father finished HS							-0.05	-0.11
							(0.09)	(0.10)
Father finished Col.							0.15	0.06
							(0.11)	(0.13)
Mother finished HS							0.15*	0.26**
							(0.09)	(0.10)
Mother finished Col.							-0.17	-0.18
							(0.12)	(0.14)
AFQT score							0.01**	0.01***
							(0.00)	(0.00)
R^2	0.03	0.07	0.19	0.09	0.11	0.20	0.11	0.15
Fixed effect	NO	NO	YES	NO	NO	YES	NO	NO
N	510	535	16,182	510	535	16,182	421	433

TABLE A.12 Women that had their first childbirth after finishing high school, enroled college, but never finished college