Impact of teenage childbirth on schooling

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Introduction

Every year, there are 7.3 million births to adolescent girls under the age of 18 in developing countries (UNFPA, 2013). The consequences of pregnancy and childbirth for these girls are numerous and carry forward with the girl for the rest of her lifetime. There are immediate health risks related to teenage pregnancy and childbirth. Childbirth in younger adolescents, is associated with higher rates of maternal death and health complications, such as obstetric fistula (UNFPA, 2013). Unwanted pregnancies can also result in unsafe abortions and associated complications (UNFPA, 2013).

Teenage childbirth is also an important factor limiting the educational attainment of girls, especially as progress is made in keeping girls in school at later ages in developing countries. Rates of pregnancy related dropouts can vary widely between countries, depending upon average years of schooling in the country, cultural factors and school policies regarding pregnant students (Eloundou-Enyegue & Stokes, 2004; Lloyd & Mensch, 2008). Using DHS data from 20 countries, the percentage of women who reported pregnancy as the main reason for leaving school ranged from 1-31% among women aged 20-24 who had not completed secondary education (Lloyd & Mensch, 2008). The study also found that the cumulative risk of dropping out as a result of childbirth by age 20 among women aged 15-24 from five francophone sub-Saharan African countries ranged from 3-17% when reasons for dropping out were compared with demographic events (Lloyd & Mensch, 2008). In a separate study based on self-reported data, the average proportion of dropouts caused by pregnancy across 23 DHS countries was 7.8% among women, and it accounted for 17.7% of female secondary school dropouts (Eloundou-Enyegue, 2004).

Although these studies indicate that dropping out of school as a result of childbearing is not the only factor contributing to the premature termination of schooling for girls (Lloyd & Mensch, 2008), analyses have shown that pregnancy related dropouts, which primarily occur among girls, can make large contributions to gender inequality in educational attainment (Eloundou-Enyegue, 2004; Eloundou-Enyegue & Stokes, 2004).

Furthermore, since educational attainment influences both earnings and economic growth, teen childbirth has both individual and country-level economic repercussions. Education has long been recognized as a critical development tool and a basic human right. By increasing knowledge and skills, education improves individual prospects for employment and earnings. In Cote d'Ivoire, the private rate of return per average year of school completed was estimated to be as high as 24% (Schultz, 1999). Based on data from a wide range of countries, Psacharopoulus and Patrinos estimated that the average rate of return for an additional year of schooling is 10% (Psacharopoulos & Patrinos, 2004).

Educating females also has indirect benefits on economic growth. There is substantial evidence to support that educating girls has intergenerational impacts on human capital, since educated women are more likely to educate their children and their children are more likely to be healthy (Abu-Ghaida & Klasen, 2004; Klasen, 2002; Schultz, 2002). Finally, increased educational attainment of women is also tied to lower fertility, which promotes economic growth by decreasing the dependency ratio and thereby increasing savings. (Abu-Ghaida & Klasen, 2004; Klasen, 2002; Schultz, 2002)

The goal of this research is to produce country-specific estimates of the number of years of schooling lost among girls who experience teenage childbirth. We recognize that not all of the lost schooling is

caused by teenage childbirth because some girls drop out of school prior to experiencing pregnancy or marriage.

Methods

Sample
Data for these analyses come from Demographic and Health Surveys (DHS) in 76 countries. The most recent, unrestricted recoded standard DHS data set available for each country at the time of the analyses was used (1987-2012). The only country for which the latest, standard DHS could not be used was El Salvador 1985, since it did not contain one of the necessary variables (age at first birth). The sample for this study included women between the ages of 13-54 years (most DHS data sets were restricted to women 15-49 years old) who reported receiving at least one year of schooling. Women who never attended school were not included in the analyses since a teenage childbirth would be unlikely to affect their educational attainment.

Variables
The dependent variable in this analysis is a respondent's self-reported education in single years. The key independent variable is whether or not the respondent experienced a teen childbirth. Women were categorized as experiencing a teen childbirth if they reported their age at first birth to be 19 years or younger. Women were categorized as not experiencing a teen childbirth if they reported their age at first birth to be 20 years or older or they reported zero total children ever born, regardless of their current age.

The analyses also controlled for other variables available in the DHS data sets and thought to be determinants of girls' education. The current age of the respondent, and its interaction with teenage childbirth was included to control for age and period effects. The respondent's religion, number of siblings, and current household wealth, as measured by the DHS five-level wealth index, were also included. The analyses also controlled for the ideal number of children of the respondent. The respondent's preference for sons was measured by whether her ideal number of boys was larger than her ideal number of girls. Since the data sets used in these analyses covered a wide range of years and geographic locations, there were differences between countries in the data collected and variables available. Every country analyses used as many of the variables described above as possible, but in some countries, data were not collected on all of the variables (see table footnotes).

Imputation
Women were dropped from the analyses if they were missing any of the variables listed above or if they were missing cluster indicators of contraceptive prevalence, urban residence, and a cluster indicator of women's empowerment. The only exceptions to this were women who were missing data on their ideal family size or their ideal number of boys and girls (used to create the son preference variable). Since there were large numbers of women in some countries missing data on these three variables or who gave non-numeric responses, simple imputation was used to create values for the missing/non-numeric responses to preserve sample size.

Analytic methods
The educational prospects of a woman and her desire for and consequences of teen childbirth likely depend on her marital status as a teenager. Therefore, all analyses were stratified by whether or not a woman reported being married or cohabiting as a teenager. Women who reported their first age of marriage or cohabitation as less than or equal to 19 years of age were categorized as "teen married."

Women who reported their first age of marriage or cohabitation as 20 years or older and women who reported their current marital status as never married or never in union (regardless of their current age) were categorized as "teen unmarried."

Multivariate fixed effects regression models were used to estimate the number of years of education lost as a result of a teen childbirth in each country, stratified by teen marital status and controlling for the other factors identified as important to schooling outcomes. The use of fixed effects models produces within-cluster estimates, which can control for unmeasured cluster differences, such as the status of women in a cluster or the availability of a school in the cluster. All analyses accounted for the clustering of data by primary sampling unit. DHS sampling weights were used and robust standard errors were specified. STATA SE version 13 was used for all regression analyses.

Results

Tables 1a-1e present summary statistics for the DHS countries used in this analysis. The proportion of women with some schooling (at least one year) varies widely by country. School attendance ranged from 9.4% among the teen married sample in Yemen (1991) to essentially universal education in some countries. The countries in Europe in particular, had consistently high levels of school attendance. Generally, the percent of women with schooling tended to be higher among the teen unmarried sample than the teen married sample.

Similar trends were found in the average number of years of schooling among those who started school. The highest average years of schooling was found in Ukraine (2007). Unmarried Ukrainian teenagers who entered school, attended an average of 14.0 years of school, whereas married Ukrainian teenagers attended an average of 13.4 years of school. The lowest average number of years of schooling among those who were not married as teenagers was 5.0 years in the Central African Republic (1995) and 4.3 years of schooling among those married as teenagers in Chad (2004) and Togo (1998). Across countries, unmarried teenagers usually stayed in school longer than their married counterparts.

Tables 1a-1e also show the proportion of women aged 20-49 with some schooling who gave birth as teenagers. This tends to be a more frequent occurrence in countries in Africa than other regions of the world. In some countries, such as Pakistan (2007), Egypt (2008) and Yemen (1991), there were no teenage births among those who were unmarried as teenagers. The country with the most frequent teen births among the teen unmarried was Gabon (2000) at 49.4%. Teen births were much more common in the teen married sample, ranging from 45.2% in Albania (2009) to 82.1% in Uganda (2011).

The results from fixed effects regression models for the years of schooling lost for a teen birth are presented in Tables 2a-2e. A teen childbirth was significantly associated with lost years of schooling in 82.2% (60/73, the three countries without teen births among the teen unmarried were not used) of countries in the teen unmarried sample and 73.7% (56/76) of countries in the teen married sample. Generally, more years of schooling were lost from a teen birth among those who were unmarried as teenagers. One or more years of schooling were lost as a result of a teen birth in 53.4% of countries (39/73) in the teen unmarried sample, but only 2.6% of countries (2/76) in the teen married sample.

The relationship between years of schooling and teen childbirth was negative but not significant in an additional nine countries in the teen unmarried sample. The lack of significance most likely stems from low statistical power due to the low percentage of teenage births among the teen unmarried in many countries. Equivalently, the relationship was also negative but not statistically significant in an additional

19 countries among those who were married as teenagers. An anomalous positive and statistically significant relationship was found among the teen unmarried sample in both the Central African Republic (1995) and Armenia (2010).[1]

Regression analyses were also performed using fixed effects models with an interaction term between teen childbirth and age to determine whether the relationship between a teenage childbirth and years of schooling has changed over time (Tables 3a-3e). In the teen unmarried sample, statistically significant interaction terms were found in 50.7% (37/73) of the countries. In the overwhelming majority of those countries (94.6% or 35/37) the interaction term was negative, indicating that less years of schooling are lost over time as a result of a teenage childbirth. In the teen married sample, 25.0% (19/76) of the countries had statistically significant interaction terms, and the interaction term was just as likely to be negative (10/19) as positive (9/19).

Instrumental variables analyses

Instrumental variables regression is designed to control for the reverse causation where school dropout leads to childbirth and focus only on the linkage from childbirth to dropout. Therefore, the authors also used instrumental variables regression to estimate the years of schooling lost as a result of a teen childbirth.

Forty DHS data sets were analyzed using instrumental variables regression with cluster indicators of contraceptive prevalence as instruments. Four tests were used to determine whether instrument selection was appropriate: the F test, the anti-test, the Hausman test, and the endogeneity test. In the teen unmarried sample, the instruments for only seven countries (17.5%) passed all four tests. In the teen married sample, instruments for four countries (10%) passed all the tests. Out of the eleven instrumental variable estimates, eight were more extreme than the fixed effects estimates (more years of schooling were lost per teen birth), and three estimates were positive (indicating that years of schooling were gained as a result of a teen birth). This suggests that non-random program placement in which family planning programs are preferentially located in areas where girls obtain more schooling anyway, is leading to spuriously inflated effects of IV-estimates of the impact of teen birth. Based on the failure of the instruments to show exogeneity and the nature of the results, no further instrumental variables analyses were conducted and only the fixed effects estimates are presented.

Discussion

A teen childbirth is consistently associated with less years of schooling in countries around the world. The magnitude of the association depends both upon the country and the marital status of the woman as a teenager. Variability in the strength of the association between countries could be due to many factors. Country-level policies regarding the enrollment of pregnant teenagers in school and programs and policies which help or hinder the return of teenagers to school after giving birth are examples (Lloyd & Mensch, 2008). Differing family support structures for a teenage mother also might contribute to between country variability. Additionally, a teenage childbirth is unlikely to result in many years of schooling lost in countries that have low average years of schooling to begin with (Eloundou-Enyegue & Stokes, 2004). Not only are there less years to lose, but a girl may complete most of them before she hits puberty.

[1] In the Central African Republic, this was probably due to confounding by wealth, since the data did not include a wealth indicator. The Armenia result was probably due to small sample size, since there were only three teen births among those who were not married as teenagers.

Despite the variability between countries, girls who were married as teenagers consistently have less years of schooling, higher frequencies of teen birth, and a smaller loss of schooling from a teen birth than their teen unmarried counterparts. Many of these girls may have dropped out as a result of marriage and its associated responsibilities. Teenage childbirth is likely happening after drop out and marriage for these girls and thus does not greatly decrease married teens' schooling prospects. For the same reasons, preventing early childbirth may not be as effective at reducing school dropout in these women as delaying early marriage, since teen pregnancy may be wanted and/or intended in this group.

The results also indicate that in many countries, the impact of a teenage childbirth on schooling loss has declined over time for those who were not married as teenagers. The estimates in Tables 2a-2e are based on women between the ages of 13-54, and thus do not necessarily reflect the current relationship. When using an interaction term to estimate the schooling loss from a teen birth in the unmarried 15 years olds at the time of the survey, the effect size decreases and in some cases disappears. It is possible that the current generation of unmarried teenagers is getting pregnant later and thus a teenage childbirth has less impact on their schooling attainment. Thus, many of the estimates in Tables 2a-2e could be overestimates for the current generation of teenagers.

Limitations

Determining a causal relationship between teen childbirth and educational attainment is difficult, since families choosing lower education for their daughters may also offer circumstances leading to teen pregnancy. Other factors that limit a girl's educational attainment, such as poverty, are also likely to increase her risk of teen pregnancy. Cluster fixed effects models do not control for the reverse causation where school dropout leads to childbirth, and thus the estimates presented in this manuscript should be considered upper bounds of the true relationship. Since the data do not include the age when a woman dropped out of school, it is possible that a girl dropped out of school years before she had a teen childbirth.

Additionally, many factors influence girls' schooling attainment, and the analyses is limited by the variables collected in the DHS. School-level variables and childhood household characteristics are some of the many variables that would have ideally been included in the analyses if they had been collected.

Finally, some of the datasets are over twenty years old and include women up to 54 years of age, so some effect estimates are likely outdated. The full educational attainment and teen birth status of younger members of the dataset (13-19 years) is also not known.

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Table 1a: Summary statistics - Africa

Country	Unmarried as teenagers			Married as teenagers		
	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling
Benin 2006	55.4%	6.5%	7.3	20.3%	69.2%	4.6
Burkina Faso 2010	48.0%	6.3%	7.6	15.1%	66.9%	5.6
Burundi 2010	62.9%	3.1%	6.0	41.2%	63.5%	4.5
Cameroon 2011	93.5%	23.3%	8.8	66.9%	71.5%	6.5
Central African Rep 1995	49.8%	24.2%	5.0	42.3%	74.4%	4.8
Chad 2004	38.7%	3.3%	5.7	20.8%	78.6%	4.3
Comoros 1996	59.0%	1.0%	6.7	29.0%	65.5%	5.6
Congo, Brazzaville 2005	95.2%	34.5%	8.1	88.6%	78.0%	7.1
Congo, Dem Rep 2007	84.8%	12.4%	7.7	74.0%	73.1%	6.0
Cote d'Ivoire 2012	58.8%	29.7%	8.0	31.8%	74.7%	5.8
Ethiopia 2011	74.1%	3.8%	6.9	30.4%	70.2%	4.9
Gabon 2000	95.5%	49.4%	7.9	91.5%	78.4%	6.6
Ghana 2008	86.5%	13.3%	9.0	66.8%	66.4%	7.3
Guinea 2005	47.4%	17.0%	7.1	13.7%	68.3%	6.1
Kenya 2009	95.3%	21.5%	9.4	85.0%	81.1%	7.4
Lesotho 2009	99.2%	13.2%	8.9	97.9%	64.7%	7.2
Liberia 2007	69.7%	36.8%	6.8	45.1%	73.7%	5.8
Madagascar 2009	86.9%	8.8%	6.2	75.3%	72.9%	4.5
Malawi 2010	90.7%	16.2%	7.7	80.2%	81.5%	5.5
Mali 2006	38.3%	13.4%	7.5	16.3%	68.6%	5.9
Mozambique 2011	72.2%	29.6%	6.6	64.3%	77.8%	4.9
Namibia 2007	94.9%	30.0%	9.2	83.2%	67.3%	7.4
Niger 2006	44.0%	5.0%	7.5	10.7%	72.9%	4.8
Nigeria 2008	89.2%	5.8%	10.4	41.5%	73.1%	7.8
Rwanda 2010	87.4%	4.7%	5.6	69.5%	59.2%	4.5
Sao Tome & Principe 2009	96.1%	12.3%	7.0	92.5%	77.1%	5.0
Senegal 2011	58.6%	7.4%	7.5	22.7%	61.2%	5.6
Sierra Leone 2008	60.7%	24.8%	8.3	20.7%	75.0%	6.3
South Africa 1998	94.9%	33.6%	9.6	86.1%	66.8%	8.1
Sudan 1990	57.8%	0.6%	8.5	36.1%	72.2%	5.3
Swaziland 2007	94.6%	46.5%	9.2	83.1%	81.5%	7.5
Tanzania 2010	88.5%	22.2%	7.8	73.5%	75.2%	6.4
Togo 1998	64.3%	10.6%	5.5	38.6%	73.1%	4.3
Uganda 2011	93.2%	20.6%	7.9	81.2%	82.1%	5.6
Zambia 2007	94.2%	25.7%	8.4	85.6%	80.3%	6.1
Zimbabwe 2011	98.8%	14.5%	10.0	96.3%	76.6%	8.4

Table 1b: Summary statistics – Asia

Country	Unmarried as teenagers			Married as teenagers		
	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling
Bangladesh 2011	89.0%	1.4%	9.8	69.4%	76.9%	6.3
Cambodia 2010	87.4%	0.5%	6.7	78.5%	57.5%	4.9
India 2006	83.7%	0.4%	9.9	45.3%	63.3%	7.1
Indonesia 2007	96.0%	1.0%	9.8	90.0%	67.6%	6.6
Kazakhstan 1999	99.7%	0.9%	11.3	99.5%	56.2%	10.5
Kyrgyzstan 1997	99.8%	0.4%	10.9	99.9%	54.4%	10.3
Maldives 2009	90.9%	1.6%	9.4	66.2%	54.5%	7.3
Nepal 2011	81.2%	0.2%	8.4	45.3%	63.1%	6.4
Pakistan 2007	46.8%	0.0%	9.0	28.7%	58.0%	6.9
Philippines 2008	99.3%	1.9%	11.8	97.4%	66.1%	8.5
Sri Lanka 1987	93.0%	0.4%	8.0	83.6%	63.6%	6.0
Thailand 1987	93.5%	0.0%	6.2	88.0%	61.5%	4.7
Timor-Leste 2010	74.1%	0.6%	10.2	63.5%	66.4%	7.9
Uzbekistan 1996	99.9%	0.5%	10.6	99.9%	49.8%	10.2
Vietnam 2002	96.1%	0.2%	8.6	90.4%	50.4%	6.8

Table 1c: Summary statistics – Europe

Country	Unmarried as teenagers			Married as teenagers		
	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling
Albania 2009	99.7%	0.3%	10.4	99.3%	45.2%	9.0
Armenia 2010	99.9%	0.1%	12.2	99.9%	59.0%	11.0
Azerbaijan 2006	99.1%	0.1%	11.1	98.5%	53.7%	10.2
Moldova 2005	99.8%	1.3%	11.5	99.8%	49.7%	11.0
Turkey 2003	89.9%	0.0%	7.9	77.9%	63.7%	5.7
Ukraine 2007	100.0%	1.6%	14.0	100.0%	49.8%	13.4

Table 1d: Summary statistics – Latin America & Caribbean

Country	Unmarried as teenagers			Married as teenagers		
	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling
Bolivia 2008	96.0%	12.4%	10.2	93.4%	76.8%	7.1
Brazil 1996	96.7%	5.6%	7.6	91.5%	67.0%	5.5
Colombia 2010	99.1%	12.7%	9.9	96.7%	73.5%	7.7
Dominican Republic 2007	98.2%	3.9%	11.0	93.4%	71.2%	8.1
Ecuador 1987	94.7%	5.1%	8.6	88.8%	75.2%	6.2
Guatemala 1995	79.7%	4.2%	7.2	57.1%	76.4%	4.7
Guyana 2009	99.2%	18.2%	9.7	97.1%	70.5%	8.1
Haiti 2006	83.1%	3.5%	7.2	65.3%	60.2%	5.7
Honduras 2012	96.8%	8.5%	9.2	91.9%	76.1%	6.4
Mexico 1987	94.4%	2.6%	7.9	80.2%	76.3%	5.5
Nicaragua 2001	92.6%	4.7%	8.7	80.0%	75.4%	6.3
Paraguay 1990	97.8%	9.6%	7.7	96.1%	68.3%	5.6
Peru 2000	96.9%	7.4%	10.3	90.6%	74.7%	7.3
Trinidad & Tobago 1987	99.2%	2.6%	8.5	98.5%	61.3%	7.2

Table 1e: Summary statistics – Middle East & North Africa

Country	Unmarried as teenagers			Married as teenagers		
	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling	Frequency of ever attending school	Frequency of teen birth among women ages 20-49 who ever attended school	Average years of schooling among those with schooling
Egypt 2008	80.7%	0.0%	11.8	55.7%	58.5%	8.7
Jordan 2007	97.6%	0.2%	12.4	94.3%	60.6%	9.9
Morocco 2004	59.9%	0.1%	8.4	25.5%	58.8%	5.8
Tunisia 1988	52.1%	0.1%	7.0	33.7%	56.4%	5.5
Yemen 1991	16.9%	0.0%	10.1	9.4%	68.8%	5.7

Table 2a: Years of schooling lost from a teen birth among those with any school attendance† - Africa

Country	Unmarried as teenagers			Married as teenagers		
	Years of schooling lost for a teen birth	Standard error	p-value	Years of schooling lost for a teen birth	Standard error	p-value
Benin 2006	-1.16***	0.25	0.000	-0.21	0.13	0.124
Burkina Faso 2010	-1.40***	0.28	0.000	-0.41*	0.20	0.038
Burundi 2010	-0.71*	0.27	0.010	-0.06	0.12	0.648
Cameroon 2011	-0.86***	0.10	0.000	-0.67***	0.09	0.000
Central African Rep 1995[c]	0.52*	0.23	0.029	0.26	0.16	0.108
Chad 2004	-2.48***	0.66	0.000	-0.22	0.21	0.301
Comoros 1996[k]	0.56	0.95	0.556	-1.52***	0.34	0.000
Congo, Brazzaville 2005	-0.43**	0.13	0.001	-0.82***	0.12	0.000
Congo, Dem Rep 2007	-0.34	0.29	0.246	-0.49***	0.13	0.000
Cote d'Ivoire 2012	-1.21***	0.18	0.000	-0.43	0.28	0.129
Ethiopia 2011	-0.92	0.52	0.078	-0.29	0.19	0.135
Gabon 2000[c]	-0.40**	0.13	0.002	-0.38*	0.16	0.020
Ghana 2008[a]	-1.38***	0.24	0.000	-0.98***	0.19	0.000
Guinea 2005	-0.84*	0.38	0.028	-0.89**	0.29	0.003
Kenya 2009	-0.99***	0.15	0.000	-0.78***	0.14	0.000
Lesotho 2009	-0.85***	0.12	0.000	-0.50***	0.11	0.000
Liberia 2007	-0.22	0.17	0.212	-0.40	0.21	0.053
Madagascar 2009	-0.72***	0.12	0.000	-0.50***	0.08	0.000
Malawi 2010	-0.50***	0.13	0.000	-0.42***	0.08	0.000
Mali 2006	-1.56***	0.33	0.000	-0.95***	0.18	0.000
Mozambique 2011	-0.54***	0.10	0.000	-0.15	0.09	0.074
Namibia 2007	-0.99***	0.09	0.000	-0.89***	0.23	0.000
Niger 2006	-1.45**	0.50	0.004	-0.35	0.19	0.074
Nigeria 2008	-0.91***	0.14	0.000	-0.53***	0.09	0.000
Rwanda 2010	-0.64***	0.12	0.000	-0.11	0.10	0.259
Sao Tome & Principe 2009	-0.78*	0.36	0.032	-0.36**	0.12	0.004
Senegal 2011	-1.35***	0.22	0.000	-0.39	0.27	0.151
Sierra Leone 2008	-1.00***	0.22	0.000	0.00	0.28	0.988
South Africa 1998[g]	-0.56***	0.08	0.000	-0.33*	0.16	0.045
Sudan 1990[h]	-3.15**	0.97	0.001	-0.74***	0.15	0.000
Swaziland 2007	-0.87***	0.10	0.000	-0.97***	0.26	0.000
Tanzania 2010[b]	-0.90***	0.11	0.000	-0.15	0.08	0.050
Togo 1998[c]	-0.42	0.23	0.071	-0.15	0.14	0.292
Uganda 2011	-0.85***	0.22	0.000	-0.62***	0.13	0.000
Zambia 2007	-0.43**	0.14	0.003	-0.29**	0.10	0.005
Zimbabwe 2011	-1.26***	0.12	0.000	-0.60***	0.09	0.000

Table 2b: Years of schooling lost from a teen birth among those with any school attendance† - Asia

Country	Unmarried as teenagers			Married as teenagers		
	Years of schooling lost for a teen birth	Standard error	p-value	Years of schooling lost for a teen birth	Standard error	p-value
Bangladesh 2011[a]	-2.43***	0.56	0.000	-0.98***	0.06	0.000
Cambodia 2010	-1.21***	0.33	0.000	-0.31***	0.07	0.000
India 2006[a]	-2.20***	0.32	0.000	-0.67***	0.04	0.000
Indonesia 2007	-1.08**	0.37	0.003	-0.54***	0.06	0.000
Kazakhstan 1999[f]	-1.20**	0.40	0.003	-0.20*	0.09	0.024
Kyrgyzstan 1997[f]	-0.04	0.51	0.933	-0.16	0.08	0.057
Maldives 2009[e]	-2.39***	0.34	0.000	-0.93***	0.10	0.000
Nepal 2011[a]	-4.69***	0.78	0.000	-0.72***	0.11	0.000
Pakistan 2007[e]	n/a	n/a	n/a	-0.41*	0.19	0.033
Philippines 2008[a]	-1.39***	0.38	0.000	-0.68***	0.13	0.000
Sri Lanka 1987[h]	-1.92*	0.90	0.035	-0.59***	0.13	0.000
Thailand 1987[h]	-3.28***	0.18	0.000	-0.38***	0.07	0.000
Timor-Leste 2010	-2.84**	0.87	0.001	-0.97***	0.20	0.000
Uzbekistan 1996[f]	-0.54	0.28	0.054	-0.16*	0.08	0.035
Vietnam 2002[f]	-3.11***	0.77	0.000	-0.50***	0.13	0.000

Table 2c: Years of schooling lost from a teen birth among those with any school attendance† - Europe

Country	Unmarried as teenagers			Married as teenagers		
	Years of schooling lost for a teen birth	Standard error	p-value	Years of schooling lost for a teen birth	Standard error	p-value
Albania 2009[a]	-0.23	0.65	0.727	-0.61***	0.11	0.000
Armenia 2010[e]	1.64***	0.17	0.000	-0.55***	0.10	0.000
Azerbaijan 2006[a]	0.88	0.57	0.127	-0.35**	0.11	0.002
Moldova 2005[j]	-1.40***	0.31	0.000	-0.55***	0.09	0.000
Turkey 2003[e]	-1.12	1.70	0.510	-0.49***	0.09	0.000
Ukraine 2007[a]	-0.83*	0.34	0.014	-0.66***	0.13	0.000

Table 2d: Years of schooling lost from a teen birth among those with any school attendance† - Latin America & Caribbean

Country	Unmarried as teenagers			Married as teenagers		
	Years of schooling lost for a teen birth	Standard error	p-value	Years of schooling lost for a teen birth	Standard error	p-value
Bolivia 2008[b]	-1.26***	0.13	0.000	-0.86***	0.15	0.000
Brazil 1996[c]	-1.59***	0.17	0.000	-0.45***	0.11	0.000
Colombia 2010[e]	-0.96***	0.06	0.000	-0.96***	0.06	0.000
Dominican Republic 2007[b]	-1.49***	0.28	0.000	-0.92***	0.10	0.000
Ecuador 1987[k]	-1.77***	0.31	0.000	-0.48**	0.15	0.002
Guatemala 1995[c]	-1.39***	0.34	0.000	-0.31	0.19	0.097
Guyana 2009[a]	-0.20	0.16	0.227	-0.30	0.16	0.067
Haiti 2006	-1.18***	0.33	0.000	-0.99***	0.14	0.000
Honduras 2012[a]	-1.20***	0.14	0.000	-0.70***	0.08	0.000
Mexico 1987[k]	-1.66***	0.34	0.000	-0.26	0.15	0.086
Nicaragua 2001[i]	-1.78***	0.37	0.000	-0.81***	0.11	0.000
Paraguay 1990[h]	-1.73***	0.20	0.000	-0.45**	0.14	0.001
Peru 2000[d]	-1.74***	0.12	0.000	-0.74***	0.09	0.000
Trinidad & Tobago 1987[h]	-1.27**	0.37	0.001	-0.62***	0.09	0.000

Table 2e: Years of schooling lost from a teen birth among those with any school attendance† - Middle East & North Africa

Country	Unmarried as teenagers			Married as teenagers		
	Years of schooling lost for a teen birth	Standard error	p-value	Years of schooling lost for a teen birth	Standard error	p-value
Egypt 2008[a]	n/a	n/a	n/a	-0.94***	0.11	0.000
Jordan 2007[e]	-2.91***	0.53	0.000	-1.09***	0.13	0.000
Morocco 2004[b]	-5.66***	1.50	0.000	-0.56**	0.20	0.005
Tunisia 1988[k]	-2.45***	0.16	0.000	-0.15	0.21	0.475
Yemen 1991[k]	n/a	n/a	n/a	-0.45	0.31	0.145

Table 3a: Years of schooling lost from a teen birth for a 15 year old at the time of the DHS survey among those with any school attendance†† - Africa

Country	Unmarried as teenagers			Married as teenagers		
	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old
Benin 2006	-2.28**	0.041	-1.67	0.40	-0.02	0.09
Burkina Faso 2010	1.29	-0.105*	-0.28	-0.38	0.00	-0.40
Burundi 2010	0.39	-0.045	-0.28	0.63	-0.02	0.27
Cameroon 2011	-0.12	-0.026*	-0.51	-1.30***	0.02**	-0.98
Central African Rep 1995[c]	-1.09	0.068	-0.06	1.04*	-0.03	0.59
Chad 2004	7.04*	-0.306**	2.45	1.15	-0.05	0.40
Comoros 1996[k]	3.51	-0.114	1.80	0.76	-0.09	-0.58
Congo, Brazzaville 2005	0.08	-0.018	-0.19	-0.34	-0.02	-0.59
Congo, Dem Rep 2007	0.66	-0.034	0.14	-0.23	-0.01	-0.36
Cote d'Ivoire 2012	-0.02	-0.043*	-0.67	-1.00	0.02	-0.71
Ethiopia 2011	2.52	-0.125*	0.65	-1.37	0.04	-0.76
Gabon 2000[c]	1.05**	-0.055**	0.22	-0.29	0.00	-0.34
Ghana 2008[a]	-0.46	-0.032	-0.94	-1.96**	0.03	-1.50
Guinea 2005	1.36	-0.091*	-0.01	-0.43	-0.02	-0.67
Kenya 2009	-0.16	-0.029	-0.59	0.16	-0.03	-0.31
Lesotho 2009	1.29**	-0.079***	0.11	0.23	-0.02*	-0.11
Liberia 2007	1.85**	-0.080**	0.64	-0.77	0.01	-0.58
Madagascar 2009	-1.02*	0.010	-0.87	-1.35***	0.03**	-0.91
Malawi 2010	0.67	-0.043**	0.02	-0.22	-0.01	-0.32
Mali 2006	-1.16	-0.014	-1.37	-2.84***	0.07***	-1.74
Mozambique 2011	-0.18	-0.013	-0.37	0.34	-0.02*	0.07
Namibia 2007	1.25***	-0.076***	0.10	-0.85	0.00	-0.87
Niger 2006	-0.93	-0.018	-1.19	0.73	-0.04	0.16
Nigeria 2008	0.47	-0.049**	-0.26	-0.35	-0.01	-0.44
Rwanda 2010	-1.11*	0.019	-0.83	0.14	-0.01	0.03
Sao Tome & Principe 2009	-0.82	0.001	-0.80	-0.99	0.02	-0.68
Senegal 2011	-0.52	-0.029	-0.96	0.02	-0.01	-0.19
Sierra Leone 2008	0.71	-0.066*	-0.27	-0.06	0.00	-0.03
South Africa 1998[g]	1.88***	-0.084***	0.62	-1.01	0.02	-0.70
Sudan 1990[h]	-5.31	0.065	-4.34	-1.87**	0.04*	-1.25
Swaziland 2007	1.18***	-0.075***	0.06	-0.20	-0.02	-0.57
Tanzania 2010[b]	-0.98**	0.003	-0.94	-0.12	0.00	-0.13
Togo 1998[c]	-1.38	0.033	-0.89	-0.85	0.02	-0.49
Uganda 2011	1.34*	-0.079***	0.16	-0.83*	0.01	-0.72
Zambia 2007	0.68*	-0.043**	0.03	-0.54	0.01	-0.42
Zimbabwe 2011	1.70***	-0.097***	0.24	-0.18	-0.01	-0.40

Table 3b: Years of schooling lost from a teen birth for a 15 year old at the time of the DHS survey among those with any school attendance†† - Asia

Country	Unmarried as teenagers			Married as teenagers		
	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old
Bangladesh 2011[a]	2.49	-0.150***	0.25	-0.13	-0.03***	-0.59
Cambodia 2010	-4.85***	0.099**	-3.36	-0.55	0.01	-0.44
India 2006[a]	0.55	-0.078*	-0.62	-0.33*	-0.01**	-0.50
Indonesia 2007	2.99*	-0.110***	1.34	-1.01***	0.01*	-0.79
Kazakhstan 1999[f]	1.45	-0.077*	0.29	-0.25	0.00	-0.23
Kyrgyzstan 1997[f]	4.69	-0.193	1.79	0.92**	-0.03***	0.41
Maldives 2009[e]	-2.07	-0.011	-2.23	-2.09***	0.04***	-1.52
Nepal 2011[a]	3.41	-0.252	-0.37	-0.92*	0.01	-0.81
Pakistan 2007[e]	n/a	n/a	n/a	-0.85	0.01	-0.63
Philippines 2008[a]	3.12*	-0.152***	0.83	0.16	-0.03*	-0.23
Sri Lanka 1987[h]	4.72	-0.170	2.17	-0.93	0.01	-0.77
Thailand 1987[h]	n/a	-0.070***	-1.05	-0.80**	0.01	-0.60
Timor-Leste 2010	-1.19	-0.048	-1.92	-1.36	0.01	-1.17
Uzbekistan 1996[f]	2.79***	-0.101***	1.28	-0.38	0.01	-0.27
Vietnam 2002[f]	3.23	-0.177*	0.58	-1.55**	0.03*	-1.07

Table 3c: Years of schooling lost from a teen birth for a 15 year old at the time of the DHS survey among those with any school attendance†† - Europe

Country	Unmarried as teenagers			Married as teenagers		
	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old
Albania 2009[a]	0.63	-0.023	0.28	-1.12**	0.01	-0.89
Armenia 2010[e]	17.46***	-0.359***	12.08	-0.16	-0.01	-0.33
Azerbaijan 2006[a]	4.95*	-0.124*	3.10	-0.82*	0.01	-0.60
Moldova 2005[j]	-0.37	-0.031	-0.84	-1.26***	0.02*	-0.94
Turkey 2003[e]	14.17***	-0.368***	8.65	-0.43	0.00	-0.46
Ukraine 2007[a]	0.84	-0.053	0.05	-0.54	0.00	-0.59

Table 3d: Years of schooling lost from a teen birth for a 15 year old at the time of the DHS survey among those with any school attendance†† - Latin America & Caribbean

Country	Unmarried as teenagers			Married as teenagers		
	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old
Bolivia 2008[b]	1.58***	-0.096***	0.13	-0.86	0.00	-0.86
Brazil 1996[c]	-0.75	-0.030	-1.19	-0.28	-0.01	-0.36
Colombia 2010[e]	3.15***	-0.136***	1.10	-0.55**	-0.01*	-0.75
Dominican Republic 2007[b]	0.70	-0.077**	-0.45	-0.25	-0.02*	-0.57
Ecuador 1987[k]	-2.41*	0.021	-2.09	0.11	-0.02	-0.19
Guatemala 1995[c]	-1.35	-0.001	-1.37	0.50	-0.03	0.08
Guyana 2009[a]	0.84	-0.031	0.37	-1.01	0.02	-0.68
Haiti 2006	-1.22	0.001	-1.20	-0.54	-0.02	-0.79
Honduras 2012[a]	0.46	-0.057**	-0.39	-0.83**	0.00	-0.77
Mexico 1987[k]	-2.02	0.012	-1.83	-1.30*	0.04*	-0.77
Nicaragua 2001[i]	0.15	-0.072	-0.93	-0.80*	0.00	-0.81
Paraguay 1990[h]	-1.16*	-0.020	-1.46	-0.58	0.00	-0.52
Peru 2000[d]	1.39***	-0.103***	-0.16	-0.40	-0.01	-0.56
Trinidad & Tobago 1987[h]	-3.61**	0.061	-2.69	-0.68*	0.00	-0.65

Table 3e: Years of schooling lost from a teen birth for a 15 year old at the time of the DHS survey among those with any school attendance†† - Middle East & North Africa

Country	Unmarried as teenagers			Married as teenagers		
	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old	Teen birth coefficient	Teen birth and age interaction coefficient	Years of schooling lost for 15 year old
Egypt 2008[a]	n/a	n/a	n/a	0.73*	-0.06***	-0.12
Jordan 2007[e]	-8.99***	0.161**	-6.58	0.40	-0.05**	-0.29
Morocco 2004[b]	-5.87	0.005	-5.80	0.18	-0.02	-0.18
Tunisia 1988[k]	n/a	-0.070***	-1.05	1.31	-0.05	0.55
Yemen 1991[k]	n/a	n/a	n/a	1.49	-0.08	0.29

Table Footnotes

†Results from fixed effect models which controlled for the following variables: age/period, religion, ideal family size, wealth, son preference, and the respondent's number of siblings. Exceptions to this list of covariates are noted in lettered footnotes below.

††Results from fixed effect models which controlled for the following variables: age/period, interaction between age and teen birth, religion, ideal family size, wealth, son preference, and the respondent's number of siblings. Exceptions to this list of covariates are noted in lettered footnotes below.

The DHS data set is missing the following variables:

[a] number of siblings
[b] religion
[c] wealth
[d] religion, wealth
[e] number of siblings, religion
[f] number of siblings, wealth
[g] religion, wealth, son preference
[h] number of siblings, wealth, son preference
[i] number of siblings, religion, wealth
[j] number of siblings, ideal family size, son preference
[k] number of siblings, religion, wealth, son preference

n/a – not applicable since there we no teen births in the sample

*p<0.05
**p<0.01
***p<0.001

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