

Online Appendix: Grandparents, Moms, or Dads? Why Children of Teen Mothers Do Worse in Life

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Appendix Table 1

Effect of Teen Birth on Child Outcomes (First-born Children) Reweighting fixed effects estimates to correct for selection into treatment

	(1) Birth Weight	(2) Middle School GPA	(3) Cognitive Score	(4) Height	(5) Years of School	(6) Finished High School	(7) Log earnings age 30	(8) Welfare use	(9) Child teen birth
Teen Birth	-2.146 (5.685)	-0.152*** (0.015)	-0.240*** (0.040)	-0.605*** (0.138)	-0.552*** (0.030)	-0.073*** (0.005)	-0.033** (0.012)	0.081*** (0.005)	0.027*** (0.007)
R^2	0.559	0.635	0.585	0.589	0.560	0.518	0.506	0.523	0.500
N	75119	16770	12528	14549	42827	56938	27346	47356	13647

Notes: Sample is restricted to “switchers” – sets of siblings in which at least one sister had a teen birth and at least one sister did not have a teen birth.

All regressions include the basic controls (indicator variables for child year of birth and child gender), maternal grandparent fixed effects, and controls for an indicator for whether the mother started academic high school at age 16.

Robust standard errors in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 2A

Effect of Teen Birth on Child Outcomes (First-born Children) for Oldest Sister in the Family

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Birth Weight	Middle School GPA	Cognitive Score	Height	Years of School	Finished High School	Log earnings age 30	Welfare use	Child teen birth
Basic Controls									
Teen Birth	-37.259*** (4.064)	-0.587*** (0.014)	-0.721*** (0.031)	-1.291*** (0.111)	-1.378*** (0.023)	-0.166*** (0.004)	-0.120*** (0.009)	0.178*** (0.004)	0.075*** (0.005)
R^2	0.012	0.094	0.024	0.006	0.065	0.030	0.057	0.056	0.026
Add Sister FE									
Teen Birth	-3.681 (6.357)	-0.053* (0.023)	-0.147** (0.052)	-0.556** (0.189)	-0.304*** (0.042)	-0.041*** (0.006)	-0.043* (0.018)	0.077*** (0.007)	0.038*** (0.009)
R^2	0.539	0.638	0.582	0.576	0.582	0.518	0.510	0.543	0.504
Add Sister FE and Maternal Characteristic									
Teen Birth	-3.257 (6.357)	-0.053* (0.023)	-0.141** (0.052)	-0.552** (0.189)	-0.295*** (0.041)	-0.041*** (0.006)	-0.043* (0.018)	0.077*** (0.007)	0.038*** (0.009)
R^2	0.539	0.641	0.585	0.576	0.584	0.518	0.510	0.543	0.504
N	277181	79300	28340	32806	97703	151737	53249	111801	29921

Basic controls include indicator variables for child year of birth and child gender and are included in all regressions.

Maternal Characteristic consists of an indicator for whether the mother started academic high school at age 16.

Robust standard errors in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 2B

Effect of Teen Birth on Child Outcomes (First-born Children) for Youngest Sister in the Family

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Birth Weight	Middle School GPA	Cognitive Score	Height	Years of School	Finished High School	Log earnings age 30	Welfare use	Child teen birth
Basic Controls									
Teen Birth	-39.366*** (4.122)	-0.551*** (0.011)	-0.737*** (0.030)	-1.253*** (0.108)	-1.396*** (0.022)	-0.174*** (0.004)	-0.113*** (0.008)	0.178*** (0.004)	0.077*** (0.005)
R^2	0.012	0.100	0.026	0.006	0.067	0.033	0.054	0.053	0.024
Add Sister FE									
Teen Birth	2.491 (6.320)	-0.195*** (0.016)	-0.278*** (0.047)	-0.530** (0.167)	-0.619*** (0.036)	-0.079*** (0.006)	-0.042** (0.014)	0.088*** (0.006)	0.045*** (0.008)
R^2	0.541	0.638	0.581	0.578	0.582	0.522	0.509	0.543	0.512
Add Sister FE and Maternal Characteristic									
Teen Birth	3.604 (6.324)	-0.180*** (0.016)	-0.251*** (0.047)	-0.515** (0.167)	-0.599*** (0.036)	-0.078*** (0.006)	-0.041** (0.014)	0.087*** (0.006)	0.045*** (0.008)
R^2	0.541	0.641	0.585	0.578	0.585	0.522	0.509	0.543	0.512
N	269435	83018	27563	31937	95282	147633	52776	108848	29119

Notes: Basic controls include indicator variables for child year of birth and child gender and are included in all regressions. Maternal Characteristic consists of an indicator for whether the mother started academic high school at age 16. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 3
 Effect of Teen Birth on Marital Status and Completed Family Size

	(1) Married when Child is 1	(2) Married when Child is 5	(3) Married when Child is 10	(4) Married when Child is 15	(5) Completed Family Size
Basic Controls					
Teen Birth	-0.294*** (0.002)	-0.229*** (0.003)	-0.185*** (0.003)	-0.149*** (0.003)	0.232*** (0.007)
R^2	0.145	0.086	0.054	0.038	0.056
Add Sister Fixed Effects					
Teen Birth	-0.168*** (0.003)	-0.130*** (0.004)	-0.103*** (0.004)	-0.074*** (0.004)	0.179*** (0.009)
R^2	0.637	0.584	0.552	0.533	0.560
Add Sister FE and Maternal Characteristic					
Teen Birth	-0.167*** (0.003)	-0.130*** (0.004)	-0.103*** (0.004)	-0.074*** (0.004)	0.180*** (0.009)
R^2	0.637	0.584	0.552	0.533	0.560
N	301354	299546	276030	235354	213163

Notes: Sample is restricted to women born by 1970 when studying completed family size.
 Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 4

Whether mother works when child is 5 as function of father characteristics (sister fixed effects)

	(1)
	Mother Works when Child is 5
Teen Birth	-0.054*** (0.004)
Mother start academic HS	0.032*** (0.002)
Father start academic HS	0.008*** (0.002)
Father IQ = 2	0.012 (0.010)
Father IQ = 3	0.028** (0.009)
Father IQ = 4	0.028** (0.009)
Father IQ = 5	0.029** (0.009)
Father IQ = 6	0.027** (0.009)
Father IQ = 7	0.023* (0.009)
Father IQ = 8	0.015 (0.009)

Father IQ = 9	0.015 (0.010)
Father age 20-22	-0.004 (0.008)
Father age 23-25	0.001 (0.008)
Father age 26-30	0.015 (0.008)
Father age 31-35	0.008 (0.008)
Father age 36+	0.000 (0.009)
Father Height	0.000 (0.000)
Paternal Grandfather high ed	-0.000 (0.000)
R^2	0.541
N	302824

All regressions include the basic controls, maternal grandparent fixed effects, and controls for maternal characteristic. Omitted categories: Father IQ = 1, Father age 19 or less. Robust standard errors in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix Table 5
 Heckman-Pinto Mediation Analysis

	Direct Effect	Indirect Effect attributable to father characteristics	Indirect Effect attributable to family income
Birth Weight	10.9	-2.2	-5.1
Middle School GPA	-0.042	-0.053	-0.048
Cognitive Score	-0.123	-0.111	-0.020
Height	-0.336	-0.451	-0.018
Schooling	-0.309	-0.161	-0.093
Finished High School	-0.044	-0.013	-0.013
Log Earnings age 30	-0.006	-0.018	-0.017
Welfare Use	0.061	0.008	0.014
Child Teen Birth	0.024	0.006	0.002

Notes: The mediator variables are of two types: Father characteristics and family income. Father characteristics include: Whether the father started academic high school, whether the paternal grandfather had high education, father cognitive score, father age at birth of child, father height. Because this procedure mandates that each mediator must be the dependent variable in a regression, rather than including indicator variables for each possible father cognitive score, we include father cognitive score linearly. Likewise, we include fathers age at the birth of the child linearly. Family Income includes: Log of family income when the child is aged 5, 10, and 15.

Appendix Table 6
 Effects of Paternal Quality on Child Outcomes Including Paternal Family Fixed Effects

	(1) Birth Weight	(2) Middle School GPA	(3) Cognitive Score	(4) Height	(5) Years of School	(6) Finished High School	(7) Log earnings age 30	(8) Welfare use	(9) Child teen birth
Teen Birth	11.509* (4.818)	-0.123*** (0.012)	-0.194*** (0.036)	-0.124 (0.122)	-0.432*** (0.028)	-0.063*** (0.004)	-0.034** (0.012)	0.080*** (0.005)	0.043*** (0.006)
Female	-106.951*** (2.677)	0.419*** (0.006)			0.815*** (0.019)	0.071*** (0.003)	-0.340*** (0.009)	0.008** (0.003)	
Maternal Grandfather high ed	9.532** (3.207)	0.083*** (0.007)	0.154*** (0.032)	0.232* (0.108)	0.192*** (0.026)	0.016*** (0.003)	-0.010 (0.012)	-0.007 (0.004)	-0.010* (0.005)
Mother start academic HS	27.852*** (3.211)	0.177*** (0.007)	0.399*** (0.027)	0.332*** (0.093)	0.530*** (0.021)	0.041*** (0.003)	0.026** (0.009)	-0.019*** (0.003)	-0.009* (0.004)
Father start academic HS	7.905* (3.856)	0.101*** (0.009)	0.225*** (0.033)	-0.001 (0.112)	0.372*** (0.026)	0.024*** (0.004)	0.001 (0.011)	-0.003 (0.004)	-0.014** (0.005)
Father IQ = 2	13.163 (16.709)	0.180*** (0.031)	0.117 (0.154)	-0.758 (0.536)	0.181 (0.121)	0.054** (0.018)	0.062 (0.067)	-0.006 (0.021)	0.005 (0.032)
Father IQ = 3	15.554 (15.766)	0.253*** (0.029)	0.476** (0.147)	-0.979 (0.503)	0.375** (0.115)	0.087*** (0.017)	0.063 (0.063)	-0.034 (0.020)	-0.010 (0.030)
Father IQ = 4	15.044 (15.471)	0.356*** (0.029)	0.511*** (0.143)	-0.890 (0.489)	0.495*** (0.112)	0.118*** (0.017)	0.094 (0.062)	-0.040* (0.019)	-0.001 (0.030)
Father IQ = 5	22.073 (15.540)	0.435*** (0.029)	0.637*** (0.144)	-0.723 (0.488)	0.659*** (0.112)	0.127*** (0.017)	0.109 (0.061)	-0.053** (0.019)	-0.004 (0.030)
Father IQ = 6	23.872 (15.716)	0.491*** (0.029)	0.894*** (0.144)	-0.802 (0.491)	0.826*** (0.113)	0.144*** (0.017)	0.122* (0.061)	-0.066*** (0.019)	-0.006 (0.030)

Father IQ = 7	31.374* (15.977)	0.578*** (0.030)	1.039*** (0.147)	-0.751 (0.500)	1.008*** (0.115)	0.155*** (0.017)	0.128* (0.062)	-0.069*** (0.020)	-0.006 (0.030)
Father IQ = 8	24.542 (16.525)	0.621*** (0.031)	1.258*** (0.152)	-0.815 (0.516)	1.186*** (0.119)	0.155*** (0.017)	0.115 (0.064)	-0.080*** (0.020)	-0.013 (0.030)
Father IQ = 9	26.009 (17.683)	0.688*** (0.034)	1.685*** (0.162)	-0.730 (0.558)	1.320*** (0.127)	0.163*** (0.018)	0.099 (0.068)	-0.074*** (0.020)	-0.008 (0.030)
Father age 20-22	22.302* (9.643)	0.071* (0.027)	-0.093 (0.072)	-0.059 (0.245)	0.049 (0.055)	0.025** (0.009)	-0.011 (0.024)	-0.038*** (0.010)	-0.026 (0.014)
Father age 23-25	28.622** (9.891)	0.110*** (0.028)	-0.096 (0.074)	0.162 (0.257)	0.123* (0.057)	0.036*** (0.009)	0.003 (0.025)	-0.066*** (0.010)	-0.029* (0.015)
Father age 26-30	23.291* (10.318)	0.189*** (0.028)	0.029 (0.079)	0.608* (0.275)	0.334*** (0.061)	0.059*** (0.010)	0.029 (0.027)	-0.093*** (0.011)	-0.044** (0.015)
Father age 31-35	7.042 (11.212)	0.197*** (0.030)	-0.005 (0.091)	0.674* (0.314)	0.424*** (0.071)	0.068*** (0.011)	0.019 (0.033)	-0.099*** (0.012)	-0.043** (0.016)
Father age 36+	-15.684 (12.730)	0.204*** (0.033)	0.075 (0.115)	0.849* (0.413)	0.383*** (0.098)	0.074*** (0.013)	0.035 (0.057)	-0.102*** (0.015)	-0.028 (0.019)
Father Height	6.902*** (0.350)	0.004*** (0.001)	0.007* (0.003)	0.371*** (0.011)	0.007** (0.002)	0.001** (0.000)	-0.000 (0.001)	-0.000 (0.000)	-0.000 (0.000)
Constant	3326.505*** (133.709)	2.957*** (0.047)	4.491*** (0.654)	187.050*** (3.578)	11.683*** (0.547)	0.521*** (0.090)	12.810*** (0.188)	0.358** (0.115)	0.131 (0.088)
R^2	0.460	0.650	0.582	0.593	0.581	0.507	0.503	0.528	0.490
N	296475	88691	31167	36072	103197	161497	56602	117915	32421

Notes: Also included are indicator variables for child year of birth and an indicator for whether the mother started academic high school at age 16.

The sample is not restricted to cases where the mother has a sister but is restricted to cases where the father has at least one brother. Omitted categories: Father IQ = 1, Father age 19 or less. Robust standard errors in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$