Skills, Schooling and Non-Marital Teenage Pregnancy in Ghana

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Abstract:
Previous studies have examined the associations between education and non-marital pregnancy and between education and teen-pregnancy but only rarely, if at all, the intersection of the two. Yet, unmarried teenage mothers appear particularly vulnerable, so that a deeper understanding of the determinants of pregnancy for this group appears particularly relevant, both from an academic and a public policy perspective.

This paper examines non-marital teen pregnancy in Ghana, focusing on the role and interplay of Ghanaian and English reading skills, educational attainment, and adult literacy course participation. Pursuing first an instrumental variables strategy, using year of birth-region of birth interactions as identifying instruments, indicates that skills and schooling may be treated as predetermined to whether an unmarried teenage girl has experienced a pregnancy. Continuing, therefore, with linear probability models yields three main results. First, I confirm the finding from previous studies that educational attainment is negatively associated with either non-marital or teenage pregnancy. Second, however, once Ghanaian and English reading skills are introduced, the association between educational attainment and non-marital teen pregnancy decreases or disappears altogether. Third, for the teenage girls who have not completed primary school, adult literacy course participation is associated with a much lower probability of experiencing a teenage pregnancy.

Again, adult literacy programs are specifically targeted at youth and adults with only limited schooling and also, in addition to their primary focus on literacy and numeracy, typically incorporate health components, including information on contraception usage. In turn, this indicates that these programs are beneficial not only in terms of literacy and numeracy per se but also in terms of public health. Adult literacy programs in Ghana, therefore, should be interesting for policy makers as a vehicle to increase the basic skills stock of Ghanaians who have fallen through the cracks of the traditional education system both in terms of basic literacy and numeracy and in terms of health knowledge, including contraceptive use. Directions for future research are also presented.

Table 1. Descriptive Statistics for Estimation Samples

	Full Sample:		Rural Sub-sample:		Mothers w/ Less than Primary Completed:		Mothers w/ Less than Primary Completed from Rural Areas:	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Ever pregnant	0.070	0.256	0.087	0.281	0.089	0.285	0.086	0.281
Literacy course participation	0.008	0.091	0.012	0.109	0.019	0.138	0.029	0.168
Never attended school	0.117	0.322	0.144	0.351	0.406	0.492	0.416	0.494
Less than primary completed	0.172	0.377	0.202	0.402	0.594	0.492	0.584	0.494
Primary completed	0.300	0.458	0.328	0.470	0.000	0.000	0.000	0.000
Above primary completed	0.411	0.492	0.326	0.469	0.000	0.000	0.000	0.000
English reading	0.605	0.489	0.512	0.500	0.166	0.373	0.137	0.345
Ghanaian reading	0.468	0.499	0.418	0.494	0.125	0.331	0.125	0.331
Mother, none	0.191	0.393	0.180	0.384	0.246	0.431	0.193	0.396
Mother, primary	0.023	0.149	0.026	0.159	0.022	0.148	0.024	0.154
Mother, above primary	0.086	0.280	0.070	0.255	0.051	0.220	0.024	0.152
Mother, edu missing	0.701	0.458	0.724	0.447	0.681	0.467	0.759	0.429
Father, none	0.191	0.393	0.198	0.399	0.281	0.450	0.254	0.436
Father, primary	0.022	0.148	0.014	0.116	0.020	0.140	0.020	0.140
Father, above primary	0.272	0.445	0.258	0.438	0.182	0.387	0.146	0.354
Father, edu missing	0.514	0.500	0.531	0.499	0.517	0.501	0.580	0.495
Born in 1979	0.116	0.320	0.098	0.297	0.097	0.297	0.086	0.282
Born in 1980	0.229	0.420	0.224	0.417	0.247	0.432	0.207	0.406
Born in 1981	0.170	0.376	0.169	0.375	0.105	0.308	0.112	0.317
Born in 1982	0.190	0.393	0.174	0.379	0.164	0.371	0.164	0.371
Born in 1983	0.254	0.436	0.287	0.453	0.334	0.473	0.368	0.483
Born in 1984 (reference)	0.041	0.199	0.049	0.217	0.051	0.220	0.063	0.244
Urban	0.440	0.497	0.000	0.000	0.330	0.471	0.366	0.483
Western (residence)	0.127	0.334	0.153	0.361	0.098	0.298	0.189	0.392
Central (residence)	0.092	0.290	0.115	0.319	0.123	0.329	0.064	0.245
Greater Accra (residence)	0.147	0.354	0.016	0.125	0.086	0.281	0.381	0.487
Eastern (residence)	0.120	0.325	0.144	0.351	0.126	0.333	0.000	0.000
Volta (residence)	0.127	0.333	0.161	0.367	0.091	0.288	0.109	0.312
Ashanti (residence)	0.188	0.391	0.167	0.374	0.155	0.362	0.145	0.352
Brong-Ahafo (residence)	0.074	0.262	0.084	0.278	0.069	0.254	0.013	0.112
Northern (residence)	0.063	0.242	0.086	0.281	0.138	0.345	0.156	0.363
Upper West (residence)	0.032	0.175	0.043	0.203	0.070	0.256	0.109	0.312
Upper East (residence)	0.031	0.172	0.031	0.173	0.043	0.204	0.113	0.317
Western (birth)	0.131	0.337	0.142	0.349	0.105	0.307	0.059	0.236
Central (birth)	0.101	0.302	0.119	0.324	0.124	0.330	0.162	0.370
Greater Accra (birth)	0.109	0.311	0.030	0.170	0.050	0.217	0.094	0.293
Eastern (birth)	0.129	0.336	0.148	0.355	0.104	0.306	0.042	0.200
Volta (birth)	0.137	0.344	0.158	0.365	0.146	0.354	0.098	0.298
Ashanti (birth)	0.196	0.397	0.171	0.377	0.149	0.357	0.145	0.352
Brong-Ahafo (birth)	0.075	0.263	0.079	0.270	0.077	0.266	0.008	0.090
Northern (birth)	0.061	0.240	0.080	0.271	0.135	0.343	0.116	0.321
Upper West (birth)	0.031	0.174	0.031	0.175	0.042	0.202	0.185	0.390
Upper East (birth)	0.030	0.172	0.041	0.200	0.068	0.251	0.102	0.303
N	1119		642		308		203	

Notes: Calculations incorporate sampling weights and clustering.
Source: Ghana Living Standards Survey (Round 4, 1998/99).

Table 2.   Specification Tests for 2SLS Ever Pregnant Regressions: Predictive Power of Identifying Instruments (First Stage), Endogeneity, and Overidentification (Second Stage), Final Specification (Including Parental Education)

	Full Sample:	Rural Sub-sample:	Mothers w/ Less than Primary Completed:	Mothers w/ Less than Primary Completed from Rural Areas:
Predictive power, Literacy course participation	0.24 [1.000]	1.78 [0.005]	0.29 [1.000]	54.11 [0.000]
Predictive power, Less than primary completed	8.41 [0.000]	28.43 [0.000]	7.13 [0.000]	17.66 [0.000]
Predictive power, Primary completed	6.54 [0.000]	6.73 [0.000]		
Predictive power, Above primary completed	7.74 [0.000]	15.52 [0.000]		
Predictive power, English reading	1.92 [0.001]	4.32 [0.000]	35.15 [0.000]	36.06 [0.000]
Predictive power, Ghanaian reading	11.47 [0.000]	6.22 [0.000]	141.11 [0.000]	3.32 [0.000]
Wu (1973)-Hausman (1978) endogeneity test	0.69 [0.598]	0.82 [0.513]	0.60 [0.663]	0.60 [0.663]
Hansen (1982) J-test for overidentification	25.90 [0.932]	31.57 [0.721]	34.68 [0.578]	24.66 [0.783]
N	1119	642	308	203

Notes: Terms in brackets are the p-values of the corresponding test-statistic. The tests employ robust Huber-White (Huber, 1967; White, 1980) standard errors and also adjust for within-community correlation/clustering. The explanatory variables are the same used for the estimations in Table 3.
Source: Ghana Living Standards Survey (Round 4, 1998/99).

Table 3. Skills and Schooling Coefficients from OLS Ever Pregnant Regressions

	Full Sample:		Rural Sub-sample:		Mothers w/ Less than Primary Completed:		Mothers w/ Less than Primary Completed from Rural Areas:	
	Only education	Adding skills	Only education	Adding skills	Only education	Adding skills	Only education	Adding skills
Literacy course	-0.049	-0.062	-0.035	-0.065	-0.121*	-0.136**	-0.120*	-0.128*
	[0.084]	[0.080]	[0.105]	[0.099]	[0.066]	[0.065]	[0.070]	[0.069]
Some education	-0.019	0.01	-0.02	0.013	-0.034	-0.012	-0.056	-0.034
	[0.038]	[0.039]	[0.055]	[0.055]	[0.037]	[0.041]	[0.056]	[0.059]
Primary	-0.014	0.058	0.007	0.082				
	[0.040]	[0.048]	[0.058]	[0.069]				
Above primary	-0.075**	0.035	-0.091*	0.029				
	[0.037]	[0.046]	[0.051]	[0.065]				
English reading		-0.095***		-0.095***		-0.064*		-0.036
		[0.026]		[0.036]		[0.035]		[0.054]
Ghanaian Reading		-0.044**		-0.059**		-0.028		-0.06
		[0.018]		[0.030]		[0.034]		[0.058]
R^2	0.10	0.13	0.13	0.16	0.17	0.18	0.26	0.26
N	1119		642		308		203	

Notes: Robust Huber-White (Huber, 1967; White, 1980) standard errors, adjusted for within-community correlation/clustering, in brackets under parameter estimates. *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent. Additional controls include remaining variables from Table 1, including variables for birth cohort, urban residence, region of birth, region of residence, and parental education (the last specification, only).
Source: Ghana Living Standards Survey (Round 4, 1998/99).

Table 4. Full Set of Results from OLS Ever Pregnant Regressions

	Full Sample:		Rural Sub-sample:		Mothers w/ Less than Primary Completed:		Mothers w/ Less than Primary Completed from Rural Areas:	
	Only education	*Adding skills*	*Only education*	*Adding skills*	*Only education*	*Adding skills*	*Only education*	*Adding skills*
Literacy course	-0.049	-0.062	-0.035	-0.065	-0.121*	-0.136**	-0.120*	-0.128*
	[0.084]	[0.080]	[0.105]	[0.099]	[0.066]	[0.065]	[0.070]	[0.069]
Some education	-0.019	0.01	-0.02	0.013	-0.034	-0.012	-0.056	-0.034
	[0.038]	[0.039]	[0.055]	[0.055]	[0.037]	[0.041]	[0.056]	[0.059]
Primary	-0.014	0.058	0.007	0.082				
	[0.040]	[0.048]	[0.058]	[0.069]				
Above primary	-0.075**	0.035	-0.091*	0.029				
	[0.037]	[0.046]	[0.051]	[0.065]				
English reading		-0.095***		-0.095***		-0.064*		-0.036
		[0.026]		[0.036]		[0.035]		[0.054]
Ghanaian Reading		-0.044**		-0.059**		-0.028		-0.06
		[0.018]		[0.030]		[0.034]		[0.058]
Mother, primary	0.081	0.058	0.125	0.099	0.161	0.151	0.297**	0.275*
	[0.077]	[0.079]	[0.116]	[0.115]	[0.166]	[0.162]	[0.143]	[0.145]
Mother, above primary	0.004	0.022	-0.02	-0.006	-0.001	0.034	0.013	0.01
	[0.034]	[0.035]	[0.044]	[0.045]	[0.059]	[0.055]	[0.092]	[0.092]
Mother, edu missing	0.028	0.033	0.014	0.015	0.059	0.055	0.033	0.024
	[0.022]	[0.024]	[0.029]	[0.028]	[0.042]	[0.043]	[0.049]	[0.054]
Father, primary	0.003	0.001	0.042	0.015	0.188	0.17	0.175	0.148
	[0.055]	[0.054]	[0.136]	[0.133]	[0.187]	[0.188]	[0.246]	[0.250]
Father, above primary	-0.011	-0.012	-0.011	-0.016	-0.048	-0.058	-0.108	-0.118
	[0.031]	[0.031]	[0.044]	[0.043]	[0.065]	[0.065]	[0.084]	[0.085]
Father, edu missing	-0.019	-0.012	-0.042	-0.038	0.001	0.005	-0.028	-0.024
	[0.027]	[0.026]	[0.037]	[0.035]	[0.050]	[0.050]	[0.062]	[0.062]
Born in 1979	0.219***	0.220***	0.268***	0.272***	0.233**	0.232**	0.263**	0.265**
	[0.042]	[0.042]	[0.064]	[0.065]	[0.094]	[0.095]	[0.107]	[0.109]
Born in 1980	0.140***	0.141***	0.207***	0.210***	0.111*	0.122*	0.11	0.118
	[0.037]	[0.036]	[0.058]	[0.057]	[0.062]	[0.064]	[0.081]	[0.081]
Born in 1981	0.099**	0.106**	0.126*	0.136**	0.107	0.114	0.102	0.116
	[0.041]	[0.042]	[0.065]	[0.066]	[0.074]	[0.077]	[0.081]	[0.086]
Born in 1982	0.050**	0.063**	0.071**	0.096***	0.079	0.093	0.110*	0.128**
	[0.024]	[0.026]	[0.033]	[0.036]	[0.063]	[0.064]	[0.061]	[0.061]
Born in 1983	0.009	0.024	0.019	0.041*	-0.012	0.002	-0.014	0.007
	[0.017]	[0.019]	[0.021]	[0.024]	[0.045]	[0.046]	[0.052]	[0.049]
Urban	-0.036**	-0.027			-0.002	-0.002		
	[0.018]	[0.018]			[0.041]	[0.042]		
Region of birth:								
Western	-0.002	0	0.087	0.09	-0.196*	-0.191	-0.226	-0.254
	[0.046]	[0.044]	[0.115]	[0.115]	[0.116]	[0.118]	[0.186]	[0.202]
Central	0.009	-0.002	0.036	0.011	-0.258*	-0.262*	-0.477**	-0.516**
	[0.073]	[0.071]	[0.162]	[0.159]	[0.133]	[0.135]	[0.195]	[0.205]
Eastern	0.075	0.106	0.241	0.258*	-0.05	-0.048	-0.101	-0.149
	[0.071]	[0.067]	[0.158]	[0.150]	[0.091]	[0.094]	[0.185]	[0.200]
Volta	0.059	0.06	0.151	0.14	0.112	0.112	0.043	0.015
	[0.046]	[0.043]	[0.125]	[0.118]	[0.116]	[0.115]	[0.206]	[0.216]
Ashanti	0.041	0.048	0.203*	0.198*	0.03	0.029	-0.015	-0.047

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	[0.035]	[0.035]	[0.112]	[0.110]	[0.069]	[0.073]	[0.147]	[0.164]

Brong-Ahafo	0.01	-0.025	0.173	0.118	-0.211**	-0.227**	-0.189	-0.251
	[0.065]	[0.066]	[0.147]	[0.140]	[0.102]	[0.103]	[0.180]	[0.192]
Northern	0.077	0.098	0.211	0.221*	-0.085	-0.075	-0.12	-0.164
	[0.065]	[0.062]	[0.138]	[0.132]	[0.097]	[0.101]	[0.179]	[0.193]
Upper West	-0.01	-0.019	0.159	0.103	-0.232*	-0.255*	-0.246	-0.31
	[0.053]	[0.056]	[0.140]	[0.133]	[0.126]	[0.130]	[0.192]	[0.209]
Upper East	0.039	0.081	0.16	0.198	0.850***	0.822***	0.728***	0.673***
	[0.102]	[0.089]	[0.158]	[0.146]	[0.092]	[0.098]	[0.183]	[0.200]
Region of residence:								
Western	-0.007	-0.009	-0.06	-0.062	0.193	0.191	0.252*	0.289*
	[0.054]	[0.051]	[0.130]	[0.124]	[0.142]	[0.143]	[0.137]	[0.152]
Central	-0.014	-0.009	-0.002	0.011	0.394**	0.392**	0.677***	0.718***
	[0.072]	[0.071]	[0.174]	[0.168]	[0.165]	[0.166]	[0.175]	[0.183]
Eastern	-0.058	-0.069	-0.125	-0.131	-0.055	-0.067	0.001	0.025
	[0.052]	[0.048]	[0.146]	[0.132]	[0.123]	[0.122]	[0.151]	[0.158]
Volta	-0.124	-0.149**	-0.283	-0.298*	0.105	0.092	0.147	0.19
	[0.077]	[0.070]	[0.178]	[0.165]	[0.123]	[0.122]	[0.138]	[0.149]
Ashanti	-0.073*	-0.085**	-0.193	-0.192	0.055	0.052	0.233	0.269*
	[0.041]	[0.039]	[0.131]	[0.124]	[0.094]	[0.094]	[0.148]	[0.157]
Brong-Ahafo	-0.088	-0.072	-0.231	-0.198	0.188	0.201	0.197	0.256
	[0.068]	[0.064]	[0.162]	[0.151]	[0.129]	[0.127]	[0.144]	[0.156]
Northern	-0.071	-0.109*	-0.172	-0.21	0.122	0.11	0.149	0.192
	[0.069]	[0.064]	[0.165]	[0.152]	[0.123]	[0.124]	[0.136]	[0.149]
Upper West	-0.14	-0.166*	-0.253	-0.274*	-0.874***	-0.854***	-0.735***	-0.685***
	[0.099]	[0.088]	[0.179]	[0.164]	[0.106]	[0.108]	[0.160]	[0.170]
Upper East	-0.098*	-0.111*	-0.235	-0.209	0.169	0.177	0.213	0.264*
	[0.058]	[0.057]	[0.157]	[0.147]	[0.139]	[0.138]	[0.144]	[0.157]
Constant	0.058	0.05	0.02	0.017	-0.042	-0.044	-0.021	-0.027
	[0.045]	[0.044]	[0.078]	[0.079]	[0.111]	[0.112]	[0.108]	[0.119]
R^2	0.10	0.13	0.13	0.16	0.17	0.18	0.26	0.26
N	1119		642		308		203	

Notes: Robust Huber-White (Huber, 1967; White, 1980) standard errors, adjusted for within-community correlation/clustering, in brackets under parameter estimates. *: statistically significant at 10 percent; **: statistically significant at 5 percent; ***: statistically significant at 1 percent.
Source: Ghana Living Standards Survey (Round 4, 1998/99).