Can Education Change the Attitudes Towards Gender Roles?

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Main idea and contribution:

- Question: Do more educated women have more modern attitudes towards gender roles?

- Challenge: Educational attainment is probably endogenous to attitudes on gender roles.

- Method: We use the exposure to a nationwide reform of the compulsory education system in Turkey as an instrument for educational attainment.

- Contribution: We show that an increased years of education leads to more modern attitudes towards gender roles, when attitudes are related to women's work outside of home. Weaker results are obtained when we use variables that are related to attitudes on women's political participation and on women's being outside of home without permission from husband.

The compulsory schooling law change in Turkey

We use the 1997 education reform in Turkey as an instrument for educational attainment.

The nationwide reform of the compulsory education system, implemented in 1997, is an ideal natural experiment, since it varied the number of years of schooling, without significant curriculum changes.

It changed the duration of compulsory schooling suddenly and unexpectedly, thereby creating an external shock on educational attainment of children.

Other studies that have used the 1997 education reform

- Teenage marriage and birth (Kirdar, Dayioglu, & Koc, 2012),

- Religiosity (Gulesci & Meyersson, 2013),

- Fertility (Güneş, 2013a),

- Child health (Güneş, 2013b),

- Schooling by gender and rural-urban residence (Kirdar, Dayioglu, & Koc, 2013),

- Measures of empowerment (Dinçer, Kaushal, & Grossman, 2013).

The compulsory schooling law change in Turkey (Continued)

The law change in 1997 imposed 8 years of compulsory education by merging five years of primary education with three years of junior high school.

The "Primary School Diploma" for 5th grade completers was abolished and a "Basic Education Completers Diploma" was offered to 8th grade completers.

The law did not specify the ages or birth-cohorts of children it targets. Instead, it required that, as of the beginning of the 1997-1998 school year, all children enrolled in grades 1 through 5 (and all children who started school in the future) would remain in school through completion of the eighth grade.

The compulsory schooling law change in Turkey (Continued)

In Turkey, children typically start school at age 6, so we can infer that cohorts born in or after 1987 were subject to the education reform.

Some children start school at age 7; therefore the 1986 birth cohort may also have been subject to the reform.

The compulsory schooling law change in Turkey (Continued)

The 1997 reform essentially had two effects on students finishing elementary school:

1) It required them to stay in school for 3 more years.

2) It ensured that these 3 extra years are spent at a secular school.

In other words, both the students who were planning to drop out after 5 years of elementary school and those who were planning to continue education at a vocational religious studies school (Imam-Hatip) were by law decreed to attend school 3 more years in a secular school.
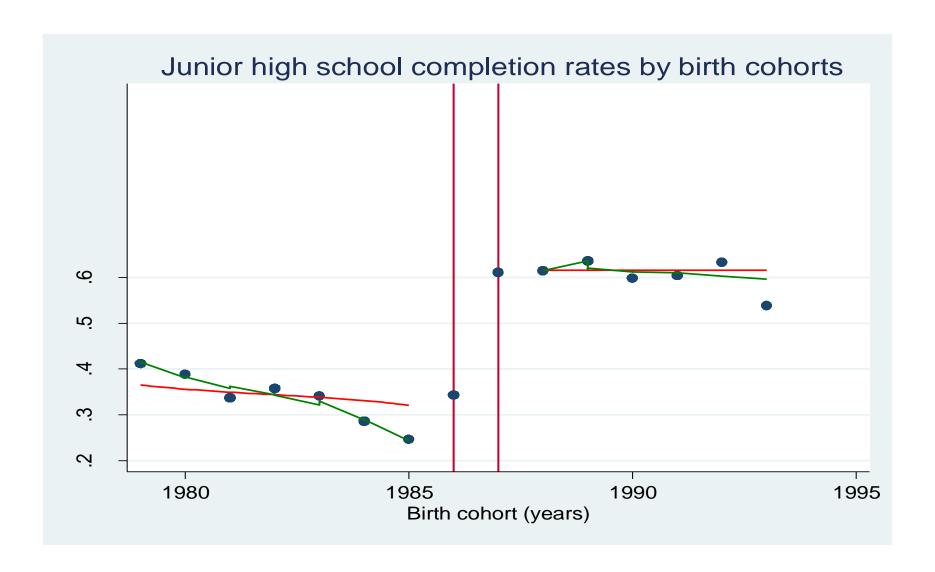
Data

Turkish Demographic and Health Survey (TDHS), conducted by Hacettepe University.

Representative at the national level and also at five major regions of the country (the West, South, Central, North, and East).

Cross-sectional nature with independent samples collected in different waves.

The ever-married women module of TDHS provides data for the sample of women between ages 15 and 49. (Wide range of indicators related to population, health, nutrition, women's beliefs and attitudes, and children's educational attainment.)

We use the 2008 round of TDHS. These data can be used to study the effects of the reform on young female adults in Turkey.

Junior high school completion rates by birth cohorts

Pre-reform average: 34%   Post-reform average: 62%

Questions related to attitudes towards gender roles (TDHS 2008)

Statement	Modern view (coded as 1)	Before	After	P-value on the test of equality
1: "Important family decisions should be made only by men."	Disagree	0.86	0.81	0.0042
2: "A woman should not argue with husband even if she disagrees."	Disagree	0.61	0.50	0.0001
3: "It is better to educate a son than to educate a daughter."	Disagree	0.91	0.82	0.0002
4: "Men are wiser."	Disagree	0.88	0.85	0.4238
5: "Women should be virgin when they get married."	Disagree	0.20	0.16	0.5365
6: "Men should also do housework."	Agree	0.68	0.56	0.0000
7: "A married woman should be able to work outside of home if she wants to."	Agree	0.91	0.83	0.0005
8: "A woman may go anywhere without husband's permission."	Agree	0.28	0.20	0.0011
9: "Women should be more involved in politics."	Agree	0.72	0.66	0.0210

Empirical Strategy and Identification

- *Two-stage least squares.*

- *The education reform used as an instrument for schooling.*

$$S_i = \alpha_0 + \alpha_{01} ydev_i + \alpha_{02}\, ydev_i^2 + \alpha_1 R_i + \alpha_{21}\, R_i\, ydev_i + \alpha_{22}\, R_i\, ydev_i^2 + \mathrm{X}_{it}'\delta + \epsilon_{it}$$

$$ydev_i = y_i - y_R$$

The main coefficient of interest is α_1, which shows the effect of the reform.

Four Different Specifications

Specification 1: $\qquad S_i = \alpha_0 + \alpha_{01} ydev_i + \alpha_1 R_i + \alpha_{21} R_i\, ydev_i + \mathrm{X}'_{it}\delta + \epsilon_{it}.$

Specification 2: $\qquad S_i = \alpha_0 + \alpha_{01} ydev_i + \alpha_1 R_i + \mathrm{X}'_{it}\delta + \epsilon_{it}.$

Specification 3:

$$S_i = \alpha_0 + \alpha_{01} ydev_i + \alpha_{02}\, ydev_i^2 + \alpha_1 R_i + \alpha_{21} R_i\, ydev_i + \alpha_{22} R_i\, ydev_i^2 + \mathrm{X}'_{it}\delta + \epsilon_{it}.$$

Specification 4: $\qquad S_i = \alpha_0 + \alpha_{01} ydev_i + \alpha_{02}\, ydev_i^2 + \alpha_1 R_i + \mathrm{X}'_{it}\delta + \epsilon_{it}.$

The full specification of the second-stage regression is similar to that in the first stage:

$$G_{it} = \beta_0 + \beta_{01} ydev_i + \beta_{02}\, ydev_i^2 + \beta_1\, \widehat{S_{it}} + \beta_{21}\, R_i\, ydev_i + \beta_{22}\, R_i\, ydev_i^2 + \mathrm{X}'_{it}\theta + \varepsilon_{it}.$$

Four Different Samples

Sample A: Includes 7 pre- and 6 post-reform cohorts (birth cohorts 1979-1993).

Sample B: Includes 6 pre- and 6 post-reform cohorts (birth cohorts 1980-1993).

Sample C: Includes 10 pre- and 6 post-reform cohorts (birth cohorts 1976-1993).

Sample D: Includes 5 pre- and 5 post-reform cohorts (birth cohorts 1981-1992). The smallest sample.

In all samples, the 1986 and 1987 birth cohorts are excluded because of the fuzziness in the adoption of the reform.

Four Different Samples Differentiated by Highest Educational Attainment

Idea: Compulsory schooling laws affect the students who want to leave school as soon as possible.

The 1197 compulsory schooling law did not change the rules on high school education; therefore, it should not be expected to have an effect on educational attainment beyond high school. Those who would have pursued college education anyway should not have changed their behavior in response to the reform.

Samples A1, B1, C1, D1: Those with at most high school education. (Expected to have a higher share of compliers.)

Samples A2, B2, C2, D2: Those with some college education or more.

First-stage regressions: Dependent variable: Junior high school completion

	Samples:	Sample A Cohorts: 1979-1993 (7 pre- and 6 post-reform cohorts)		Sample B Cohorts: 1980-93 (6 pre- and 6 post-reform cohorts)		Sample C Cohorts: 1976-93 (10 pre-, 6 post-reform cohorts)		Sample D Cohorts: 1981-1992 (5 pre- and 5 post-reform cohorts)	
		Full sample	Sample 1	Full sample	Sample 1	Full sample	Sample 1	Full sample	Sample 1
Spec 1	Post reform dummy	0.440***	0.474***	0.464***	0.495***	0.455***	0.507***	0.476***	0.491***
		(0.094)	(0.092)	(0.097)	(0.095)	(0.085)	(0.084)	(0.105)	(0.103)
	Adjusted R-squared	0.062	0.091	0.069	0.104	0.053	0.076	0.077	0.120
	F-statistic	21.94	26.39	22.87	27.13	28.61	36.20	20.38	22.82
Spec 2	Post reform dummy	0.410***	0.459***	0.413***	0.463***	0.457***	0.505***	0.411***	0.451***
		(0.090)	(0.091)	(0.091)	(0.091)	(0.085)	(0.085)	(0.096)	(0.096)
	Adjusted R-squared	0.062	0.091	0.068	0.104	0.051	0.074	0.077	0.120
	F-statistic	20.70	25.59	20.83	25.77	28.83	35.70	18.32	22.16
Spec 3	Post reform dummy	0.452***	0.454***	0.487***	0.467***	0.500***	0.532***	0.581***	0.534***
		(0.153)	(0.153)	(0.166)	(0.163)	(0.136)	(0.138)	(0.202)	(0.194)
	Adjusted R-squared	0.061	0.090	0.068	0.103	0.053	0.075	0.077	0.119
	F-statistic	8.67	8.83	8.59	8.21	13.45	14.79	8.29	7.56
Spec 4	Post reform dummy	0.407***	0.455***	0.407***	0.456***	0.470***	0.512***	0.407***	0.447***
		(0.091)	(0.092)	(0.092)	(0.092)	(0.086)	(0.086)	(0.097)	(0.097)
	Adjusted R-squared	0.061	0.091	0.068	0.104	0.051	0.074	0.076	0.119
	F-statistic	19.81	24.50	19.78	24.48	29.58	35.72	17.64	21.39
	Observations	2125	1926	1862	1692	2934	2657	1544	1414

Second-stage results (Summary):

- Some evidence for a positive causal effect of education on attitudes towards gender roles.

- Strongest results are found when attitudes are measured by

Statement 7 ("A married woman should work outside if she wants to.").

- Weaker results are found when attitudes are measured by Statements 8 and 9:

Statement 8 ("A Woman may go anywhere without husband's permission.")

Statement 9 ("Women should be more involved in politics.")

Second-stage regressions: Statement 7: "Married woman should work outside if she wants to."

			A1	B1	C1	D1	A2	B2	C2	D2
Spec 1	OLS	Junior high	0.087***	0.086***	0.076***	0.093***				
			(0.017)	(0.019)	(0.013)	(0.023)				
	Reduced Form	Post reform	0.119+	0.109	0.108*	0.129+	0.025	-0.008	-0.030	0.011
			(0.075)	(0.079)	(0.064)	(0.088)	(0.060	(0.048	(0.049	(0.052
	IV	Junior high	0.247+	0.214	0.210*	0.261+				
			(0.155)	(0.156)	(0.126)	(0.174)				
Spec. 2	OLS	Junior high	0.088***	0.087***	0.075***	0.094***				
			(0.017)	(0.020)	(0.013)	(0.023)				
	Reduced Form	Post reform	0.123*	0.123*	0.108*	0.136*	0.022	-0.009	-0.035	0.010
			(0.072)	(0.073)	(0.065)	(0.076)	(0.060	(0.045	(0.060	(0.045
	IV	Junior high	0.265*	0.263*	0.210*	0.306*				
			(0.157)	(0.158)	(0.127)	(0.170)				

Second-stage regressions: Statement 7: "Married woman should work outside if she wants to."

(Continued)

			A1	B1	C1	D1	A2	B2	C2	D2
Spec. 3	OLS	Junior high	0.085***	0.084***	0.073***	0.089***				
			(0.017)	(0.019)	(0.013)	(0.023)				
	Reduced Form	Post reform	0.119	0.100	0.092	0.046	0.144+	0.080	0.031	0.222
			(0.116)	(0.128)	(0.102)	(0.158)	(0.091	(0.061	(0.054	(0.166
	IV	Junior high	0.277	0.223	0.184	0.085				
			(0.281)	(0.289)	(0.205)	(0.285)				
Spec. 4	OLS	Junior high	0.088***	0.088***	0.075***	0.094***				
			(0.017)	(0.020)	(0.013)	(0.023)				
	Reduced Form	Post reform	0.128*	0.127*	0.112*	0.137*	0.028	-0.001	-0.026	0.021
			(0.074)	(0.075)	(0.067)	(0.077)	(0.062	(0.048	(0.065	(0.048
	IV	Junior high	0.278*	0.276*	0.216*	0.309*				
			(0.163)	(0.163)	(0.129)	(0.173)				

Second-stage regressions: Statement 8: "A woman may go anywhere without husband's permission."

			A1	B1	C1	D1	A2	B2	C2	D2
Spec. 1	OLS	Junior high	0.050*	0.033	0.065***	0.036				
			(0.028)	(0.030)	(0.025)	(0.032)				
	Reduced Form	Post reform	0.102	0.085	0.128*	0.075	-0.672**	-0.689**	-0.596***	-1.028***
			(0.082)	(0.085)	(0.075)	(0.091)	(0.263)	(0.285)	(0.202)	(0.383)
	IV	Junior high	0.218	0.173	0.252+	0.154				
			(0.181)	(0.176)	(0.154)	(0.189)				
Spec. 2	OLS	Junior high	0.051*	0.036	0.064**	0.040				
			(0.028)	(0.030)	(0.025)	(0.032)				
	Reduced Form	Post reform	0.126*	0.128*	0.128*	0.133*	-0.663**	-0.640***	-0.664**	-0.777***
			(0.075)	(0.075)	(0.075)	(0.079)	(0.270)	(0.240)	(0.286)	(0.293)
	IV	Junior high	0.276+	0.277+	0.253+	0.294+				
			(0.175)	(0.174)	(0.155)	(0.188)				

Second-stage regressions: Statement 8: "A woman may go anywhere without husband's permission."

(Continued)

			A1	B1	C1	D1	A2	B2	C2	D2
Spec. 3	OLS	Junior high	0.047*	0.031	0.062**	0.032				
			(0.028)	(0.030)	(0.025)	(0.033)				
	Reduced Form	Post reform	0.072	0.034	0.069	-0.089	-0.889**	-0.857*	-0.665***	-1.574**
			(0.138)	(0.151)	(0.120)	(0.181)	(0.358)	(0.443)	(0.246)	(0.514)
	IV	Junior high	0.158	0.071	0.128	-0.167				
			(0.309)	(0.319)	(0.228)	(0.342)				
Spec. 4	OLS	Junior high	0.052*	0.037	0.064**	0.040				
			(0.028)	(0.030)	(0.025)	(0.032)				
	Reduced Form	Post reform	0.138*	0.138*	0.125*	0.138*	-0.755***	-0.665***	-0.753**	-0.860**
			(0.074)	(0.074)	(0.075)	(0.079)	(0.282)	(0.251)	(0.299)	(0.308)
	IV	Junior high	0.303*	0.301*	0.243+	0.305+				
			(0.178)	(0.177)	(0.152)	(0.190)				

Second-stage regressions: Statement 9: "Women should be more involved in politics."

			A1	B1	C1	D1	A2	B2	C2	D2
Spec. 1	OLS	Junior high	0.001	0.001	0.023	0.002				
			(0.032)	(0.035)	(0.026)	(0.038)				
	Reduced Form	Post reform	0.177+	0.204*	0.146+	0.203*	-0.295	-0.328	-0.180	-0.367
			(0.108)	(0.113)	(0.097)	(0.123)	(0.257	(0.265)	(0.246	(0.358
	IV	Junior high	0.335+	0.376*	0.266+	0.378+				
			(0.212)	(0.216)	(0.180)	(0.235)				
Spec. 2	OLS	Junior high	0.001	0.001	0.023	0.002				
			(0.032)	(0.035)	(0.026)	(0.038)				
	Reduced Form	Post reform	0.151+	0.153+	0.146+	0.154	-0.289	-0.301	-0.164	-0.378
			(0.103)	(0.103)	(0.097)	(0.109)	(0.262	(0.268	(0.221	(0.340
	IV	Junior high	0.299	0.303+	0.266+	0.315				
			(0.209)	(0.210)	(0.180)	(0.227)				

Second-stage regressions: Statement 9: "Women should be more involved in politics."

(Continued)

			A1	B1	C1	D1	A2	B2	C2	D2
Spec. 3	OLS	Junior high	-0.007	-0.008	0.017	-0.007				
			(0.032)	(0.035)	(0.026)	(0.038)				
	Reduced Form	Post reform	0.065	0.097	0.048	0.130	-0.595	-0.606	-0.383	-0.373
			(0.177)	(0.195)	(0.156)	(0.232)	(0.430	(0.457	(0.395	(0.580
	IV	Junior high	0.140	0.207	0.088	0.239				
			(0.388)	(0.423)	(0.288)	(0.429)				
Spec. 4	OLS	Junior high	0.000	0.000	0.023	0.003				
			(0.032)	(0.035)	(0.026)	(0.038)				
	Reduced Form	Post reform	0.145	0.146	0.145+	0.156	-0.355	-0.328	-0.247	-0.300
			(0.104)	(0.105)	(0.098)	(0.109)	(0.281	(0.279	(0.240	(0.347
	IV	Junior high	0.292	0.294	0.260+	0.325				
			(0.214)	(0.214)	(0.178)	(0.230)				

Second-stage results:

For some indicators, only the OLS estimates are positive and statistically significant:

Statement 1: "Important family decisions should be made only by men."

Statement 2: "Woman should not argue with husband even if she disagrees."

Statement 3: "It is better to educate a son rather than a daughter."

Statement 5: "Women should be virgin when they get married."

Second-stage results:

For some indicators, the OLS, reduced form and IV estimates agree, but only in some samples and some specifications:

Statement 4: "Men are wiser."

Statement 6: "Men should also do housework."