'For the Love of the Republic' Education, Religion, and Empowerment*

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Preliminary – Comments are welcome

Abstract

We assess the religious and social impacts of female schooling in Turkey using a change in compulsory schooling law. A new law, implemented in 1998, bound individuals born after a specific date to 8 years of schooling while those born earlier could drop out after 5 years. This allows the implementation of a Regression Discontinuity (RD) Design and the estimation of meaningful causal estimates of schooling. Using a dataset of ever married Turkish women in 2008, we find large reducing effects of a year of schooling on expressions of religiosity, such as the habit of wearing a headscarf, attending Qur'anic courses, and regular prayer. Parallel to these, we also document a partial empowerment effect, whereby women are more likely to make marriage and family planning decisions themselves, less likely to marry under the legal age, and to experience better household and husband characteristics. A noteworthy non-result is the lack of clear effects on female labor force participation. On one hand, we show that returns to schooling in terms of women's status and living conditions may be substantial even when labor-related returns are not. In particular, our results are consistent with education allowing social mobility out of religiously conservative environments for the poor and pious; with women more independently choosing richer, and more educated husbands outside the family circle. On the other hand, however, we also document the absence of commensurate impacts for the country's large ethnolinguistic minorities. An evaluation of the education reform thus needs to weigh its average empowering effects against increased inequality across ethnolinguistic groups.

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1 Introduction

"A tree can bend only when it is young." – Turkish proverb

This paper exploits an extension of compulsory schooling in Turkey to estimate a causal impact of schooling on religious and social outcomes for women. The consequences of female schooling has been investigated for many developing countries, but less so for Muslim countries. These countries typically exhibit particularly low female participation in labor markets, leading researchers to investigate whether education has effects on women's outcomes beyond labor (Lavy and Zablotsky [25]). In turn, this touches on recent research on the broader social effects of education related to religion and women's rights (Friedman et al [9] and Hungerman [15]); topics that are of paramount importance for the future development of the Muslim world.

From a theoretical perspective, modernization theorists have long argued for a secularizing effect of education (Stark [36], Swatos and Christiano [37]), whereby an increasingly educated population should over time become less dependent on superstitious and supernatural beliefs, and in extension less religious. While this may fit the experience in several Western countries, the two seem to have experienced trends in opposite directions in the Muslim world. Women in Muslim countries have made significant gains in educational participation resulting in a narrowing of the gender gap in education (UNDP [38]). Yet, at the same time an ongoing process commonly referred to as the 'Islamic revival' (Lapidus [24]) has, if anything, led to an increase in expressions of religiosity both in terms of demand for religious education as well as the practice of wearing a headscarf for women.

Previous empirical research has found mixed results on the relationship between education and religion. For example, investigating time series usually results in negative correlations (Hout and Fisher [14]). While cross-country evidence suggest a positive correlation (Barro and McCleary [1]), others have documented negative ones (Iannacone [17] and Deaton [7]). The use of micro-studies without a clear identification strategy is further confounded by the importance of religious institutions as important social networks (Sacerdote and Glaeser [35]). Some recent work by Hungerman [15] have provided interesting causal parameters on the effects of education on religious affiliation. Yet, to this date no study has provided a causal identification of the effect of education on broader measures of religious expressions in a Muslim country.

Related to the topic of religion is the issue of women's rights, which in Muslim countries tends to lag those of non-Muslim countries.[1] Consequently, if education has empowering effects, this could be an important instrument for improving gender equality in these countries. Several researchers have investigated the effect of education on empowerment outcomes, and specifically related to politics. For example, Basu and King [2] find that education tends to have positive effects on female participation in attending political meetings. A recent paper by Friedman et al [9] also examines the educational effects on attitudes related to social issues such as religion or domestic abuse. Less work has been done on the effects of education on religious behavior and women's status for Muslim countries.

[1] The Gender Gap, World Economic Forum, http://www.weforum.org/en/initiatives/gcp/Gender%20Gap/index.htm

A common view is also that public education serves as an instrument for affecting a population's beliefs and values (Pritchett [34], Kremer and Sarychev [23]). This indoctrination view suggests that education may affect views not just on religiosity or women's status, but also with regards to nationalism and ethnicity. Of particular relevance for this paper are two components of such indoctrinal practices serving to condition participation on prerequisites or actions related to ethnic and religious identity. The first is the friction resulting from cases where proficiency in the language of instruction is not homogenous (Glewwe et al [10]), which may result in widening inequality in educational attainment across ethnolinguistic groups. The second are restrictions on religious expressions in schools, such as the headscarf ban, which in some cases may give "some women no choice but to remove themselves from the state educational system" (Human Rights Watch [13]).

This paper breaks into previously uncharted research territory by providing meaningful causal parameters for the effect of a year of schooling on religious and social outcomes in a Muslim country and further whether this may come through an empowerment or simply an indoctrination channel.[2]

In 1997, Turkey's parliament passed a new law to increase compulsory schooling from 5 to 8 years. This reform came in part as a response to what a military-influenced secular establishment perceived as unwanted Islamic influence over the "tender youth." In particular, this establishment was concerned about the lack of secular education, and a mushrooming of both uncontrolled Qur'anic study centers as well as women wearing the headscarf.

During, and leading up to this period, political Islam rose to political dominance in local as well as national elections, with some noteworthy consequences for education. In a recent study, Meyersson [32] uses an RD design to show that having an elected Islamic mayor led to higher female participation in secular education. The study further finds no evidence of any effect on support for Islamic parties ten years later. This raises the possibility that increased secular education may in turn have secularizing effects on individual behavior.

Historical evidence suggests that education has played a role in instilling more secular values in Turkey. Since the creation of the Republic of Turkey under its founder, Mustafa Kemal Atatürk, the Ministry of Education has been a key instrument in sowing the seeds of—and protecting—a *laïcism* that subjects all public forms of religious expression under state control (Lewis [27]). In the period following the creation of a secular republic, an ideology known as "Kemalism"—which aims to retain and uphold Atatürk's reformsand values—has had profound influence on the education system in Turkey.

More recently, in what is often referred to as the 'February Process'—after a set of published recommendations on February 28th 1997 by the National Security Council—the military initiated a chain of events leading to the Basic Education Law No. 4306, which replaced the voluntary secular and religious junior high schools with a compulsory secular junior high school. Individuals born on or after September 1986 were consequently bound by this law requiring 8 years of schooling, whereas those born earlier could drop out after 5 years.

Using the 2008 Turkish Demographic Health Survey (TDHS) we are able to compare married women's outcomes assigning treatment based on whether their month-and-year of birth occurred before

[2] A related paper by Kırdar et al. [22] uses the same legal change as we focus on to examine the consequences for teen marriages in Turkey. Our examination complements this study in implementing a standard RD framework using precise month-and-year-determined treatment and by expanding the consequences of the reform to religiosity and women's empowerment.

or after this threshold. Our RD identification strategy thus means comparing cohorts born one month apart and relies on the assumption that these two groups should have no systematic differences other than their years of schooling.

Our results show large reducing effects of schooling on expressions of religiosity. These include wearing a headscarf, attending Qur'anic studies, and regular prayer. This secularizing effect can also be seen in a weighted index of the different religiosity measures. Further evidence also reveals what can best be described as a partial empowerment effect of schooling. Women with more schooling tend to be less likely to both marry—and have children—under the legal age; they are more likely to choose their husbands and make family planning decisions themselves, and less likely to marry in traditional ways. A noteworthy non-result is the lack of precise effects of schooling on female labor force participation, despite positive effects on household characteristics, such as household wealth and husband's education.

This points to a set of returns to schooling that take into context the socially conservative nature of Turkish society where policies to increase schooling have so far had limited consequences for female labor force participation. At the same time, secular schooling in Turkey resulted in broad benefits for women. One interpretation of the results is that education facilitated upward social mobility out of religiously conservative environments. A central takeaway from this exercise is recognizing the important returns to education for women in socially conservative countries extending beyond labor.

We also provide evidence consistent with previous work on potential mismatch between national educational systems and ethnolinguistic heterogeneity (Glewwe et al [10]). According to Turkey's constitution, educational instruction in core subjects may only occur in the Turkish language. Consequently, whereas the studied policy had substantial impacts for women with primarily Turkish-speaking parents, we find zero impacts for women with parents primarily speaking a non-Turkish language. Among this group, which made up a quarter of the sample, roughly 90 percent constituted Kurdish-speakers. As such, while the education reform had positive average effects on important outcomes, our results also point to a deepening inequality across ethnolinguistic groups. This is of particular concern given a further finding that the reform provided substantial benefits for the poor and pious among the majority-Turkish population.

The rest of this paper is organized as follows: Section 2 provides information on the education system in Turkey and the political context within which the policy change took place; Section 3 presents the data used in the study and our empirical design; Section 4 provides the empirical results and some validity checks, Section 5 explores heterogenous treatment effects, and Section 6 concludes.

2 The Political Economy of Education in Turkey

> *"He is a weak ruler who needs religion to uphold his government; it is as if he would catch his people in a trap. My people are going to learn ... the dictates of truth and the teachings of science.' Superstition must go. Let them worship as they will, every man can follow his own conscience provided it does not interfere with sane reason or bid him act against the liberty of his fellow men.' – Mustafa Kemal Atatürk*[3]

Education in the Republic of Turkey was always about more than just teaching and learning. Even today, the Ministry of Education describes education as "the process of change in behaviors of individuals."[4] This dates back to reforms implemented by Atatürk in the 1920s, seeking a modernization of a stagnant and archaic Ottoman Empire into a modern Western-oriented republic based on secularism and nationalism. Among these, reforms to the education system brought all educational instruction under government control, away from religious organizations as well as ethnic and religious minorities.

For women, these reforms had important consequences. Even though female schooling existed before Atatürk—Young Turks had previously opened up middle and secondary schools to women—such instances provided exceptions to the norm that women did not participate in education (Lewis [27]).

A groundbreaking reform was a law making primary school compulsory for both girls and boys as well as a new civil code resulting in equal inheritance rights and ending divorce at the husband's discretion. These and several other reforms implemented by Atatürk have resulted in the founder's hero status in terms of Turkish women's emancipation (Mango [28]). Yet despite the reforms' importance given the initial level of women's rights in the early 20th century, their long-running effects remain limited. Today, women's rights in Turkey remains poor. And despite significant gains in education over the past decades, labor force participation remains low. But more alarmingly is the prevalence of forced marriages—often both unofficial and under the legal age— while domestic abuse and honor killings remain acute problems especially in the country's poorer Eastern provinces (Human Rights Watch [16]).

Nonetheless, for many women, the education system may have played an important role in facilitating social mobility and improved living conditions. Higher female education today is correlated with more formal economic activities, such as labor force participation, as well as lower levels of social conservatism, often related to expressions of religiosity. Yet whether education in Turkey has had causal empowering effects is at the core of this paper.

The early reforms also had an impact on Turkey's minorities. For some groups, such as the Alevi who under the Ottoman empire suffered discrimination and sometimes outright repression, the bundle of nationalism and laïcism provided a crucial form of social mobility which had previously been impossible (Bellaguie [3]). Other communities instead found inclusion more difficult due to the large discrepancy in culture and language imposed by the new system.

Yet perhaps the biggest challenge of the education system lay in its clash with a broadly shared culture of social and religiously conservative views on the means and ways of female participation. At the

[3] Quoted in Atatürk: The Biography of the founder of Modern Turkey, by Andrew Mango; "In a book published in 1928, Grace Ellison quotes [Atatürk], presumably in 1926-27", Grace Ellison Turkey Today (London: Hutchinson, 1928)

[4] "National Education at the Beginning of 2001," Republic of Turkey Ministry of Education http://www.meb.gov.tr/stats/apk2001ing/section_4/compulsoryeducation1.htm

time of the mid-1990s, waves of migrants from the Anatolian heartland and the Eastern provinces had shifted the demographic and socio-political nature of the urban population. As a result, many parents saw in the existing state-run religious schools an alternative to the culturally demanding secular schools with its headscarf bans and co-educational classes.

2.1 Political Islam and the 1997 'Basic Education Law'

Before 1997, Turkey's basic education system consisted of three components; 5 years of primary school (*İlkokul*), 3 years of junior high school (*Ortaokul*), and 3 years of high school (*Lise*). Of these three, primary school was mandatory and the other two voluntary. For both junior high school as well as high school, students had two choices: secular or vocational schools, where the latter included religious (*imam-hatip*) schools. This allowed students after primary school the option of not just dropping out, but also to continue studies focusing on religious instruction. All education is co-educational and exclusively in Turkish. Although the official law stated that women could not wear a headscarf in any public institution (i.e. neither in secular nor religious (*imam-hatip*) schools), in practice this law was less enforced in religious schools where female students could often be seen attending class in their headscarf (Çakir et al [6]).

Starting in the early 1990s, an Islamist movement experienced increasing political gains in local and national elections alike, becoming the largest party in the 1995 national elections. The following years would be marred by a conflict between the politically Islamic movement and a secular establishment dominated by the military and the judiciary (Yavuz [40]). One of the main points of friction centered around public displays of religiosity, especially women wearing the headscarf as well as attendance in religious instruction centers. These religious instruction centers either consisted of religious formal alternatives to post-primary education, or more extracurricular Qur'anic study centers (Günay [11]). Despite their being under formal state control, secular critics argued that the state had lost control of these institutions to Islamists who were using them as indoctrination centers to influence Turkish youth at a crucial and impressionable stage in their development.

The ongoing conflict reached a climax on February the 28th 1997 when, after a longer than usual meeting, the National Security Council (NSC) announced the adoption of eighteen recommendations designed to stem the spread of Islamism in the country. One of these recommendations was the extension of mandatory secular schooling from 5 to 8 years, and it made quite clear that at stake was more than test scores:

> "*With a view toward rendering the tender minds of young generations inclined foremost toward love of the republic, Atatürk, the homeland, and the nation, and toward the ideal and goal of raising the Turkish nation to the level of modern civilization, and to protect them against the influence of various quarters... An eight-year uninterrupted educational system must be implemented across the country.*"[5]

[5] *"Genç nesillerin körpe dimağlarının öncelikle cumhuriyet, Atatürk, vatan ve millet sevgisi, Türk milletini çağdaş uygarık düzeyine çıkarma ülkü ve amacı doğrultusunda bilinçlendirilmesi ve çeşitli mihraklarin etkisinden korunmas bakımından... 8 yıllık kesintisiz eğitim, tüm yurtta uygulamaya konulmalı."* "National Security Council Resolution No. 406", February 28, 1997 Appendix A, available at http://bit.ly/AdtYFl

Less than five months later, Law No. 4306 passed the Turkish parliament by a vote of 277 to 242. This new law stipulated an extension of mandatory schooling to 8 years, effectively merging primary school and junior high school into what is now called primary education (*İlköğretim*). The option to attend religious junior high schools was consequently removed and the traditional diploma that had been awarded at the end of the fifth grade was abolished, replacing it with one for successful completion of the eighth grade.[6]

The new law required a massive investment in education. According to a World Bank [39] report annual expenditures for the reform were in the order of 3 billion US dollars. This included expenditure on construction of schools, educational materials, and staff. Within just a few years of the implementation of the reform, around 82,000 new classrooms were built (increasing classroom supply by 30 percent) and 70,000 new teachers were recruited. In order to improve access for children in rural areas, a variety of methods were implemented ranging from extending an already existing bussing scheme, establishing more boarding schools, and consolidating some village schools. Students from low-income families often received free textbooks and school meals.

Despite the name, 'Basic Education Law,' the law was primarily meant to enforce enrollment as opposed to reforming aspects of the main education system, such as the curriculum or various rules (Dulger [8]). As such the legal change had a particularly strong effect on including women. For example between 1997 and 1998 the female-to-male ratio of enrollment in post-İlkokul education jumped from 0.6 to 0.8. In a country where women are systematically under-represented in not just voluntary education but also labor markets and politics, this nationwide law represented a dramatic increase in education.[7]

Even though the reform has been deemed a success, there are exceptions to the remarkable take-up in enrollment and significant disparities remain across gender, socioeconomic groups and geographic locations (World Bank [39]). Religiously conservative groups were critical of the reform due to less time spent on religious instruction in the new system, the ban on wearing a headscarf, and mixed-sex education. Moreover, in the country's Eastern region factors such as poverty, weak women's rights, and security problems have at times created near insurmountable barriers to female participation. A further complicating factor is the fact that in this predominantly Kurdish region, fluency in Turkish—the exclusive language of educational instruction—is not homogenous.

3 Data and Empirical Design

3.1 Data

The data used in this study comes from the 2008 Turkey Demographic Health Surveys (TDHS).[8] Within this household survey, one module focuses on the sample of ever married women, which includes data on month and year of birth. Since the cutoff in our RD design occurs roughly mid-year and due to the absence of month of birth for the larger DHS household sample, we can therefore only expect to find precise RD estimates for the ever married women sample. This module of the TDHS includes a

[6] A further component of the Law raised the minimum grade requirements of attending Qur'anic instruction centers but these were subsequently overturned two years later.

[7] For more on women's participation in Turkey as well as comparisons with other countries, see The Gender Gap, World Economic Forum, http://www.weforum.org/en/initiatives/gcp/Gender%20Gap/index.htm

[8] We will also use the 2003 wave of the TDHS for some robustness checks.

number of variables related to health, economic activity, and social status. Specifically for our purposes, this sample also includes variables measuring religious expression such as wearing a headscarf, having attended a Qur'anic course, as well as prayer and fasting. As such, our analysis will be concentrated on the nationally representative sample of ever married women from the TDHS.

Table 1 provides summary statistics on characteristics of women in the ever married women sample. Since our identification focuses on young women in their early twenties, we report summary statistics for those between 16 and 26 years of age. The average woman in this age bracket has 6.3 years of schooling. Roughly 38 percent have finished junior high school while 21 percent of them have completed high school. Around 5 percent most recently attended a vocational school.

Panel B of Table 1 provides descriptive statistics for the measures of religiosity we have in the data. 77 percent of the women in our sample report that they wear a headscarf when they leave the house. The prevalence of this custom is consistent with other recent surveys in Turkey.[9] 44 percent have ever attended a Qur'an course and just below 40 percent say their prayers regularly. The last two measures in Panel B show an overwhelming majority praying irregularly and regularly fasting.

Since all these variables measure religiosity in different ways, we also construct a weighted religiosity index, where the weights are proportional to one minus the mean of the religiosity variables. Thus, the religiosity index puts more weight on less common measures of religious expression, such as Qur'anic study and regular prayer, and less weight on irregular praying and fasting, which are more common.[10] The average of this religiosity index is 0.43.

Panel C of Table 1 provides statistics on age at marriage and first birth. The average age at first marriage in the sample is 18.4. This means that when we identify the RD treatment effect of women around their 22nd birthday, on average they will be in their fourth year, and beyond one standard deviation from the average age of first marriage. Moreover, 87 percent of the sample report that they married after the legal age of marriage, which in Turkey is 16. The average age at first birth is 19.8 and 86 percent of the women in the sample gave birth after they were 17. [11] The last two rows also show that just over half of the respondents got to chose their husbands themselves – as opposed to their family making that decision – and that 86 percent of women had a say in the decision whether to use contraception.

Panel D gives summary statistics on the labor force participation and household characteristics of the women in our sample. The labor force participation among married women in Turkey is low; only 18 percent of the women in the sample report that they currently have a job. No consumption or income data was collected in the TDHS. However, data on asset ownership was used to construct a generalized wealth index from which we construct a dummy variable whether the respondent is in the third or higher wealth quintile. Half of our sample belong to this group. On average the respondents' husbands are five years older and have 8 years of schooling; significantly higher than the years of schooling for women. More than half of the respondents' husbands completed junior high school and 10 percent completed university education.

[9] See for example Çarkoğlu and Toprak [5].

[10] More formally, the weights are $w_i = \frac{1-\mu_i}{\sum_J (1-\mu_j)}$ where μ_i is the mean of religiosity variable i. All religiosity variables used in creating the index are indicator variables taking either a value of 0 or 1.

[11] These low ages of marriage and birth are not specific to the young cohorts in the ever married sample. For ever married women of *all* ages, the corresponding averages are 19.9 and 21.1 respectively.

Final section of Table 1 provides summary statistics on pre-determined characteristics of married women in our sample, which we will control for in the following analysis. On average, near a third of the young ever married women had a mother whose primary language was not Turkish, and in 88 percent these cases, the mother's primary language was Kurdish. Furthermore, 5 percent had mothers with completed junior high school, and 19 percent had father's with completed junior high school. 27 percent of the women had parents who were related. Finally, in terms of geographic distribution of the women in our sample, 28 percent of them were from rural areas while 21 percent of them were born in one of the top 10 largest cities in Turkey.

3.2 Identification

An important component in Law No. 4306 was that it decreed that children born on or after September 1986 were bound by the new law, whereas for older cohorts any further schooling beyond 5 years remained optional. This allows the use of a Regression Discontinuity (RD) design to estimate the causal effect of schooling on various outcomes. Our empirical design thus relies on a comparison of cohorts, i.e. those born just after, or just before the discontinuity—in this case September 1986. As long as the treatment and control groups in close proximity to the discontinuity do not differ systematically in any other way than their years of schooling, this allows an as-good-as-random assignment of years of schooling.

Previous research (Oreopolous [33] and Hungerman [15]) implement so-called Fuzzy RD, whereby the discontinuity acts as an instrumental variable for treatment status. As will be clear in Section 4, in our design the first-stage estimates a discontinuous jump of exactly one year of schooling, allowing us to estimate meaningful reduced-form regressions making standard two-stage least squares somewhat redundant. We will use a basic RD specification of the form:

$$\begin{aligned} y_i &= \alpha + \beta s_i + f(x_i) + \varepsilon_i \\ \forall x_i &\in (c-h, c+h) \end{aligned} \tag{1}$$

where y_i is the outcome in question, m_i is the treatment, x_i is the forcing variable, and h is a neighborhood around c, hereby referred to as the bandwidth. The control function $f(x_i)$ is some continuous function, usually an n-order polynomial in the forcing variable on each side of c. Previous research has used different approaches to RD estimation, but are predominantly variations of equation 1 by choosing different bandwidths and control functions. We use local linear regressions (Hahn et al. [12], Imbens and Lemieux [19]). In order to determine the correct bandwidth we use the Optimal bandwidth routine from Imbens and Kalyanaraman [18], which in our case is in the order of 60 months. Alternative specifications are also reported, and do not have meaningful bearings on the results.

4 Results

As we will be using the married women's module from the 2008 Turkish DHS, one concern is to what extent the treatment may have had an effect on being ever married in 2008 and thus on inclusion into this subsample of the survey. Since household survey data only includes age and not month of birth,

we can at best expect to estimate imprecise and somewhat noisy effects for this larger group including both married and single women. Our slightly noisy cutoff is in this case between 21 and 22 years of age, recorded at the time of the interview between October and December of 2008. The upper left graph in Figure 1 shows completion of junior high school in annual age averages at interview date. Here, average completion of junior high school is clearly higher (to the order of one and a half year) just to the right of the cutoff compared to that just to the left, illustrated also by the difference in endpoints of local linear smoothers on each side of the discontinuity. This confirms the expected increase in educational attainment for all women regardless of marital status.

The upper right graph shows the same for men and reveals no clear jump at the discontinuity. Not only is the difference at the threshold much smaller than for women, but it is also negative and within the corresponding confidence intervals. Consequently, the reform seems to have had a much more muted effect for men, which is perhaps not so surprising given that almost 90 percent of the men in the sample were already completing junior high school even before the reform.

The effect on the gender gap — the ratio of average female-to-male completion of junior high school — can be seen in the lower left graph. The jump here is around 0.2, a relative increase of a third compared to the pre-reform ratio. To put this in context, our sample's parents on average exhibit a female-to-male completion ratio of 0.25. The difference between this and pre-reform ratio is 0.35. In other words, at the threshold the treatment reduced the gender gap of an order of magnitude more than half the size of the intergenerational gender gap between respondents and parents.

The lower right graph further investigates whether there was a similar jump at the discontinuity for whether the respondent was ever married. As this graph shows, there is no commensurate jump in marital status and consequently, there is therefore little reason to expect that the treatment affected likelihood of inclusion into the sample restricted to married women we will focus on for the rest of the paper.

4.1 Schooling

> *"The government's most creative and significant duty is education." – Turkish proverb widely attributed to Mustafa Kemal Atatürk*

The upper two graphs in Figure 2 is a graphical illustration of the RD design with regards to years of schooling. The upper left graph plots the average years of schooling in annual bins away from the cutoff of turning 21 years in September in 2008, commensurate with being born in September 1986. Overlaid is a local linear smoother on each side of the discontinuity. This clearly shows a jump at the threshold of approximately one year. As a placebo check, the upper right graph shows the relationship for the 2003 DHS survey, where there should be no known effect on schooling of turning 22 in September for this survey cohort (since they were not affected by the policy). As this graph shows the relationship is smooth at the threshold.

In order to establish these relationship more thoroughly, we first establish the impact of the policy change on years of schooling in Table 2. Panel A reports results from regressions without covariates while Panel B includes dummies for type of mother and father's education respectively, a dummy for whether the respondent's mother has a non-Turkish language as mother tongue, a dummy for living in

a rural location, a dummy for whether the respondent's mother and father are relatives, month-of-birth fixed effects, as well as province-of-birth fixed effects. All standard errors are clustered by month-year of birth to accommodate for specification error in the forcing variable following Card and Lee [4].

Columns 1-4 show results with years of schooling as the outcome variable. Column 1 uses a local linear RD specifications with a 60-month bandwidth. Column 2 has no control function and only includes observations within 4 months of the threshold. Column 3 and 4 expands the bandwidth to 120 and 180 months, and includes a quadratic and a cubic control function respectively. From the estimate in Panel B of column 1, a one-year increase in schooling is a significant increase, and corresponds to roughly a 15-20 percent increase relative to the mean level of schooling (also reported in the table).

A facilitating consequence of the one-year increase is that it makes the standard IV framework largely redundant. Therefore, we will focus on the reduced-form regressions using the local linear method, although we still report standard IV specifications as well.

Columns 5-8 report estimates using local linear regressions with the same bandwidth as in column 1 for various types of schooling. In column 5 there is a large and precise treatment effect on completing junior high school, the main focus of the education reform. Interestingly those affected by the reform subsequently were also more likely to complete high school, the still-voluntary three-year type of education succeeding junior high school. Moreover, there is a positive impact, marginal in magnitude as well as statistical significance, on completing primary school.

The last outcome in the table, vocational schooling, is important for our purpose. This particular dummy is one if the individual's last reported school was of a vocational type, which may or may not have been either a religious junior high school or a religious high school.

The reform not only extended the minimum number of years of schooling but also removed the option of choosing a vocational junior high school. Thus any treatment effect could, in theory, manifest itself either through more years of schooling or through affecting the type of schooling. A large negative impact on attending vocational schooling would be consistent with a treatment effect being driven by a switch from religious to secular schooling.

In column 8, we find a *positive* but comparatively small and insignificant effect on having last attended a vocational school. This suggests that the reform failed to reduce attendance in vocational schools leading up to the time of the survey. In other words, even though the reform removed the possibility of attending a vocational *junior high school*, if anything it increased the likelihood of attending a vocational *high school*. Consequently, this seems to suggest that the channel of reducing the vocational—and implicitly, religious—types of schooling may not be the main source behind our treatment effect, and we instead interpret it as the effect of increasing years of schooling.

4.2 Religion

> *"In human life, you will find players of religion until the knowledge and proficiency in religion will be cleansed from all superstitions, and will be purified and perfected by the enlightenment of real science." – Mustafa Kemal Atatürk*[12]

As a first step in uncovering the relationship between schooling and religion in Turkey, Figure 2 shows

[12]Speech (October 1927); quoted in Atatürk'ten Dusunceler by E. Z. Karal, p .59

the relationship between the propensity to wear a headscarf and the forcing variable. Here a negative jump at the threshold can be seen, clearly different from the lower placebo graph from the 2003 survey.

Table 3 shows regression results for the religious outcomes, with basic ordinary least squares (OLS) specifications reported in Panel A. For the religiosity index in column 1, an additional year of schooling was correlated with a 1.4 percentage point lower value of the religiosity index (3 percent in relative terms) and were 3.8 percentage points less likely to wear a headscarf (5 percent in relative terms).

The rest of the columns include outcomes for whether the respondent has ever attended an extracurricular Qur'an course, whether the respondent prays five times per day, whether the respondent ever prays, and whether the respondent fasts. In all but the Qu'ran course outcome, schooling is negatively correlated with these measures of religious expression.

Panel B presents the RD results using the local linear method. For the religiosity index, Qur'an course, headscarf, and regular prayer outcomes, the estimates are larger in magnitude than the OLS estimates, but only marginally statistically significant for the last two. The results imply that treated cohorts who experienced a policy-driven one-year increase schooling had a 7.2 percentage points lower religiosity index (17 percent relative to the mean), were 6.1 percentage points (8 percent relative to the mean) less likely to report wearing a headscarf, 11.3 percentage points (26 percent) less likely to have attended a Qur'an course, and 7.4 percentage points (19 percent) less likely to report that they pray regularly (5 times a day). Together, our results imply that the increase in mandatory schooling implied by the policy change led to a significant decrease in expressions of religiosity among the treated cohorts. For the last two outcomes in Table 3, ever praying and fasting, the estimates are close to, and significantly indistinguishable from, zero. The IV estimates using two-stage least squares (2SLS) in Panel C show identical estimates to those in Panel B.

In explaining why we find results for the first three but less so for the last two religion outcomes it is important to remember the context in which the education law was applied. Many in the secular establishment were particularly concerned over public displays of religiosity as well as alternative instructional facilities. Given Turkey's long-running controversial debate over the headscarf as a symbol of Islamism, and the explicit mentioning of Qur'anic study centers as potentially threatening to the the secularism of the country, it is perhaps not so surprising that estimates are particularly pronounced for these outcomes. In contrast, occasional prayer and fasting could be deemed as measuring religiosity at a lower level or less controversial, and so we might expect less of an effect on these outcomes.

Moreover, as discussed in Section 2, to the extent that the law imposed girls to stay in secular education for longer, it also imposed them to not wear a headscarf regularly until an older age and this could have led to a change in their preferences and affected their headscarf use in later life.

This in turn could mean that schooling may not necessarily affect deeper religious preferences per se, but rather public expressions of them. If this is simply a matter of indoctrination towards restricting public expression of religiosity, this could necessitate an interpretation away from a more pure secularizing story.

In relation to the empowerment argument of schooling, these results do not necessarily imply that women independently *choose* their level of religious expression. One possibility is that schooling changes the type of husband the woman eventually marries, and that the differences in religious expressions simply represent different commandments from different husband types; for example, a religious husband

for a woman with less schooling versus a secular husband for a woman with more schooling.

In order to investigate whether the effects on public expressions of religiosity comes from women making these decisions themselves, and whether this may come through some sort of empowerment, we in the next section examine outcomes related to marriage, household, and labor.

4.3 Marriage Characteristics

"Everything we see in the world is the creative work of women." – Mustafa Kemal Atatürk[13]

A commonly noted way in which schooling may affect women's outcomes is through delaying marriage (Kırdar et al [22]). Our design emphasizes comparing women in their early 20s, but due to the low age of first marriage in Turkey (around 19 years in the sample) analyzing age of first marriage for our relatively young sample is still highly relevant.

Panel A of Table 4 shows that schooling is weakly positively correlated with age at first marriage (column 1) as well as getting married after the age of 16 (column 2), which is the legal minimum age of marriage. Moreover, the correlation with age at first birth (column 3) and birth after 17 (column 4) is either equally weak or nonexistent.

The weak correlations point to two potential factors at play here. On one hand, schooling may have a direct delaying effect on marriage due to an expansion of alternative opportunities. One the other hand, schooling may increase a woman's opportunities in the marriage market which might lead to finding a husband earlier.

In Panel B our RD estimates show an insignificant and very small negative estimate on age at first marriage – the point estimate is -0.16 and insignificant at conventional levels. On the other hand, there is a positive effect larger than the OLS estimate on getting married after the legal age in column 2. Women in treated cohort are 6 percentage points (7 percent relative to the mean) more likely to have married after the age of 16 and this effect is marginally significant. This duality is further manifested when examining age at first birth and whether the respondent gave first birth after the age of 17. Here the small negative estimate of -0.09 on age at first birth is insignificant, but there is a positive effect of 7.2 percentage points (8 percent relative to the mean) on the propensity to give birth after 17.

All in all this serves to show that schooling may have delayed marriage and births until the legal minimum, but after that may have actually increased the speed at which a match occurred.

In light of the relatively early age at which women get married in Turkey, column 5 has as outcome whether the woman respondent was able to decide for herself whom to marry. As can be seen, only around half of the women in the sample reported that they decided on their husband themselves. It is therefore noteworthy that the treated cohort was 11 percentage points (21 percent relative to the sample mean) more likely to have chosen their husband themselves. Furthermore, the treatment also led to women being 13 percentage points more likely to have a say in whether to use contraception or not. The positive impacts of these two decision-related outcomes are important as they suggest women got more decision rights from the additional year of schooling.

[13] As quoted in The Macmillan Dictionary of Political Quotations (1993) by Lewis D. Eigen and Jonathan Paul Siegel, p. 424; also in Atatürk: First President and Founder of the Turkish Republic (2002) by Yuksel Atillasoy, p. 15

The rest of the Table shows results for a range of outcomes that could be considered socially progressive. Schooling leads to a lower propensity to have bridesmoney (*başlık*) paid (43 percent relative to the mean), a higher likelihood of having a civil (as opposed to only a religious) ceremony (8.9 percent relative to the mean), and lower (although statistically insignificant) likelihood of marrying a close relative (18 percent relative to mean).

4.4 Labor and Household outcomes

> *"Humankind is made up of two sexes, women and men. Is it possible for humankind to grow by the improvement of only one part while the other part is ignored? Is it possible that if half of a mass is tied to earth with chains that the other half can soar into skies?"* – Mustafa Kemal Atatürk[14]

In table 5 we examine outcomes related to women's participation in the labor force as well as household and husband characteristics. Column 1 in Panel A shows that 19 percent of the women in our sample are currently employed. One more year of schooling is correlated with a 1.2 percentage point higher propensity to be employed. The RD estimate in Panel B shows a larger in magnitude but statistically insignificant estimate of around 2.3 percentage points. This effect is rather large (12 percent relative to the mean), but insignificant at conventional levels.

In terms of household and husband characteristics, Panel A reveals that women with an additional year of schooling tend to live in richer households, as evidenced by the positive correlation with the household wealth indicator in column 2. For the RD estimates in Panel B, there's a large positive effect on the propensity for the respondent to belong to the third or higher wealth quintile.

Similarly the reform seems to have further accelerated urbanization through affecting geographic mobility. Schooling is positively correlated with moving from a rural birthplace to an urban location in Panel A. In Panel B the estimate is three times larger, but only marginally statistically significant.

In column 4, years of schooling is only vaguely correlated with the age difference between the responding woman and her husband. The RD specification for this outcome also yields an estimate that is marginal both in magnitude as well as statistical significance. This is rather important as it lowers the likelihood that effects on husbands' characteristics are driven the women marrying men in the same class or school who are also affected by the reform.

While the respondent's and their husbands' years of schooling are only weakly correlated in the OLS specification in Panel A, the RD estimate of women's schooling on husband's years of schooling is particularly strong. The 1.3 years increase is larger than (although not statistically significant from) the treatment effect on female years of schooling estimated in Table 2.

In contrast, however, here the effect on husband's schooling comes not from junior high school but from high school and university. An additional year of women's schooling further increases the propensity for the husband to have received a high school and university degrees by 9 and 3.2 percentage points respectively. This suggests that a direct return to education for the affected woman may have been a better educated husband, not just in absolute terms but also relative to the woman's own education.

[14] Quoted in Vakit on 30 March 1923.

Although we fail to find any effects on labor force participation, education may have important consequences for social mobility. An interpretation of the religiosity, marriage, and household outcomes suggest that education may have contributed to bring women out of socially conservative—and often rural —environments, by allowing them to independently choose richer and more educated husbands outside the immediate family circle. Furthermore, education may have provided a form of personal security by reducing the possibility of unofficial marriages under the minimum legal age.

4.5 Additional Validity Checks

In this section we investigate the validity of the RD design. A central assumption in order for the RD estimates to have a causal interpretation is for the assignment of years of schooling around the threshold to be as good as random.

The fact that there was no treatment effect found for individuals in the 2003 survey is consistent with a valid randomization at the discontinuity, as is the irrelevance of including covariates to the specifications in Table 2 beyond increasing precision.

A further consequence of the assumption underlying the RD design is that we should observe no commensurate jumps at the threshold for any control variable predetermined to the treatment itself.

Figure 7 illustrates this by plotting annually binned averages of the control variables against the forcing variable. Since we control for parent's education and birth province using a large number of dummy variables, this makes it difficult to easily illustrate this. Instead, in this figure we show RD graphs for more compressed dummy variables. For parent's education we use two dummies denoting whether the respondent's mother and father have completed junior high school respectively. For birth province we show a graph for whether the respondent was born in an urban area in one of the 10 largest provinces in Turkey.

The two upper graphs in the figure show, not only the severe disparity in educational attainment between the average mother and father of the respondent, but also that for both the relationship is smooth across the threshold. As can be seen in the rest of the figure, all the covariates appear similarly balanced at the threshold.

In order to account for the more detailed dummy variables used in the regressions we also run a test of multiple hypothesis following Lee [26] using seemingly unrelated regressions (SUR). In such a test of whether the individual effects on the predetermined covariates are jointly significant we get a p-value of 0.85, and can thus comfortably establish that treatment has no effect on the covariates. Given the pre-determined nature of these covariates, this is a crucial validity check.

Parents in Turkey can usually delay registering their children until the age of three, but we do not expect parents to be able to affect the birth dates of their 11-12 year old children's after the announcement of the law change. Any seasonality in the birth month cohorts should be picked up by our month-specific fixed effects, although their inclusion has no bearing on the estimates.[15]

[15] We further run a McCrary [31] density test on the density of the forcing variable yielding an insignificant estimate close to zero.

5 Extensions

"Happy Is He Who Can Call Himself A Turk" – Mustafa Kemal Atatürk[16]

5.1 'Many *Zarokên* Left Behind' and Ethnolinguistic Inequality

Around a quarter of our sample are made up by individuals with parents speaking a different language than Turkish as their mother-tongue. In 85 percent of these cases, that non-Turkish language was Kurdish. As several studies and news reports have shown, children from the Kurdish, as well as other minority communities, face multiple complications in pursuing education.

There are several reasons why we would expect the legal reform to have less of an impact in Turkey's Kurdish-dominated families. On the demand side, there is greater discrimination against women in Kurdish communities (Kırdar [21] and Marcus [29]). Article 42 of Turkey's constitution states that "no language other than Turkish can be taught as a mother tongue to Turkish citizens". The constitution's restriction on Turkish as the exclusive language of instruction makes Kurdish students less likely to succeed in school and more likely to drop-out (McClure [30]). Moreover, Kurds tend to be poorer, and hence more likely to drop out for economic reasons (Kaya [20]).

On the supply-side, most of the country's Kurdish population lives in the Eastern and Southeastern regions, where a long-running conflict with the Kurdistan's Worker's Party (PKK) and the consequent security risks for teachers and pupils alike have led to higher student-to-teacher ratios and a dearth of schooling equipment. At the same time, state interference is widely prevalent in the Kurdish-speaking regions, both in terms of cultural restrictions as well as outright security restrictions. The conflict left some areas under de facto military control for much of the 1990s, and both political and cultural Kurdish organizations are repeatedly banned or harassed (Marcus [29]).

Consequently, we may be interested in the effects of the policy for those coming from families where Turkish is not the mother tongue. In other words, can we find similar effects on schooling, religiosity, marriage, and household outcomes for ethnolinguistic minorities, i.e. those citizens of Turkey who are less likely to speak, or to be fluent in, Turkish. Our data can provide insight into this as respondents in the TDHS are asked not just their own mother-tongue but also their parents' mother-tongue. While the former is unlikely to be exogenous, the latter can arguably be thought of as more so.

In Figure 8 and in Table 6 we have divided the sample into those where either of the respondent's parent has a non-Turkish language as their mother tongue (Panel B), and those where both of the respondent's parents have Turkish as their mother tongue (Panel A). For the sake of brevity, we will refer to these as the Turkish, and the non-Turkish, group. These two groups are quite different in terms of sample size, raising the question of what control function and bandwidth pair to use. We therefore retain the 60-month bandwidth but include a quadratic control function, so that comparisons across subgroups of varying sample sizes becomes easier.[17]

As can be seen from the table, not only is the non-Turkish group much poorer, less educated, and

[16] Onuncu Yıl Söylevi (Onuncu Yıl Nutuk), Mustafa Kemal Atatürk's Tenth Anniversary Address of the Republic of Turkey, on October 29, 1933, Atatürk Araştırma Merkezi Başkanlığı http://www.atam.gov.tr/index.php?Page=SoylevDemecler&IcerikNo=336

[17] Alternative specifications, such as using a cubic or higher polynomial for the entire sample have trivial bearing on the estimates.

both socially and religiously more conservative. But there is also only a treatment effect on schooling for the Turkish group. For the non-Turkish group, there is a much smaller insignificant – and even *negative* – estimate. This comes despite the non-Turkish group having around half the average years of schooling as the Turkish group.

The rest of the columns in the Table show the reduced-form results for some of the outcomes investigated earlier. What is clear is that for the Turkish group, the estimates are mostly larger than those in earlier Tables (with the exception being the headscarf outcome where the standard error is also larger). For the non-Turkish group, however, we find much smaller and insignificant estimates across the board, with several of them having the opposite signs.[18]

Despite the broad impact of the education reform on various measures of religiosity, marriage, and household characteristics for the average sample population, we find no effects either on schooling or on the outcomes for a sample of the country's Kurdish-dominated ethnolinguistic minority. A more problematic consequence of the reform was thus that it widened an already large gap between the country's large ethnolinguistic minorities and the majority Turkish population.

There is little reason to believe that the reform to extend compulsory education directly aimed to exclude any specific subgroup. Indeed, the lack of educational take-up among ethnolinguistic minorities may be due to well-established reasons relating to remoteness, social conservatism, and security. For example, the ban on wearing a headscarf in co-educational secular public schools may have had a role in why the reform did not have much of an effect in more religiously conservative Kurdish communities. And for the same reason, these families may also have been less willing to accept a bussing scheme driving daughters to schools in distant cities.

At the same time, the friction resulting from linguistic exclusivity in Turkish public education and the variance in Turkish proficiency in some communities remains widely documented. As such, we cannot exclude the possibility that the inherent design of Turkey's education system may have resulted in significant barriers to entry for ethnolinguistic minorities.

Regardless of which reasons explain the heterogenous impact of the reform, the fact that so many Kurdish girls were left behind may have had far-reaching consequences for the ongoing conflict in the region.

For almost 30 years, the Turkish state has been engaged in a violent conflict with the Kurdistan's Worker's Party (PKK). A noteworthy phenomenon in the PKK is the prevalence of young female fighters, which stands in stark contrast to the region's otherwise deeply socially conservative society and limited women's rights. A commonly expressed motive for women joining the PKK is escaping forced marriages or repressive gender-unequal environments.[19] Consequently, a worrying hypothesis is to what extent the Kurdish women left behind in the reform may have been left with the choice of either teenage marriage and a life of oppression, or active participation in a conflict that has so far claimed almost 40,000 lives.

[18] We further test whether the estimates in Panels A and B respectively are jointly significant from zero. For the Turkish group, the p-value of a SUR test is less than 0.000 percent whereas for the non-Turkish group the corresponding value is 0.78.

[19] See "The unknown side of the PKK," Sabah, January 23 2012, http://english.sabah.com.tr/National/2012/01/23/the-unknown-side-of-the-pkk and "Women join terrorist PKK for many reasons, mainly seeking freedom," Sunday's Zaman, January 29th 2012, http://www.sundayszaman.com/sunday/newsDetail_getNewsById.action?newsId=269867

5.2 The Poor and Pious

The previous section found no effects for the country's linguistic minorities, which tend to be both poorer and more socially conservative. This is of concern not only for Turkey's large minority population. If the heterogeneity in the treatment effects are simply due to varying predetermined levels of religious or social conservatism, this would suggest that individuals from conservative backgrounds among the majority Turkish-speaking population may experience similarly lower treatment effects. Since one of the stated goals of the reform was to "improve conditions for the poor" (Dulger [8]), this warrants further analysis.

Therefore, in this section we focus on heterogenous effects by the degree of social conservatism, excluding individuals with parents primarily speaking minority languages. Excluding minorities from this analysis allows us to focus more on differences in pre-determined socially conservative factors independently from those related to individuals' ethnicity or origin in the Southeastern region.

As a measure of social conservatism we use a weighted index of four indicator variables: mother and father's completion of junior high school respectively, whether the respondent's parents are related, and rural location.[20] The weights used are constructed identically to those used in calculating the religiosity index described in Section 3. Using this measure we divide the sample at the median with the above-median group referred to as more socially conservative, and the below-median group as less socially conservative.

The right-hand side of Figure 8 shows the RD graphs for a few of the outcomes, and Table 7 shows regression results for a larger set of outcome variables. Similar to the previous subgroup analysis, the more socially conservative group exhibits characteristics of having lower average years of schooling, higher levels of religiosity, and lower levels of decision-making and income levels. Yet the main difference to the previous analysis is that in this case the reform seems to have had pronounced effects for both groups.

The results from the Table reveal that, for the less socially conservative in Panel A, the estimates tend to be somewhat smaller in magnitude and less precisely estimated. For the group of individuals from a more socially conservative background, estimates are substantially larger in several cases. Specifically, in column 1 in Panel B the estimate on years of schooling is more than fifty percent larger than the average estimate for the entire sample in Table 2. This is perhaps not so surprising given the differing means of schooling across the two groups. Moreover, when it comes to decision-making, the treatment seems to have had much larger effects for the more socially conservative sample, as can be seen in column 7.

These findings confirm the importance of the reform in not only making education available for the poor and pious, but also providing increased social mobility for this group. Moreover, this casts doubt on the suggestion that any non-result on Turkey's minorities are singularly due to their more socially conservative values. Instead, the reform had profound effects for the Turkish majority's poor and pious.

[20] Unfortunately, the survey does not include any variables on parents' religiosity or income data.

6 Concluding Remarks

"Teachers are the one and only people who save nations" – Turkish proverb widely attributed to Mustafa Kemal Atatürk

This paper uses an extension of compulsory schooling in Turkey to study the causal effects of schooling on women's religiosity and empowerment. Using a Regression Discontinuity Design, we document a policy-induced increase in schooling for married women of one year on average. We further find large reducing effects of this additional year of schooling on expressions of religiosity. In particular, we find that treated women are less likely to wear a headscarf, attend Qur'anic courses and to pray regularly.

The effects on religiosity are matched by a partial empowerment effect, whereby women are not only more likely to make decisions on issues like marriage and family planning themselves, but also to have more educated husbands and experience better household characteristics. Despite the many pro-empowering effects of schooling we fail to find precise positive effects on labor force participation. Consequently, our results show that returns to schooling in terms of women's status and living conditions may be substantial even when labor-related returns are not. Moreover, the results point to the instrumental nature of education in facilitating social mobility, by allowing women to more independently marry richer, more educated husbands from outside the immediate family circle.

To the best of our knowledge, this is the first study to provide evidence on the causal link between education, religiosity and empowerment of women in a Muslim society. While our findings are consistent with a general secularizing effect of schooling, they also raise the question of to what extent this is driven by teaching values and habits? While we cannot rule out the possibility of an indoctrination effect of secular schooling in our context, the fact that we find parallel empowerment effects of the policy implies that the additional schooling did more than impose state-mandated religious behaviors on the affected women.

At the same time, our results also shed some light on how the reform may have left behind some of Turkey's ethnolinguistic minorities. Although we find substantial social mobility effects for the poor and pious among the majority-Turkish population, we find none for the large and much poorer Kurdish-dominated minority. A darker side of the reform may therefore have been its inadvertent role in widening the gap between ethnolinguistic groups.

This leaves us with several hypotheses for future research. If the effects found here are indeed due to indoctrination, does this mean that some forms of indoctrination are desirable, and to what extent does this suggest a development role for centralized educational systems beyond pecuniary and individual returns to schooling? Second, does the simultaneous occurrence of effects on secularization and empowerment constitute a necessary compact for development? Is female empowerment in the Muslim world possible without increased secularization? Finally, to what extent does an educational system based on ethnolinguistic homogeneity contribute to increased inequality of living standards in an ethnolinguistically heterogeneous environment?

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A Appendix: Data variables

- *Years of Schooling* – Number of completed years of school.
- *Junior High School* – Respondent completed 8 years long education, i.e. both primary and lower secondary (junior high school) education.
- *High School* – Respondent completed 11 years long education, i.e. primary, lower secondary, and upper secondary (high school) education.
- *University Education* – Respondent completed university education
- *Vocational School* – Respondent's last attended school was vocational.
- *Wears Headscarf* – Respondent reported as regularly wearing headscarf when going outside
- *Attended Qur'an course* – Reported as having ever attended a course to study the Qur'an.
- *Regular Prayer* – Respondent reported as regularly performing namaz, or prayer.
- *Ever Prays* – Respondent reported as irregularly performing namaz, or prayer.
- *Regular Fasting* – Respondent reported as regularly fasting.
- *Religiosity Index* – An index defined as the weighted average of wearing a headscarf, attended Qur'an course, regular prayer, ever praying, and regularly fasting. The weights are defined as $w_i = \frac{1-\mu_i}{\sum_J (1-\mu_j)}$ where μ_i is the mean of religiosity variable i.
- *Age of First Marriage* – Respondent's achieved age at the time of her first amriage.
- *Married after 16* – A dummy variable taking the value of one if the respondent married after her 16th birthday, and zero otherwise.
- *Age at First Birth* – Respondent's achieved age at the time of her first birth.
- *Gave birth after 17* – A dummy variable taking the value of one if the respondent gave birth after her 17th birthday, and zero otherwise.
- *Employed* – A dummy variable taking the value of one if the respondent reported as "currently working", and zero otherwise.
- *Wealth Indicator* – A dummy variable taking the value of one if the respondent reported as being in either the third, fourth, or fifth highest wealth quartiles.
- *Husband's Years of Schooling* – The respondent's husband's years of completed schooling.
- *Husband Completed University* – A dummy variable taking the value of one if the respondent's husband completed university education, and zero otherwise.
- *Non-Turkish mother* – A dummy variable taking the value of one if the respondent's mother speaks a non-Turkish language as her mother tongue.

- *Mother's education* – Dummy variables for whether the respondent's mother ever attended no education, primary school, secondary school, high school, or graduate education.
- *Father's education* – Dummy variables for whether the respondent's father ever attended no education, primary school, secondary school, high school, or graduate education.
- *Parents are related* – A dummy variable taking the value of one if the respondent reported her parents as being related, and zero otherwise.
- *Rural* – A dummy variable taking the value of one if the respondent lived in a rural location, and zero otherwise.
- *Birth province dummies* – Dummy variables for each of the 83 birth provinces where the respondent was born.
- *Social conservative Indicator* – Indicator variable taking on the value of 0 (1) if a weighted average of mother's and father's non-completion of junior high school respectively, whether parents are not related, and rural location is below (above) median. The weights are defined as $w_i = \frac{1-\mu_i}{\sum_J (1-\mu_j)}$ where μ_i is the mean of each variable i.

Table 1: Summary Statistics

Panel A: Education			
	Mean	SD	Obs
Years of Schooling	6.29	3.80	1557
Junior High School	0.38	0.49	1557
High School	0.21	0.41	1557
Primary School	0.88	0.32	1557
Vocational School	0.06	0.23	1557
Panel B: Religiosity			
	Mean	SD	Obs
Religiosity Index	0.43	0.24	1554
Wears headscarf	0.77	0.42	1554
Attended Qur'an course	0.44	0.50	1554
Regular Prayer	0.39	0.49	1554
Irregular Prayer	0.71	0.46	1554
Fasting	0.89	0.31	1554
Panel C: Marriage and Birth			
	Mean	SD	Obs
Age of First Marriage	18.44	2.62	821
Married after 16	0.87	0.34	821
Age at First Birth	19.78	2.54	821
Gave Birth After 17	0.90	0.30	821
Decided Marriage Herself	0.52	0.50	821
Contraception Decision	0.86	0.35	821
Panel D: Labor and Household Characteristics			
	Mean	SD	Obs
Employed	0.18	0.39	1468
Wealth Indicator	0.52	0.50	1468
Marital Age Difference	5.09	3.71	1468
Husband's Years of Schooling	8.20	4.10	1468
Husband Completed Jr. High Sch.	0.55	0.50	1468
Husband Completed University	0.09	0.28	1468
Panel E: Pre-determined covariates			
	Mean	SD	Obs
Non-Turkish-speaking mother	0.31	0.46	1557
Mother completed Jr. High Sch.	0.05	0.22	1557
Father completed Jr. High Sch.	0.19	0.40	1557
Parents are related	0.26	0.44	1557
Rural	0.28	0.45	1557
Born in Top 10 City	0.21	0.41	1557

Notes: The table shows the mean, standard deviation, and number of observations from the Turkish Demographic Health Survey for married women in 2008. Variables are described in Appendix A.

Table 2: RD Treatment Effect on Schooling

Outcome	Years of Schooling				Type of Schooling:			
					Jr. High	High	Primary	Vocational
Control function	Linear	None	Quadratic	Cubic	Linear	Linear	Linear	Linear
Bandwidth	60	4	120	180	60	60	60	60
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Without Covariates								
Mean	6.29	5.87	6.43	6.27	0.38	0.21	0.88	0.06
Treatment	1.275	0.749	1.359	1.184	0.253	0.117	0.043	0.022
	(0.340)	(0.350)	(0.404)	(0.458)	(0.054)	(0.034)	(0.030)	(0.024)
Obs	1557	135	2936	4208	1557	1557	1557	1557
Panel B: With Covariates								
Treatment	1.005	0.799	1.076	0.889	0.219	0.103	0.044	0.018
	(0.224)	(0.290)	(0.272)	(0.297)	(0.041)	(0.032)	(0.023)	(0.023)
Obs	1557	135	2936	4208	1557	1557	1557	1557

Notes: Panel A shows results from regressions without covariates and Panel B shows results from regressions including dummies for father's education, dummies for mother's education, non-turkish mother tongue, dummy for rural location, dummy for whether mother and father were related, month-of-birth fixed effects (except column 2), and province-of-birth fixed effects. Outcomes in columns 1-4 is respondent's reported years of schooling. Column 1 is a specification with a linear control function in the forcing variable using a bandwidth of 60 months; column 2 includes only individuals born within 4 months of the threshold without a control function; column 3 includes individuals 120 months around the threshold with a quadratic control function; and column 4 includes individuals 180 months around the threshold with a cubic control function. The following columns 5-8 use a linear control function, a 60-month bandwidth and have completed type of schooling as the outcome; Junior High School, High School, Primary School, and University. The forcing variable measures months below or above cutoff at Sep 1986. Variables are described in Appendix A. Standard errors are clustered by month-year cohort.

Table 3: RD Treatment Effect of Education on Measures of Religiosity

	Religiosity Index	Wears Headscarf	Quran study	Prays 5/day	Prays At All	Fasts Regularly
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: OLS						
Mean	0.428	0.775	0.435	0.392	0.707	0.889
Years of Schooling	-0.008	-0.029	-0.001	-0.005	-0.008	-0.005
	(0.002)	(0.004)	(0.005)	(0.005)	(0.004)	(0.003)
Obs	1554	1555	1557	1555	1555	1554
Panel B: Reduced-form RD						
Treatment	-0.072	-0.061	-0.113	-0.074	-0.002	-0.008
	(0.022)	(0.034)	(0.046)	(0.048)	(0.040)	(0.029)
Obs	1554	1555	1557	1555	1555	1554
Panel C: IV-RD						
Years of Schooling	-0.071	-0.061	-0.112	-0.074	-0.002	-0.008
	(0.027)	(0.030)	(0.052)	(0.054)	(0.040)	(0.028)
F-stat	20.5	20.0	20.1	20.0	20.0	20.5
Obs	1554	1555	1557	1555	1555	1554

Notes: Panel A reports OLS results with years of schooling as the independent variable. Panel B reports reduced-form RD estimates using a bandwidth of 60 months, a linear control function in the forcing variable, and being born after September 1986 as the independent variable. Panel C are 2SLS RD estimates with a bandwidth of 60 months, a linear control function in the forcing variable, where being born after September 1986 is an instrument for years of schooling. The forcing variable measures months below or above cutoff at Sep 1986. Controls include dummies for father's education, dummies for mother's education, dummy for mother's primary language not being Turkish, dummy for rural location, dummy for whether mother and father were related, month-of-birth fixed effects, and province-of-birth fixed effects. Variables are described in Appendix A. Standard errors clustered by month-year-cohort.

Table 4: RD Treatment Effects of Education on Marriage Characteristics

	Age at 1st Marriage (1)	Married after 16 (2)	Age at 1st Birth (3)	Gave Birth After 17 (4)	Marriage Decision (5)	Contraception Decision (6)	Bridesmoney Paid (7)	Civic Ceremony (8)	Married Relative (9)
Panel A: OLS									
Mean	18.750	0.886	19.673	0.896	0.548	0.862	0.189	0.910	0.288
Years of Schooling	0.223	0.015	0.171	0.012	0.032	0.008	-0.010	0.006	-0.006
	(0.026)	(0.003)	(0.028)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)
Obs	1557	1557	1187	1187	1554	908	1557	1557	1554
Panel B: Reduced-form RD									
Treatment	-0.161	0.060	-0.092	0.072	0.110	0.128	-0.082	0.085	-0.050
	(0.249)	(0.036)	(0.230)	(0.040)	(0.053)	(0.046)	(0.031)	(0.030)	(0.040)
Obs	1557	1557	1187	1187	1554	908	1557	1557	1554
Panel C: IV-RD									
Years of Schooling	-0.160	0.060	-0.078	0.061	0.110	0.113	-0.081	0.085	-0.050
	(0.263)	(0.034)	(0.199)	(0.035)	(0.049)	(0.051)	(0.037)	(0.036)	(0.041)
F-stat	20.1	20.1	19.0	19.0	19.8	11.0	20.1	20.1	19.9
Obs	1557	1557	1187	1187	1554	908	1557	1557	1554

Notes: Panel A reports OLS results with years of schooling as the independent variable. Panel B reports reduced-form RD estimates using a bandwidth of 60 months, a linear control function in the forcing variable, and being born after September 1986 as the independent variable. Panel C are 2SLS RD estimates with a bandwidth of 60 months, a linear control function in the forcing variable, where being born after September 1986 is an instrument for years of schooling. The forcing variable measures months below or above cutoff at Sep 1986. Controls include dummies for father's education, dummies for mother's education, dummy for mother's primary language not being Turkish, dummy for rural location, dummy for whether mother and father were related, month-of-birth fixed effects, and province-of-birth fixed effects. Variables are described in Appendix A. Standard errors clustered by month-year-cohort.

Table 5: RD Treatment Effects of Schooling on Labor and Household Characteristics

	Respondent Currently Employed	Respondent Household Wealth	Respondent Born Village City Resident	Husband Age Difference	Husband Years of Education	Husband Completed Jr. High Sch.	Husband Completed High Sch.	Husband Completed University
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: OLS								
Mean	0.188	0.514	0.482	5.107	8.486	0.551	0.374	0.089
Years of Schooling	0.006	0.031	0.019	-0.083	0.214	0.039	0.040	0.023
	(0.004)	(0.004)	(0.004)	(0.036)	(0.068)	(0.004)	(0.005)	(0.003)
Obs	1555	1557	1557	1519	1555	1505	1505	1505
Panel B: Reduced-form RD								
Treatment	0.023	0.116	0.059	-0.123	1.349	0.026	0.090	0.044
	(0.034)	(0.040)	(0.037)	(0.323)	(0.646)	(0.043)	(0.044)	(0.027)
Obs	1555	1557	1557	1519	1555	1505	1505	1505
Panel C: IV-RD								
Years of Schooling	0.023	0.115	0.059	-0.123	1.336	0.025	0.087	0.042
	(0.035)	(0.040)	(0.036)	(0.320)	(0.667)	(0.040)	(0.041)	(0.028)
F-stat	20.2	20.1	20.1	19.5	20.5	20.2	20.2	20.2
Obs	1555	1557	1557	1519	1555	1505	1505	1505

Notes: Panel A reports OLS results with years of schooling as the independent variable. Panel B reports reduced-form RD estimates using a bandwidth of 60 months, a linear control function in the forcing variable, and being born after September 1986 as the independent variable. Panel C are 2SLS RD estimates with a bandwidth of 60 months, a linear control function in the forcing variable, where being born after September 1986 is an instrument for years of schooling. The forcing variable measures months below or above cutoff at Sep 1986. Controls include dummies for father's education, dummies for mother's education, dummy for mother's primary language not being Turkish, dummy for rural location, dummy for whether mother and father were related, month-of-birth fixed effects, and province-of-birth fixed effects. Variables are described in Appendix A. Standard errors clustered by month-year-cohort.

Table 6: Treatment Effects by Parents' Minority Status

	Years of Schooling	Jr. High School	High School	Religiosity Index	Wears Headscarf	Qur'an Course	Marriage Decision	Wealth Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Primary language is Turkish								
Mean	7.475	0.491	0.274	0.383	0.712	0.515	0.595	0.647
Treatment	1.123	0.144	0.133	-0.119	-0.076	-0.234	0.181	0.175
	(0.352)	(0.056)	(0.052)	(0.037)	(0.056)	(0.072)	(0.097)	(0.065)
Obs	1060	1060	1060	1059	1060	1060	1058	1060
Panel B: Primary language is not Turkish								
Mean	3.753	0.155	0.068	0.524	0.909	0.266	0.448	0.229
Treatment	-0.255	-0.015	-0.000	0.007	0.010	0.155	0.028	0.053
	(0.881)	(0.094)	(0.049)	(0.057)	(0.073)	(0.105)	(0.122)	(0.093)
Obs	497	497	497	495	495	497	496	497

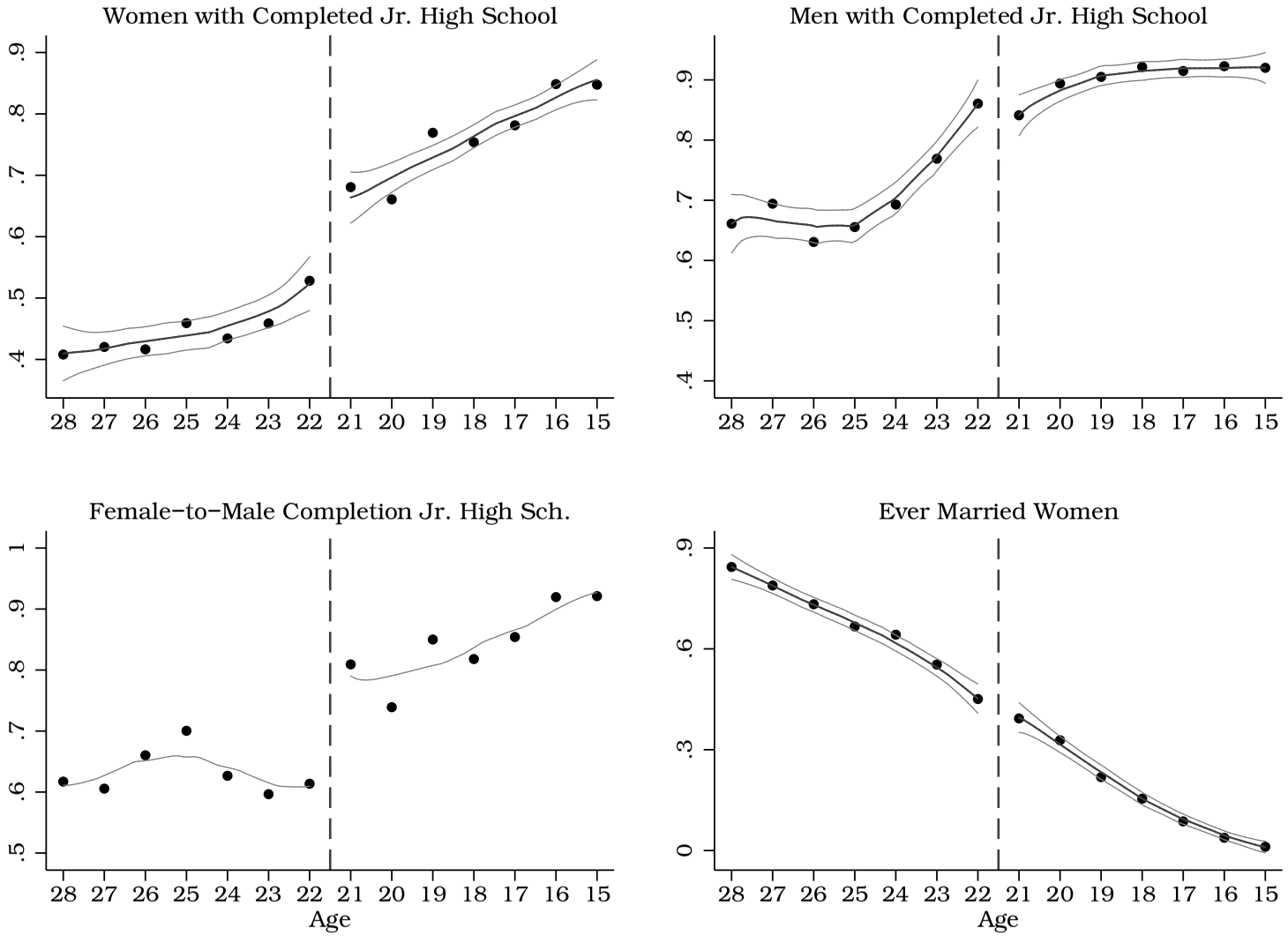
Notes: The table report results from reduced-form RD regressions using a local quadratic control function in the forcing variable with a bandwidth of 60 months. Panel A includes only individuals with both parents speaking Turkish as their primary language. Panel B restricts the sample to respondents where either parent's primary language is not Turkish. SUR tests of joint significance of each of the coefficients in columns 1 through 6 yield p-values of 0.000 in Panel A and 0.92 in Panel B. A SUR test of whether coefficients in Panels A and B are jointly different from each other yields a p-value of 0.017. Controls include dummies for father's education, dummies for mother's education, dummy for rural location, dummy for whether mother and father were related, month-of-birth fixed effects, and province-of-birth fixed effects. Variables are described in Appendix A. Standard errors clustered by month-year-cohort.

Table 7: Treatment Effects by Parents' Social Background

	Years of Schooling	Jr. High School	High School	Religiosity Index	Wears Headscarf	Qur'an Course	Marriage Decision	Wealth Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Less Socially Conservative								
Mean	8.065	0.574	0.324	0.368	0.656	0.547	0.643	0.732
Treatment	0.724	0.155	0.091	-0.131	-0.094	-0.235	0.138	0.189
	(0.507)	(0.104)	(0.069)	(0.059)	(0.098)	(0.127)	(0.148)	(0.109)
Obs	598	598	598	597	598	598	597	598
Panel B: More Socially Conservative								
Mean	6.710	0.383	0.208	0.402	0.786	0.474	0.531	0.537
Treatment	1.675	0.163	0.191	-0.112	-0.136	-0.224	0.310	0.144
	(0.687)	(0.103)	(0.086)	(0.059)	(0.071)	(0.111)	(0.120)	(0.116)
Obs	462	462	462	462	462	462	461	462

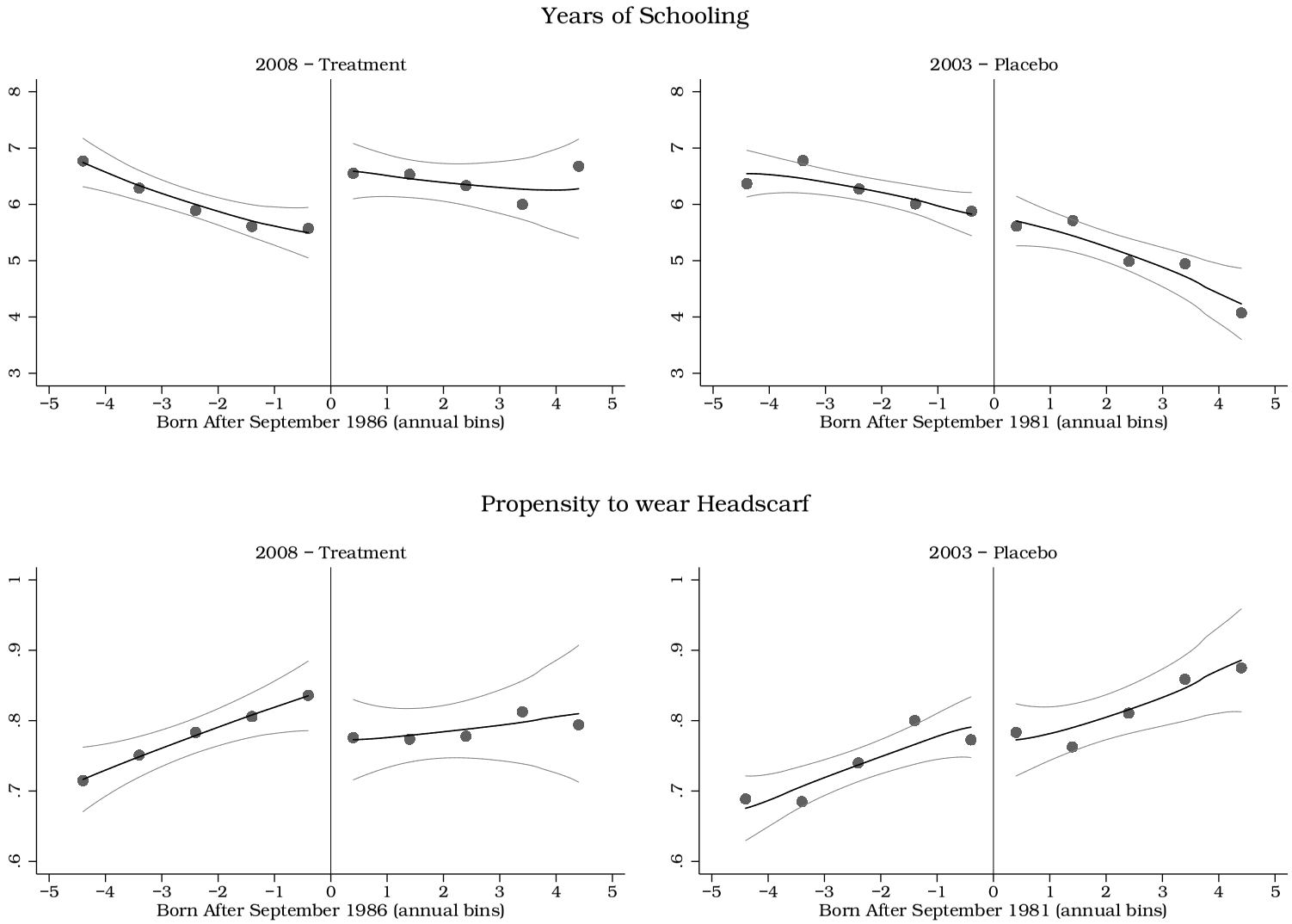
Notes: The table report results from reduced-form RD regressions using a local quadratic control function in the forcing variable with a bandwidth of 60 months. The panels are split samples from those scoring below (Panel A) or above (Panel B) the median of a measure of social conservatism, described in Appendix A. SUR tests of joint significance of each of the coefficients in columns 1 through 6 yield p-values of 0.161 in Panel A and 0.005 in Panel B. A SUR test of whether coefficients in Panels A and B are jointly different from each other yields a p-value of 0.67. Controls include dummies for father's education, dummies for mother's education, dummy for rural location, dummy for whether mother and father were related, month-of-birth fixed effects, and province-of-birth fixed effects. Variables are described in Appendix A. Standard errors clustered by month-year-cohort.

Figure 1: 2008 DHS Household Sample



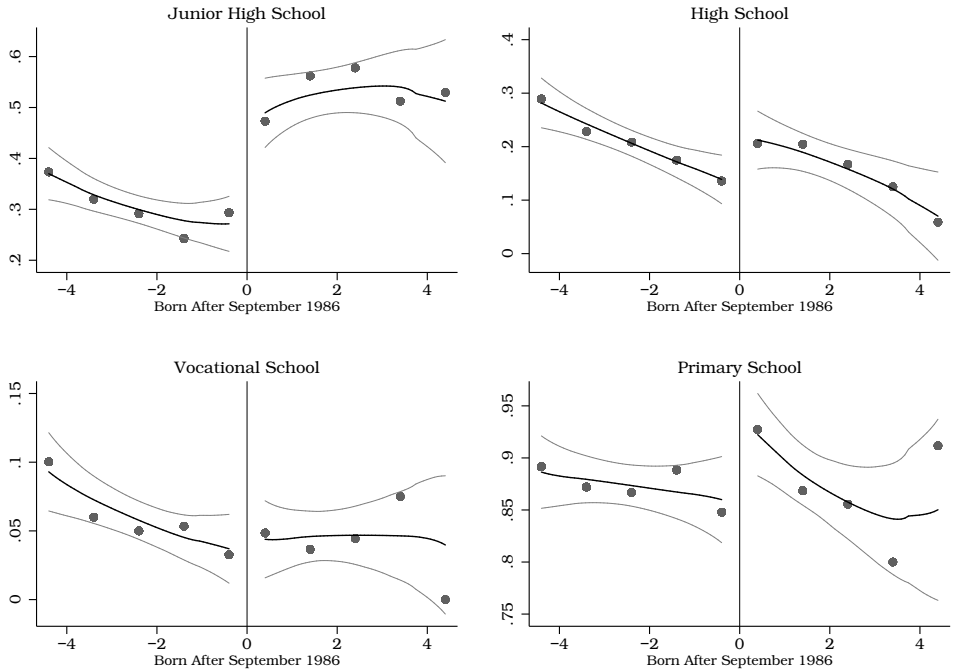
Notes: The forcing variable is the distance in years away from turning 21 in September. The upper graph shows the treatment effect from the 2008 survey, the lower graph is a placebo test from the 2003 survey. Variables are described in Appendix A.

Figure 2: Graphical RD



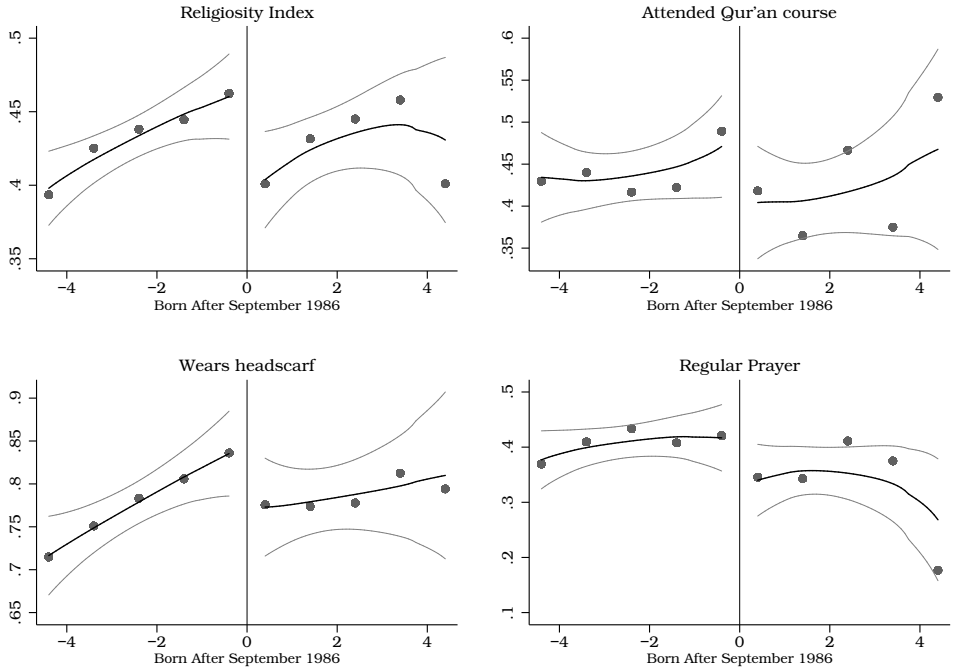
Notes: The forcing variable is the distance in years away from turning 21 in September. The left-hand graphs show the treatment effects from the 2008 survey, the right-hand graphs show placebo tests from the 2003 survey. Variables are described in Appendix A.

Figure 3: Education Outcomes



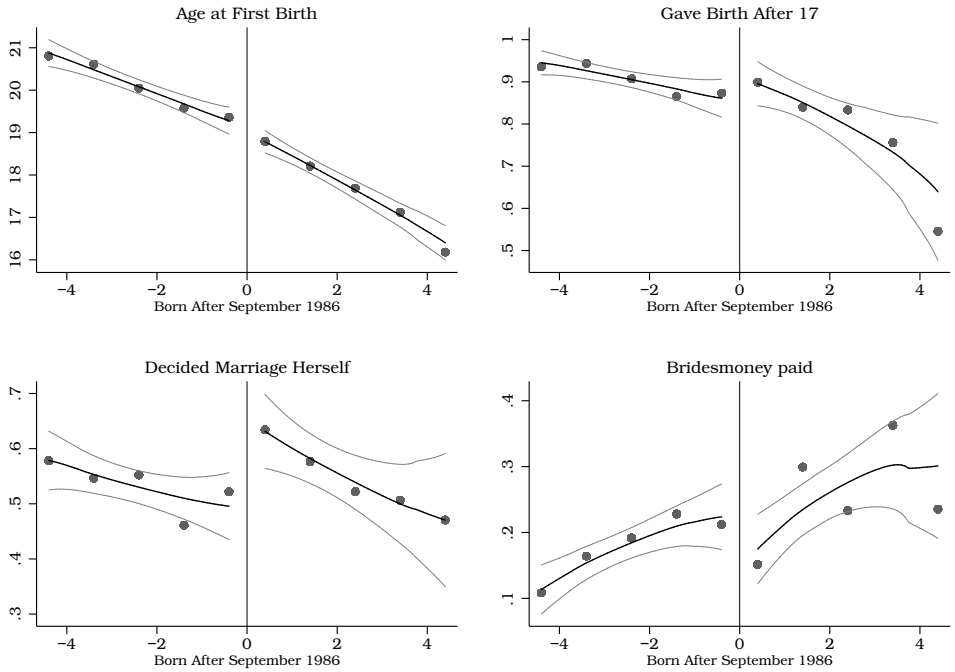
Notes: Figures show educational outcomes in annual average means against the forcing variable 6 years within the threshold of turning 21 in September 2008. Variables are described in Appendix A.

Figure 4: Religion Outcomes



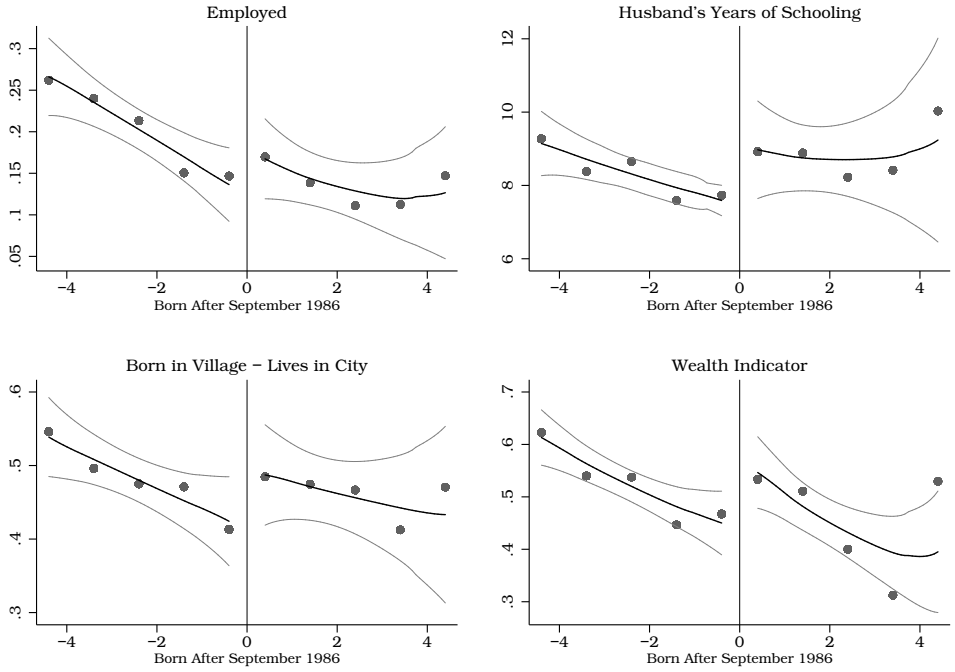
Notes: Figures show religious outcomes in annual average means against the forcing variable 6 years within the threshold of turning 21 in September 2008. Variables are described in Appendix A.

Figure 5: Marriage Outcomes



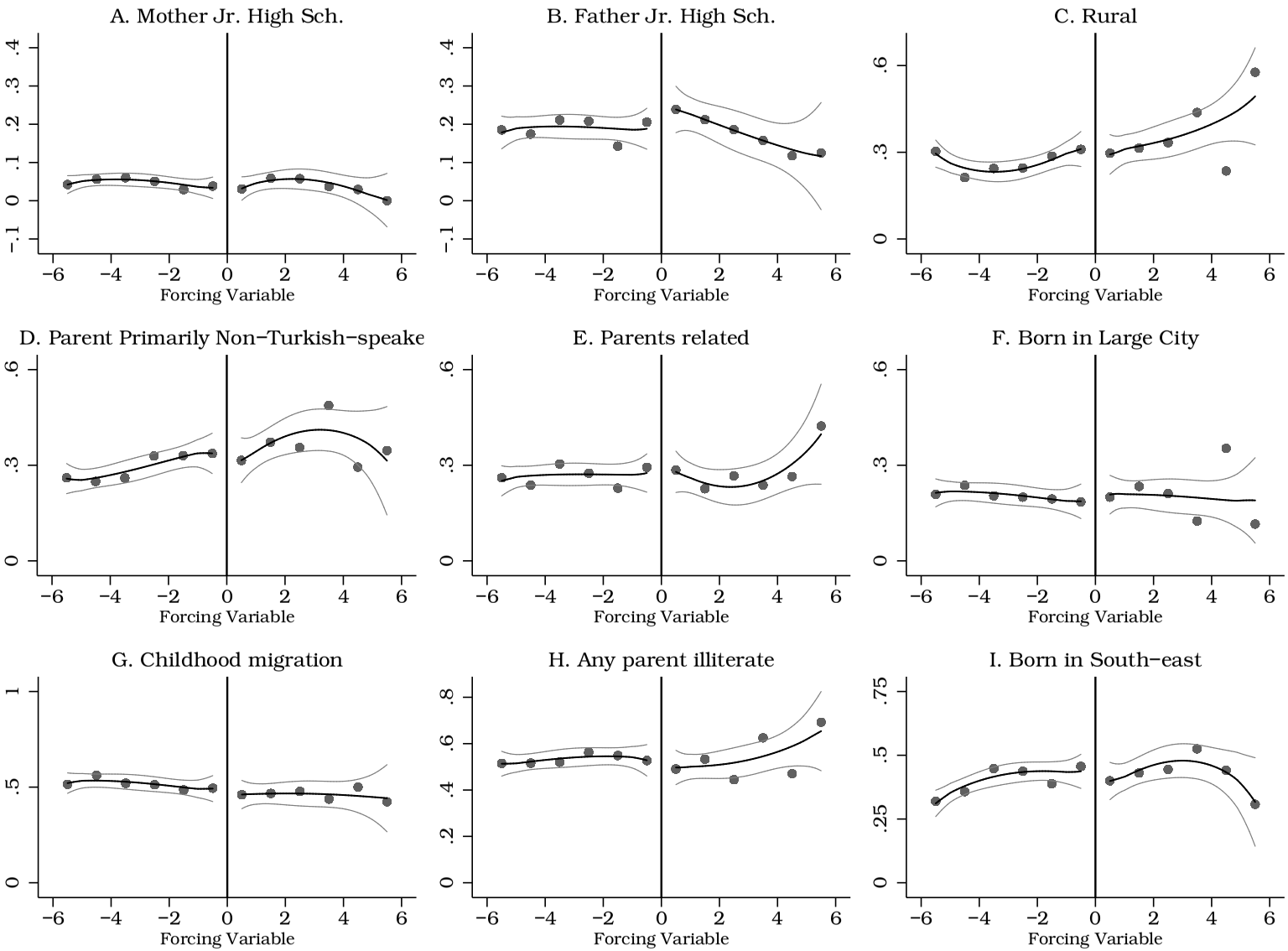
Notes: Figures show marriage-related outcomes in annual average means against the forcing variable 6 years within the threshold of turning 21 in September 2008. Variables are described in Appendix A.

Figure 6: Household Outcomes



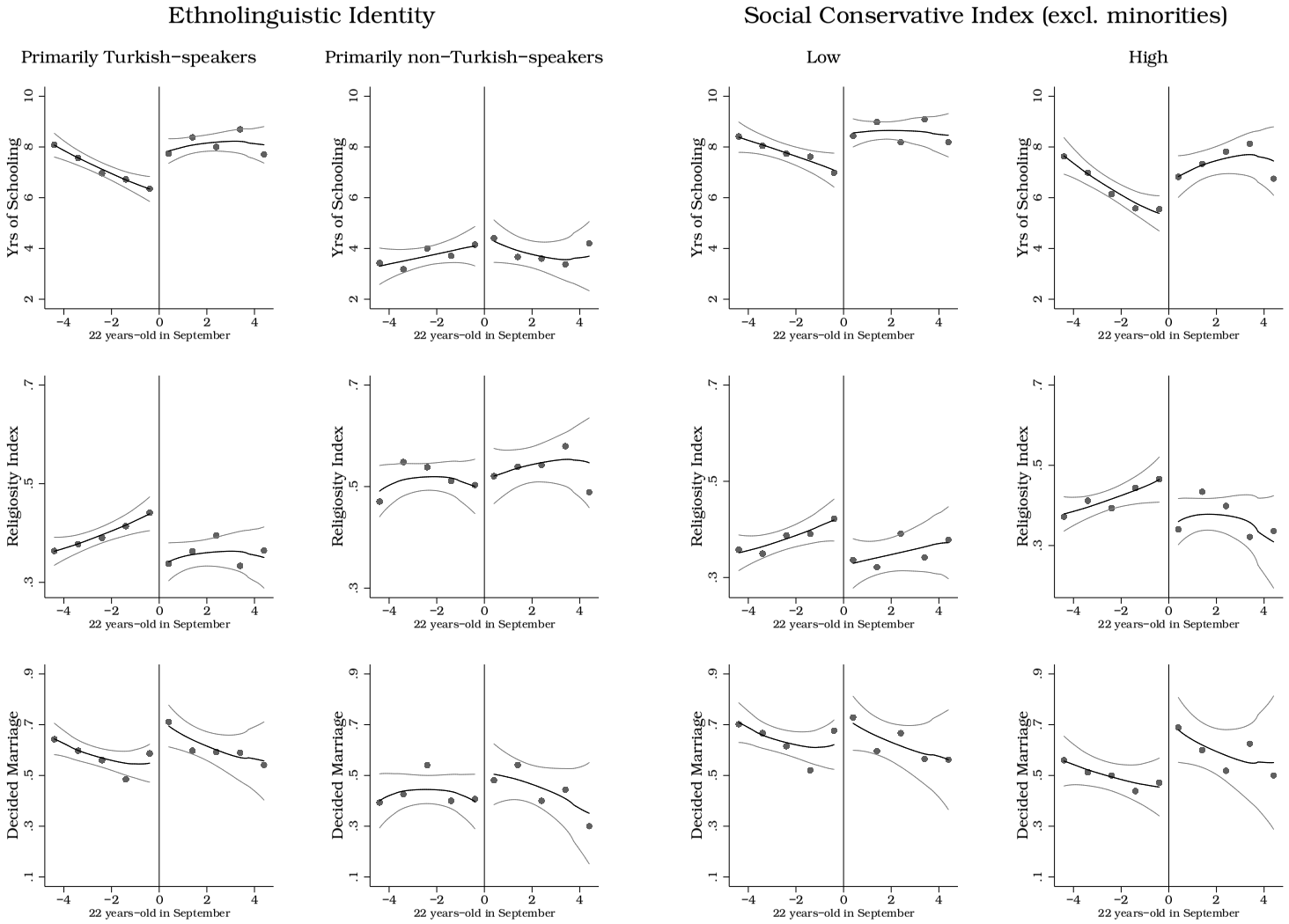
Notes: Figures show household-related outcomes in annual average means against the forcing variable 6 years within the threshold of turning 21 in September 2008. Variables are described in Appendix A.

Figure 7: Balanced Covariates



Notes: Figures show pre-determined covariates in annual average means against the forcing variable 6 years within the threshold of being born in September 1986. A test of the null hypothesis that the discontinuity jumps in all graphs are jointly zero yields a p-value of 0.95. Variables are described in Appendix A.

Figure 8: Heterogenous Effects



Notes: Figures show outcomes in annual average means against the forcing variable 6 years within the threshold of turning 21 in September 2008. The two left-hand graph columns are divided by whether either of the respondents' parents' mother tongue was not Turkish, and the two right-hand graph columns are divided by a weighted index of social conservatism. Variables are described in Appendix A.