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RESHAPING ADOLESCENTS' GENDER ATTITUDES:
EVIDENCE FROM A SCHOOL-BASED EXPERIMENT IN INDIA

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ABSTRACT

Societal norms about gender roles contribute to the economic disadvantages facing women in many developing countries. This paper evaluates an intervention aimed at eroding support for restrictive gender norms, specifically a multi-year school-based intervention in Haryana, India, that engaged adolescents in classroom discussions about gender equality. Using a randomized controlled trial, we find that the intervention increased adolescents' support for gender equality by 0.25 standard deviations, a sizable effect compared to other correlates of their gender attitudes such as their parents' views. Program participants also report more gender-equitable behavior; for example, boys report helping out more with household chores.

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1   Introduction

Gender inequality exists in every society but is especially severe in many developing countries: Women and girls have fewer educational opportunities, less autonomy over marriage and fertility, more restrictions on labor force participation, and even a lower likelihood of being born than their male counterparts (Duflo, 2012; Jayachandran, 2015). Many of these gender gaps are stagnant despite economic progress, suggesting that economic development on its own is unlikely to close them.

Recent work has drawn economists' attention to the importance of cultural norms in perpetuating gender gaps (Bertrand et al., 2015; Alesina et al., 2013; Giuliano, 2017). Meanwhile, even centuries-old norms might be amenable to change. For example, reserved seats for female politicians reduce gender-biased attitudes in India (Beaman et al., 2009), and television programming can change fertility preferences (Jensen and Oster, 2009; La Ferrara et al., 2012). These findings are part of a broader literature on how individual preferences are shaped (Becker and Mulligan, 1997; Bowles, 1998).

This paper focuses on a direct attempt to reshape gender attitudes through discussion and persuasion. We evaluate a school-based program in the state of Haryana, India, for seventh to tenth graders. The program centered around classroom discussions about gender equality, with a 45-minute session held every three weeks for two and a half school years in government schools. The sessions taught facts and endorsed gender equality, and as importantly, prompted students to reflect on their own and society's views. Discussion topics included gender stereotypes, gender roles at home, girls' education, women's employment outside the home, and harassment. Some sessions taught communication skills to help students convince others of their views and, say, persuade their parents to permit them to marry at a later age. The program's messaging combined a human-rights case for gender equity with pragmatic reasons to value women, such as their economic contributions. The reason for targeting secondary school students is that adolescence is a critical time in the development of morality and formation of identity, when people are young enough to still have malleable attitudes but mature enough to reflect on complex moral questions (Kohlberg, 1976; Markus and Nurius, 1986). The intervention was designed and implemented by Breakthrough, a non-profit organization with extensive experience in gender-equality programming. The Government of Haryana allowed the non-profit to lead these classes during

the regular school day.

As context, gender inequality is pronounced in India. While boys and girls start secondary school at the same rate, only 0.73 girls enroll in tertiary schooling for every boy (World Bank, 2010). Early marriage and childbearing are common, and women face life-long barriers to access to healthcare (Pande, 2003; Jayaraman et al., 2014), mobility and autonomy (Calvi, 2016), and labor force participation (Afridi et al., 2018; Field et al., 2010). Selective abortion of female fetuses is widespread (Sen, 1990; Jha et al., 2006). India's sex ratio among children age 0 to 6 years is 1.09 boys per girl; Haryana's sex ratio of 1.20 is the most male-skewed among Indian states (Govt. of India, 2011).

We implement a randomized controlled trial across 314 government secondary schools in four districts, with data collected for roughly 14,000 students. We examine how the program changed students' gender attitudes, aspirations, and behaviors (our three pre-specified primary outcomes). By attitudes, we mean views about what is right and wrong such as whether it is wrong for women to work outside the home. By aspirations, we mean goals for one's own life, for example to pursue higher education or a career; while the program was aimed at changing both boys' and girls' attitudes, any impacts on aspirations should be concentrated among girls. Finally, for behaviors, we mean those that are influenced by gender norms such as chores done at home and frequency of interaction with opposite-gender peers. While attitude change could be sufficient to prompt behavior change, many moderating factors might stand in the way. A girl who asks that her burden of household chores be reduced might simply be ignored by her parents. A boy who now believes that he should help out with chores might still feel that the social sanctions for doing so are too costly. Thus, we also examine whether the program changed perceptions of social norms and how the home environment mediates the intervention's effects.

We find that the intervention made gender attitudes more progressive by 0.25 standard deviations. The measure of attitudes is an index that aggregates several survey responses about support for gender equality. This finding is robust to a battery of stress tests, including investigating whether the intervention induced students to offer more socially desirable survey responses. One way to benchmark the effect size is to use the correlation between parents' and students' gender attitudes; the intervention's impact is much larger than the change associated with having a parent whose attitudes are one standard deviation more gender equitable. In addition, the intervention produced more gender-equal behavior such

as increased interaction at school with the opposite sex. However, there was no significant impact on girls' educational and professional aspirations (which are quite high to begin with).

The program impacts are similar for students whose parents have more versus less gender-progressive views and for boys versus girls. Behavior change is larger for boys, however. For example, boys report doing more household chores, but girls do not report doing less. This asymmetry is consistent with behavior change requiring both wanting and being able to change, and girls facing more external factors constraints on their behavior.

Our study contributes to the literature on endogenous preferences, which includes past work on the formation of gender-related preferences. Besides political quotas (Beaman et al., 2009) and television (Jensen and Oster, 2009; La Ferrara et al., 2012), other factors that have been shown to make attitudes more gender-progressive include mothers' labor force participation (Fernandez et al., 2004), having daughters (Washington, 2008) or sisters (Healy and Malhotra, 2013), and serving with women in the military (Dahl et al., 2017).

We also add to the literature on persuasion, which is communication intended to change preferences or beliefs (DellaVigna and Gentzkow, 2010). Many studies focus on efforts to influence consumer or political preferences. Closer to our work are studies on attitude change about intimate partner violence (Green et al., 2017), concealing one's HIV status from sexual partners (Banerjee et al., 2018), the mentally ill (Evans-Lacko et al., 2013), and racial minorities (Donovan and Leivers, 1993), and studies about altering perceptions about social norms about discrimination (Paluck, 2009) and female employment (Bursztyn et al., 2018). Also related is Cantoni et al. (2017), which finds that Chinese students taught with textbooks designed to convey pro-Communist messages exhibit more pro-government views and skepticism of free markets as adults.

Finally, our study contributes to the vast literature on gender gaps and determinants of women's agency in developing countries. Recent work in India has studied cultural incentives to have sons (Bhalotra et al., 2018; Jain, 2014); how parents' desire to have sons affects girls' health (Jayachandran and Kuziemko, 2011; Jayachandran and Pande, 2017); how the diffusion of ultrasound technology affected the sex ratio (Bhalotra and Cochrane, 2010); financial incentives to have daughters (Anukriti, 2017); information on the returns to girls' education (Jensen, 2012); and improving women's financial access (Field et al., 2016), among other topics. Other related recent work includesBandiera et al. (2018) on female empowerment training in Uganda, Buchmann et al. (2017) on empowerment training and

financial incentives to delay marriage in Bangladesh, and Ashraf et al. (2018) on teaching negotiation skills to girls in Zambia.

2 Description of intervention

The project emerged from the Government of Haryana's interest in testing policies to narrow gender gaps. The intervention was designed and implemented by Breakthrough, a human rights organization with experience in social change programs. The participants were the cohorts in grades 7 and 8 in the academic year 2014-15, and the program ran from April 2014 to October 2016 (i.e., one cohort participated in the program in grades 7, 8 and half of 9, and the other cohort participated in grades 8, 9 and half of 10). Grades 7 to 10 have high enrollment and low dropout, implying that the program could reach a large proportion of the underlying age cohorts and that attrition due to dropout would be limited (significant dropout occurs after grade 10) (DISE, 2011).[1]

The objective of the program, which was named *Taaron ki Toli*, or Legion of Stars, was to create awareness of gender-based discrimination, change dominant gendered perceptions and promote gender equitable attitudes, raise aspirations, and provide tools to participants to translate attitude change and greater aspirations into behavior change. By changing fundamental gender attitudes, the program aimed to influence a wide range of behaviors related to female education, mobility, work, marriage and fertility, for both female participants and male participants' female family members (e.g., future wives).

The program emphasized both economic and human rights reasons for valuing girls. For instance, the intervention activities informed participants about benefits of girls' education such as how outcomes for children improve when the mother is more educated. The hypothesis is that this information causes girls to update their beliefs and place higher value on staying in school longer, and for both boys and girls to place higher value on educating their daughters down the road. The messaging also emphasized that equal opportunity for education for girls is a basic human right.

To ensure that the intervention would be widely accepted, Breakthrough engaged with multiple stakeholders at the state, district, and sub-district levels, orienting and gathering input from various education officials, school principals, and teachers. This helped them

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[1]The enrollment rate in grades 6 to 8 was 77% for boys and 80% for girls in 2009-2010. Dropout is 4.1% between grades 7 and 8, although some students transfer to private schools.

design a program that might ultimately be integrated into the regular school curriculum.[2] The central feature of the program was interactive classroom sessions led by a Breakthrough facilitator. Breakthrough hired 15 facilitators, 13 of whom were male, to cover the 150 treatment schools. Other elements of the program included teacher training, youth clubs, school activities, and a media and communications campaign.

The program comprised 27 sessions, each 45 minutes long, conducted over two and a half school years. Breakthrough facilitators visited each school roughly every three weeks.[3] Discussion topics included gender identity, values, aspirations, gender roles and stereotypes, and recognition and tolerance of discrimination. For example, one session focused on household chores. Students broke out into groups and listed whether males or females did various chores in their households. They then reconvened and discussed the answers. When the pattern emerged that women and girls did most of the chores, the facilitator asked why that was and whether it was fair. The class discussed why women cook at home, but men are cooks in restaurants, with the latter role earning more prestige in society. A few of the sessions aimed to impart skills such as public speaking, communication between the genders, and leadership which could translate gender-equitable attitudes into behavioral change. For instance, girls might be able to negotiate greater independence with their parents, leading to more freedom of movement in the short run and greater occupational choice in the long run. Through these topics, plus homework assignments such as writing stories, recording observations, and encouraging dialogue with family members, and some activities outside the classroom such as street theater and optional Breakthrough clubs, students explored gender identity and stereotypes, gained a better understanding of gender inequities and their consequences, understood their rights and entitlements, and were encouraged to communicate and act on what they had learned.

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[2]One approach for scale-up would be for the government to hire special-purpose teachers, each covering several schools, who deliver the curriculum, or to incorporate the content into textbooks and standardized school assignments.

[3]The program's dosage was 20 hours total. As comparisons, the negotiation program for girls in Zambia studied by Ashraf et al. (2018) comprised six two-hour sessions (12 hours total); the safe space groups in Bangladesh evaluated by Buchmann et al. (2017) met for about 200 hours total over six months; and the empowerment and livelihood clubs in Uganda evaluated by Bandiera et al. (2018) were open five afternoons per week for two years (over 500 hours).

3 Study design and data

3.1 Experimental design

We conduct a randomized evaluation of the gender attitude change program using a sample of 314 government schools across Sonipat, Panipat, Rohtak, and Jhajjar districts in the north Indian state of Haryana. The randomization unit is the school.[4]

The sample size of 314 schools was chosen to be able to measure the immediate impact of the program on gender attitudes, aspirations and behavior, as well as on long-term outcomes such as educational attainment, occupational choice, marriage, and fertility. Schools were selected from the universe of 607 government-run secondary schools that offered grades 6 through 9 in the four districts, with at most one school per village included in the sample. Details on the selection of the sample schools is provided in Appendix A.1. Of the 314 schools, 59 enroll only girls, 40 enroll only boys, and the remaining 215 are co-ed. Schools have an average of 84 students per grade.

We randomly selected 150 of the sample schools to be in the treatment group; the remaining 164 serve as control schools. Figure 1 shows the four study districts and the schools assigned to the treatment and control groups. The randomization was stratified by district, co-ed status of the school, school size, and distance to the district headquarters. Table 1 reports baseline characteristics of schools by treatment status. The first panel confirms that the two samples are balanced on various school characteristics such as co-ed status, urban/rural, number of male and female students, and number of teachers.

3.2 Data collection

We measure attitudes, aspirations, behavior, and a rich set of individual and household characteristics through baseline and endline surveys. The baseline survey was conducted between August 2013 and January 2014, covering 14,809 students and 6,126 parents. The endline survey was conducted between November 2016 and April 2017, with a 94.2% resurvey rate.

To select students within schools for the sample, we randomly chose among those whose parents gave consent for their child to participate in the study and who personally assented to participate, stratifying by gender and grade in the ratio Female 6th:Male 6th:Female

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[4]The 2011 child sex ratio in Sonipat was 1.25, 1.19 in Panipat, 1.22 in Rohtak, and 1.28 in Jhajjar.

7th:Male 7th of 3:2:2:2.[5] We surveyed more girls than boys because female enrollment is higher than male enrollment in government schools, and we sampled more grade 6 girls than grade 7 girls because we expected lower attrition for younger grades.[6] To be in the study, the student also needed to be at school on the baseline survey day. The 35-minute-long baseline survey took place on the school premises. Surveys were conducted by Jameel Poverty Action Lab (J-PAL) staff.

Note that we mistakenly omitted one school from the baseline survey. This school was randomized into the treatment group, and the intervention was conducted in it. We collected endline data in the school and include it in the analysis, imputing baseline variables with the gender-specific sample average for the district.[7]

Table 1 summarizes baseline characteristics of the sample. The average age for both boys and girls is between 11 and 12 years. Religious and caste variables line up with the overall demographics for these districts, as reported in the 2011 Census (Govt. of India, 2011). Baseline variables, including gender-related attitudes, aspirations, and behavior, are balanced between the treatment and control groups. An F-test of joint significance fails to reject balance between the study arms.

We measure gender attitudes through direct questions about female and male roles and rights (e.g., whether women should go to college or work outside the home, the appropriate age of marriage for girls). We also measure attitudes via questions about a vignette on investing in a son's or daughter's education. Gender attitudes in the sample are quite regressive at baseline. For example, about 80% of boys and 60% of girls believe that a woman's most important role is being a good homemaker. This pattern that girls are less likely than boys to endorse gender-discriminatory views is seen for most of our attitude questions (see Appendix Table 1).

Responses to several questions were aggregated into a gender attitude index, the construction of which was pre-specified.[8] The appendix provides more detail on how the atti-

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[5]We distributed the consent forms to students to take home; 84% of them were returned. Anecdotally, lack of consent was usually due to the student losing or forgetting the form.

[6]Parents are more likely to send their sons than daughters to private schools. Also, wealthier families use private schools, so the boys in government schools are from relatively poorer families than the girls.

[7]Similar to the procedure at baseline, we distributed consent forms to students present during a visit to the school just before the endline survey and then randomly chose sample students from among those whose parent provided consent and who personally assented to participate.

[8]The pre-analysis plan was posted to the AEA RCT Registry in November 2016 at the beginning of endline data collection. It specified the primary outcomes and how they would be constructed, secondary

tudes index and other indices were constructed.

The survey also included a module on aspirations for education and occupation; responses were aggregated into an aspirations index. Complementing this were questions on gender-equitable behavior among students – students' comfort with and interaction with the opposite gender; engagement with household chores; autonomy; and encouragement given to girls and women in their lives to pursue education and careers.

A key concern when examining attitudes is that students might report insincere gender-progressive attitudes or behaviors because they are aware of being studied. If such misreporting is more prevalent among treated students—who know they are part of a program trying to change their gender attitudes—this would upward bias our findings. Therefore, we included at baseline a Marlowe-Crowne survey module designed by psychologists to measure the respondent's propensity to give socially desirable answers (Crowne and Marlowe, 1960). We use this social desirability measure to assess whether our results are driven by students' desire to make a favorable impression on the surveyor.

To understand how parental attitudes influence program impacts, one parent of a random 40% subsample of the surveyed students participated in a survey at the student's home; we selected at random whether to interview the father or the mother.[9] Parents answered questions on their gender attitudes among other topics.

Table 1 summarizes characteristics of the parents. The mean age is 35 years for mothers and 40 years for fathers. There is a high illiteracy rate for mothers, reflecting the low level of female schooling in the parents' generation. A small proportion (29.2%) of mothers work outside the home, which is consistent with low female labor force participation rates in India.

Endline data collection began in November 2016, a month after the intervention ended, and concluded in April 2017. It was conducted primarily in the same school where the baseline was conducted (75.6% of endline respondents). Several students had moved to a different school, either in the same or a different village, or dropped out of school. These students were surveyed at home (24.3% of endline respondents). If the student had moved to another village that was far from the survey districts, we conducted a truncated phone survey (0.11% of endline respondents).[10] We were able to resurvey at endline 13,944 of

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outcomes, heterogeneity analyses, and the procedure for choosing control variables.

[9] Budget constraints are why only 40% of households and one parent were chosen.

[10] Appendix Table 2 summarizes participants' schooling status at endline: 81.6% were enrolled in the same school as baseline, 7.9% had dropped out of school, and the remainder had changed schools. The table

the 14,809 students surveyed at baseline, which corresponds to an attrition rate of 5.8%. The endline sample also includes an additional 44 students from the sample school that we mistakenly did not survey at baseline, yielding a total endline sample of 13,988 students. Appendix Table 3 shows that sample attrition is unrelated to treatment status, and that attrition in the treatment versus control group is not differential based on baseline attitudes, aspirations, or behavior.[11]

The 40-minute endline survey repeated a number of questions on gender attitudes and behavior from the baseline, and we added new questions measuring attitudes, such as towards occupational decisions, marriage, fertility and social norms. Responses to individual questions are aggregated into indices of gender attitudes, aspirations, and behavior that are our main outcomes.

4   Empirical specification and results

The intervention is hypothesized to make participants' attitudes less discriminatory against females, raise girls' aspirations, and increase gender-equitable behavior. This section describes the estimation strategy used to test these hypotheses and presents the results.

4.1   Specification

We use a dataset with one observation per student and estimate the following ordinary least squares regression specification:

$$Y_{ij} = \beta_0 + \beta_1 Treat_j + \beta_2 Y_{ij}^0 + \beta_3 \mathbf{X}_{ij} + \epsilon_{ij} \tag{1}$$

Y_{ij} is the outcome variable measured at endline for student i in school j. The first primary outcome is a gender attitudes index. The second is an aspirations index, and the third is a gender behavior index. $Treat_j$ is a binary variable that equals 1 if the school was assigned to the treatment group, and 0 otherwise. Thus, β_1 represents the average effect of the intervention on the outcome. The outcomes are constructed so that a higher value

also reports the treatment group's engagement with the Breakthrough program; 86.5% were aware of the program activities, and 73% recalled participating in one or more activities. Appendix Table 3 shows that treatment status is not significantly correlated with endline survey location.

[11]Appendix Table 4 details the reasons for attrition, which include permanent or long-term migration, death or poor health, refusal to participate by the student or parent, and the survey team's inability to find the respondent at the time of an appointment.

represents more gender progressiveness, so the hypothesis is $\beta_1 > 0$.

We control for Y_{ij}^0, the baseline analogue of the outcome. The vector $\mathbf{X}_{ij}$ comprises other control variables, which in our basic specification are grade-gender fixed effects and district-gender fixed effects. We also estimate an enhanced specification which controls for additional baseline student, parent, and school characteristics chosen using LASSO following Belloni et al. (2014).[12] We allow the error term, ϵ_{ij}, to be clustered at the school level.

4.2 Program impacts on primary outcomes

Table 2 reports the main treatment effects on gender attitudes, aspirations, and behavior using the basic specification. We find that the intervention made gender attitudes more progressive: Column (1) shows that treatment schools have a 0.25 standard deviation higher attitude index than control schools ($p < 0.01$). The coefficient is stable (0.24) when the LASSO-selected extended controls are included, as shown in Appendix Table 5.[13] To account for potential endogenous attrition from the sample, we also estimate Lee bounds on the treatment effects (Lee, 2009). Appendix Table 6 shows that the attrition-adjusted lower bound on the point estimate is 0.23.

A key concern is that participating in the program might have made salient what the socially desirable responses to our survey questions were without changing actual views. To test for this, we construct a social desirability score using responses to a short-form Marlowe-Crowne module (conducted at baseline) that measures whether the respondent has a tendency to offer socially desirable answers. The module asks the respondent whether he or she has several too-good-to-be-true personality traits such as never being jealous of others' good fortune and always admitting when he makes a mistake. We test for heterogeneous treatment effects based on this measure; it would be worrisome if the treatment effects were driven by students with a high propensity to give disingenuous answers. Reassuringly, Table 3 shows no differential treatment effects on gender attitudes by the social desirability score (SDS). Meanwhile, the main effect of having a low (i.e., below-median) SDS is quite large and negative, suggesting some upward shading of responses overall and SDS is capturing this tendency. Importantly, there is no more of this shading up in the treatment group than the

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[12]Appendix Table 14 lists the extended control variables and the larger set of variables from which the LASSO procedure chose them.

[13]Because the results are similar with or without the extended controls, subsequent tables only present results without the extended control variables.

control group. The estimated treatment effects appear to reflect real changes in attitudes.

To benchmark the size of the program's effect, Appendix Table 7 shows the correlation in the control group between endline attitudes and baseline factors that might affect them. Being a girl is associated with a 0.68 standard deviation higher gender attitude index, so the treatment effect is approximately one third as large as the girl-boy gap in attitudes. A one standard deviation increase in parent gender attitudes is associated with a 0.03 increase in student gender attitudes; the treatment effect is much larger than this effect.[14] We also calculate the intervention's 'persuasion rate' (DellaVigna and Gentzkow, 2010); it is 13.6%.[15]

Table 2 also shows a small effect of the treatment on aspirations. The average effect of the program is 0.05 standard deviations ($p < 0.01$). However, this result is not robust to restricting the sample to respondents with below-median social desirability scores (Table 3), and moreover, we show below that the effect is driven by boys. We find no evidence that the intervention raised girls' aspirations, which were quite comparable to boys' aspirations to begin with at baseline.

The third primary outcome reported in Table 2 is behavior. Our survey included more behavior questions relevant for girls than boys (e.g., mobility outside the home), and in some cases the hypothesized behavior change is in opposite directions for boys and girls (e.g., doing more chores for boys and less for girls). Thus, we show the results separately for girls and boys including all available questions, and then pooled, where we restrict the index to the common questions and code an increase in boys doing chores as equivalent to a decrease in girls doing chores. The gender-specific behavior index increases by 0.20 standard deviations for girls and 0.46 standard deviations for boys. Column (5) pools both genders and finds an average effect of 0.32 standard deviations. These estimates are robust among respondents exhibiting low social desirability bias (see Table 3). Thus, our analysis suggests that the intervention led to a sizable reduction in gender-biased and gender-stereotyped behavior.

4.3   Disaggregated results and heterogeneity analysis

This section disaggregates the main effects and examines heterogeneity across individuals. We begin by examining thematic sub-indices to show which specific attitudes and

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[14]Dhar et al. (2018) presents an arguably better benchmark using parental attitudes, comparing responses to the same set of questions for parents and students, and attitudes collected for both at baseline. A one standard deviation increase in parental attitudes increases student attitudes by 0.11 standard deviations.

[15]The treatment group holds on average 68% of the progressive views, compared to 63% in the control group.

behaviors the intervention affected. Appendix Table 8 reports the effect of the program on four sub-indices of attitudes: towards opportunity for education, employment outside the home, women's roles in society, and fertility behavior. These findings potentially reveal which topics students paid most attention to, which attitudes are more malleable, or where the program thrust was greatest. The effects on attitudes towards education, employment, and women's roles are large and statistically significant, with the strongest effect on employment attitudes (0.32), followed by gender roles attitudes (0.22) and education attitudes (0.19). The effect on gender-equitable fertility attitudes is smaller (0.04), which is likely due to the Breakthrough sessions having very limited discussion about fertility, but could also be due to such attitudes being difficult to change, or school-age participants being too distant from their own childbearing years to absorb messages on this topic.

We next examine how the program impacts differ across individuals. Girls might be more receptive to the programs' messages, or, the program might change boys' attitudes more because they start out with less gender-egalitarian views and thus have more room for improvement. As reported in column (1) Table 4, we do not find a significant differential effect of the program on girls' attitudes, on average. Column (2) examines aspirations, and although the negative interaction effect for girls (-0.055) is not significant, we cannot reject the null of no effect on girls' aspirations. Using the behavior index based on outcomes relevant for boys and girls, we find that the program had a significantly smaller impact on girls' behavior (interaction coefficient of -0.25, $p < 0.01$), although the net effect for girls is also positive and significant.[16] One interpretation of this finding is that boys and girls can adopt gender-equal attitudes with relatively equal ease, but girls face more constraints on translating their attitudes into behavior.

To better understand the gender differences in behavioral change, Appendix Table 10 examines behavior sub-indices. The intervention generated more interaction with the opposite sex for both boys and girls, with a larger impact for girls. It also led to greater mobility (i.e., walking to school alone) for girls, but had no impact on girls' decision-making power. Two specific behaviors drive the larger effect for boys on the aggregate behavior index reported above. First, boys do more household chores, but girls do not cut back on chores. This pattern is consistent with boys being able to unilaterally decide to help out more, but

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[16]This heterogeneity analysis is robust to correcting for the differential selection into the sample by wealth for girls and boys discussed in footnote 6. See Appendix Table 9.

girls needing, and not receiving, their family's consent to do fewer chores. Second, there is a large increase for boys in encouraging female family members to pursue higher education and careers, but no such effect for girls. These results point to what could be a quite general phenomenon that men face fewer external constraints on their behavior—and specifically to act in a more gender-progressive way—than women do. Extrapolating, the program's similar impact on attitudes for males and females might translate into larger changes in long-run behavior for males.

Next, we test whether the program's effects differ for students from more progressive versus conservative families. Is the intervention a substitute or complement to parents' views in shaping children's attitudes? As shown in columns (4) to (6) of Table 4, we do not find significant differential effects of the treatment by parents' gender attitudes, and moreover, the point estimates are small compared to the main effects. We thus have little evidence to conclude that pro-girl parent attitudes facilitate or hinder the success of the intervention.

4.4   Program impacts on secondary outcomes

We examine impacts on perceptions of social norms as a secondary outcome. Changes in perceived social norms can lead to behavior change (Tankard and Paluck, 2016).[17] We also assess how much participants view social norms as preventing them from acting on their progressive attitudes. To do so, we examine parallel questions about (1) personally holding a positive gender attitude, (2) believing society has a positive gender norm in that domain, and (3) personally holding the positive attitude and believing society will not oppose you if you act on it. Table 5 reports the results, first, for a norm about women's employment. The intervention made personal attitudes about female employment more progressive by 13 percentage points (column 1), It also increased by 5 percentage points the perception that others in the community hold that gender-progressive view (column 2), which is consistent with other findings that signals from institutions (Breakthrough in this case) are effective in changing subjective perceptions of norms (Tankard and Paluck, 2016). Meanwhile, the effect on holding the progressive attitude and believing society will be supportive (column 3) is smaller by 6 percentage points than the effect on simply holding that attitude (column 1): Some students whose own attitude changed think they will be hindered from acting on their

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[17]Recent evidence from India and Saudi Arabia suggest that people overestimate their community's opposition to female employment (Bursztyn et al., 2018; Bernhardt et al., 2018).

views by restrictive cultural norms. Columns (4) to (6) show a similar pattern for norms about women pursing university education.

We also examine four other pre-specified secondary outcomes: girls' self-esteem, awareness of gender discrimination, and implicit association test (IAT), and school performance. Appendix Table 11 shows impacts on the first three secondary outcomes. First, the intervention increased a self-esteem index, but, surprisingly, as much for boys as girls. Second, the program also led to a modest (0.07) standard deviation) increase in awareness of gender-based discrimination. Third, we administered IATs related to general positive feelings about girls and about women in professional roles to subsamples of students. The treatment had no effect on this outcome. The last secondary outcome we pre-specified is school performance, which we hypothesized would not be affected by the program this immediately; we examine this outcome to rule out the concern that the sessions on gender equality hurt school performance by crowding out other curricular material like math or language. Appendix Table 12 shows that the program did not affect school performance. The appendix describes the secondary outcomes in greater detail.

Finally, based on feedback when we presented our initial results, we collected additional data in early 2018 for a subset of our sample to objectively measure gender-related behavior in the classroom. We measured girls' class participation, students' views on girls' knowledge, and students' interaction with opposite-gender peers. Unfortunately, these analyses are underpowered, as discussed in the appendix. We do not find statistically significant treatment effects on these outcomes (see Appendix Table 13).

5   Conclusion

One approach to rooting out gender discrimination is to try to directly change people's attitudes. This paper examined whether a school-based gender attitude change intervention could succeed in making adolescents' attitudes less discriminatory, raise girls' aspirations, and reduce gender-biased behavior. The approach centered on having students think about and discuss gender differences and gender equality in classroom sessions held periodically over three school years in Haryana, India. We find that the intervention succeeded in making gender attitudes more progressive, with an accompanying effect on gender-equal behavior but no boost in girls' educational and career aspirations.

Our setting of north India has particularly strong gender discrimination, and the impacts

of a similar intervention might be either larger or smaller in places with less gender discrimination. Cross-cultural differences in how much autonomy adolescents have also mean that the extent to which attitude change translates into behavior change will vary with context.

One direction for future research is to unpack which elements of the intervention (e.g., human rights versus economic arguments) were most effective. Doing so requires systematically varying implementation, which our research design did not do. One could also compare this program, which explicitly discussed gender equality in dedicated class sessions, to a less overt approach. For example, through assigned readings featuring empowered women or writing assignment for history class that ask students to discuss changes in women's roles in society, schools could embed gender-equality messaging and prompt reflection on these topics without explicitly positioning the assignments as about gender inequality.

Another important question, of course, is whether the effects of this program will be sustained in the long run, leading to changes in educational achievement, occupational choice, marriage, and fertility years after the intervention has ended. Based on our short-run findings, we hope to track the respondents into adulthood to examine long-run outcomes.

References

Afridi, F., T. Dinkelman, and K. Mahajan (2018). Why are fewer married women working in rural India? A decomposition analysis over two decades. *Journal of Population Economics 31*, 783 – 818.

Alesina, A., P. Giuliano, and N. Nunn (2013). On the origins of gender roles: Women and the plough. *Quarterly Journal of Economics 128*(2), 469–530.

Anderson, M. (2008). Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry preschool, and early training projects. *Journal of the American Statistical Association 103*(484), 1481–1495.

Anukriti, S. (2017). Financial incentives and the fertility-sex ratio trade-off. *American Economic Journal: Applied Economics 10*(2), 27–57.

Ashraf, N., N. Bau, C. Low, and K. McGinn (2018). Negotiating a better future: How interpersonal skills facilitate inter-generational investment.

Bandiera, O., N. Buehren, R. Burgess, M. Goldstein, S. Gulesci, I. Rasul, and M. Sulaiman (2018). Womens empowerment in action: Evidence from a randomized control trial in africa. Working paper.

Banerjee, A., E. L. Ferrara, and V. Orozco (2018). The entertaining way to behavioral change: Fighting HIV with MTV.

Beaman, L., R. Chattopadhyay, E. Duflo, R. Pande, and P. Topalova (2009). Powerful women: Does exposure reduce bias? *Quarterly Journal of Economics 124*(4), 1497–1540.

Becker, G. and C. Mulligan (1997). The endogenous determination of time preference. *Quarterly Journal of Economics 112*(3), 729–758.

Belloni, A., V. Chernozhukov, and C. Hansen (2014). Inference on treatment effects after selection among high-dimensional controls. *Review of Economic Studies 81*(2), 608–650.

Bernhardt, A., E. Field, R. Pande, N. Rigol, S. Schaner, and C. Troyer-Moore (2018). Male social status and women's work. *AEA Papers and Proceedings 108*, 363–67.

Bertrand, M., J. Pan, and E. Kamenica (2015). Gender identity and relative income within households. *Quarterly Journal of Economics 130*(2), 571–614.

Bhalotra, S., A. Chakravarty, D. Mookherjee, and F. Pino (2018). Property rights and gender bias: Evidence from land reform in West Bengal. *American Economic Journal: Applied Economics forthcoming.*

Bhalotra, S. and T. Cochrane (2010). Where have all the young girls gone? Identification of sex selection in India.

Bowles, S. (1998). Endogenous preferences: The cultural consequences of markets and other economic institutions. *Journal of Economic Literature 36*(1), 75–111.

Buchmann, N., E. Field, R. Glennerster, S. Nazneen, S. Pimkina, and I. Sen (2017). Power vs. money: Alternative approaches to reducing child marriage in Bangladesh, A randomized control trial. working paper.

Bursztyn, L., A. Gonzalez, and D. Yanagizawa-Drott (2018). Misperceived social norms: Female labor force participation in Saudi Arabia. NBER Working Paper No. 24736.

Calvi, R. (2016). Why are older women missing in India? The age profile of bargaining power and poverty. Rice University working paper.

Cantoni, D., Y. Chen, D. Yang, N. Yuchtman, and Y. Zhang (2017). Curriculum and ideology. *Journal of Political Economy 125*(2), 338–392.

Crowne, D. and D. Marlowe (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology 24*(4), 349 – 354.

Dahl, G., A. Kotsadam, and D. Rooth (2017). Does integration change gender attitudes? The effect of randomly assigning women to traditionally male teams. Working paper.

DellaVigna, S. and M. Gentzkow (2010). Persuasion: empirical evidence. *Annual Review of Economics 2*(1), 643–669.

Dhar, D., T. Jain, and S. Jayachandran (2018). The intergenerational transmission of gender attitudes: Evidence from India. *Journal of Development Studies forthcoming*.

DISE (2011). District information system for education. `http://dise.in`.

Donovan, R. and S. Leivers (1993). Using paid advertising to modify racial stereotype beliefs. *Public Opinion Quarterly 57*(2), 205–218.

Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature 50*(4), 1051–1079.

Evans-Lacko, S., C. Henderson, and G. Thornicroft (2013). Public knowledge, attitudes and behaviour regarding people with mental illness in england 2009-2012. *British Journal of Psychiatry 202*(s55), s51–s57.

Fernandez, R., A. Fogli, and C. Olivetti (2004). Mothers and sons: Preference formation and female labor force dynamics. *Quarterly Journal of Economics 119*(4), 1249–1299.

Field, E., S. Jayachandran, and R. Pande (2010). Do traditional institutions constrain female entrepreneurship? A field experiment on business training in India. *American Economic Review 100*(2), 125–9.

Field, E., R. Pande, N. Rigol, S. Schaner, and C. Moore (2016). On her account: Can strengthening women's financial control boost female labor supply? Working Paper.

Giuliano, P. (2017). Gender: An historical perspective. Technical report, National Bureau of Economic Research.

Govt. of India (2011). Census of India. Available at `www.censusindia.gov.in/`.

Green, D., A. Wilke, and J. Cooper (2017). Reducing intimate partner violence through informal social control: A mass media experiment in rural Uganda.

Healy, A. and N. Malhotra (2013). Childhood socialization and political attitudes: Evidence from a natural experiment. *The Journal of Politics 75*(4), 1023–1037.

Jain, T. (2014). Where there is a will: Fertility behavior and sex bias in large families. *Journal of Human Resources 49*(2), 393–423.

Jayachandran, S. (2015). The root causes of gender inequality in developing countries. *Annual Review of Economics 7*, 63–88.

Jayachandran, S. and I. Kuziemko (2011). Why do mothers breastfeed girls less than boys? Evidence and implications for child health in India. *Quarterly Journal of Economics 126*(3), 1485–1538.

Jayachandran, S. and R. Pande (2017). Why are Indian children so short? The role of birth order and son preference. *American Economic Review 107*(9), 2600 – 2629.

Jayaraman, R., D. Ray, and S. Wang (2014). Engendered access or engendered care? Evidence from a major Indian hospital. *Economic & Political Weekly 44*(25), 47–53.

Jensen, R. (2012). Do labor market opportunities affect young women's work and family decisions? Experimental evidence from India. *Quarterly Journal of Economics 127*(2), 753–792.

Jensen, R. and E. Oster (2009). The power of TV: Cable television and women's status in India. *Quarterly Journal of Economics 124*(3), 1057–1094.

Jha, P., R. Kumar, P. Vasa, N. Dhingra, D. Thiruchelvam, and R. Moineddin (2006). Low male-to-female sex ratio of children born in India: National survey of 1.1 million households. *The Lancet 367*, 211–218.

Kohlberg, L. (1976). Moral stages and moralization: The cognitive-developmental approach. *Moral development and behavior: Theory, research, and social issues*, 31–53.

La Ferrara, E., A. Chong, and S. Duryea (2012). Soap operas and fertility: Evidence from Brazil. *American Economic Journal: Applied Economics 4*(4), 1–31.

Lee, D. (2009). Training, wages, and sample selection: Estimating sharp bounds on treatment effects. *Review of Economic Studies 76*(3), 1071–1102.

Markus, H. and P. Nurius (1986). Possible selves. *American Psychologist 41*(9), 954–969.

Paluck, E. (2009). Reducing intergroup prejudice and conflict using the media: A field experiment in Rwanda. *Journal of Personality and Social Psychology 96*(3), 574.

Pande, R. (2003). Selective gender differences in childhood nutrition and immunization in rural India: The role of siblings. *Demography 40*(3), 395–418.

Reynolds, W. (1982). Development of reliable and valid short forms of the Marlowe-Crowne social desirability scale. *Journal of Clinical Psychology 38*(1), 119–125.

Sen, A. (1990). More than 100 million women are missing. *The New York Review of Books 37*(20).

Tankard, M. and E. Paluck (2016). Norm perception as a vehicle for social change. *Social Issues and Policy Review 10*(1), 181–211.

Washington, E. (2008). Female socialization: How daughters affect their legislator fathers' voting on women's issues. *American Economic Review 98*(1), 311–332.

World Bank (2010). *World Development Indicators*. Washington, D.C.: World Bank.

Figure 1: Map of treatment and control schools within the study districts
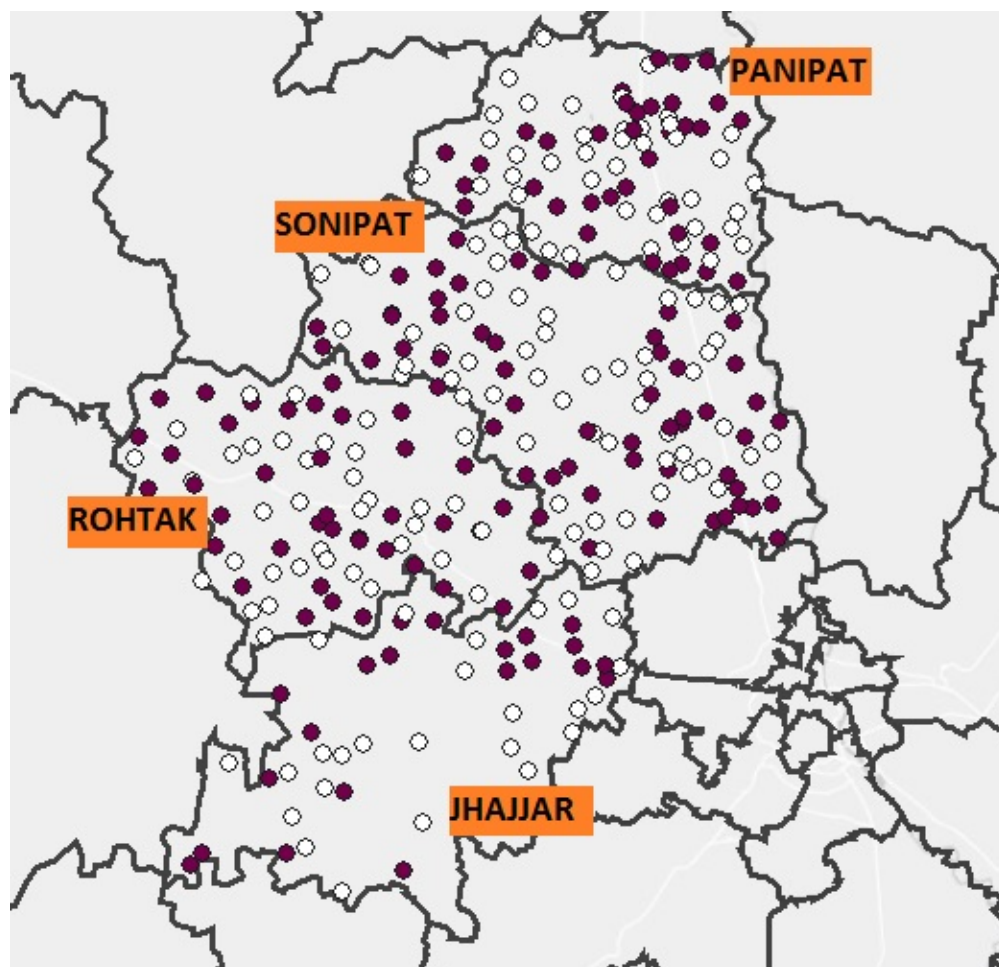
Note: Schools in the treatment group are marked with black dots, and schools in the control group are marked with white dots.

Table 1: Descriptive statistics: School and student characteristics at baseline

Variable	Treatment	Control	Standardized Diff
Number of schools	149	164	
Urban	0.107 [0.311]	0.073 [0.261]	0.119
School is Coed	0.698 [0.461]	0.677 [0.469]	0.045
Number of males in 6th and 7th	53.912 [48.392]	52.995 [40.152]	0.021
Number of females in 6th and 7th	66.709 [60.389]	63.078 [58.318]	0.061
Total number of teachers	17.766 [9.988]	17.173 [7.987]	0.066
Number of students	7,051	7,758	
Student's age	11.833 [1.258]	11.854 [1.246]	-0.017
Female	0.565 [0.496]	0.543 [0.498]	0.044
Hindu	0.945 [0.227]	0.953 [0.211]	-0.037
Enrolled in grade 6	0.526 [0.499]	0.521 [0.500]	0.010
Scheduled caste	0.268 [0.422]	0.285 [0.433]	-0.040
Mother's age	35.183 [4.083]	35.247 [4.272]	-0.015
Father's age	40.251 [4.568]	40.294 [4.678]	-0.009
Mother is illiterate	0.369 [0.460]	0.374 [0.461]	-0.011
Mother works full-time	0.291 [0.445]	0.292 [0.446]	-0.002
Dwelling has flush toilet	0.155 [0.362]	0.131 [0.337]	0.069
Gender Attitudes Index	0.031 [1.012]	0.000 [1.000]	0.031
Aspirations Index	0.006 [1.012]	0.000 [1.000]	0.006
Behavior Index	-0.012 [0.991]	-0.000 [1.000]	-0.012

F-stat for joint significance of above baseline student variables is 0.882

Note: Table reports variable means and standard deviations.

Table 2: Effects of the gender attitude-change intervention on attitudes, aspirations, and behavior

	Gender Attitudes Index (1)	Aspirations Index (2)	Girls' Behavior Index (3)	Boys' Behavior Index (4)	Behavior Index (5)
Treated	0.250***	0.052***	0.199***	0.461***	0.323***
	[0.019]	[0.019]	[0.031]	[0.031]	[0.022]
Basic controls	Yes	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No	No
Observations	13988	13988	7787	6201	13988

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. All columns control for the baseline analogue of the outcome variable, grade-gender, and district-gender fixed effects. All regressions also include a variable indicating if any component of the index was missing and imputed with the gender-district-treatment average. Standard errors are clustered by school.

Table 3: Robustness check for social desirability bias

	Gender Attitudes Index (1)	Aspirations Index (2)	Girls' Behavior Index (3)	Boys' Behavior Index (4)	Behavior Index (5)
Treated	0.223***	0.066**	0.189***	0.488***	0.328***
	[0.025]	[0.027]	[0.043]	[0.041]	[0.028]
Low social desirability score	-0.108***	-0.099***	-0.127***	-0.001	-0.055***
	[0.021]	[0.021]	[0.033]	[0.032]	[0.019]
Treated*Low social desirability score	0.044	-0.020	0.017	-0.040	-0.008
	[0.031]	[0.032]	[0.046]	[0.047]	[0.028]
Basic controls	Yes	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No	No
Observations	13988	13988	7787	6201	13988

Notes: Asterisks denote significance: $*p < .10, **p < .05, ***p < .01$. Social desirability (SD) score is a baseline measure of the student's propensity to give socially desirable answers. Low SD score refers to having a below-median score among students. All columns control for the baseline analogue of the outcome variable, grade-gender, and district-gender fixed effects, as well as an indicator for whether any component of the index was missing and thus imputed with the gender-district-treatment average. Standard errors are clustered by school.

Table 4: Heterogeneity of effects by gender and baseline parent attitudes

	Gender Attitudes Index (1)	Aspirations Index (2)	Behavior Index (3)	Gender Attitudes Index (4)	Aspirations Index (5)	Behavior Index (6)
Treated	0.281*** [0.028]	0.078*** [0.028]	0.462*** [0.029]	0.279*** [0.039]	0.049 [0.037]	0.331*** [0.036]
Treated*Female	-0.055 [0.037]	-0.047 [0.036]	-0.250*** [0.036]			
Treated*Above median baseline parent attitudes				-0.043 [0.051]	-0.006 [0.049]	-0.053 [0.042]
Treat+Treat*Female=0	0.00	0.20	0.00			
Treat+Treat*Above median parent attitudes=0				0.00	0.22	0.00
Basic controls	Yes	Yes	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No	No	No
Observations	13988	13988	13988	5718	5718	5718

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. All columns control for the baseline analogue of the outcome variable, grade-gender, and district-gender fixed effects, as well as an indicator for whether any component of the index was missing and thus imputed with the gender-district-treatment average. Standard errors are clustered by school.

Table 5: Effect of intervention on perception of social norms

	Social norms towards work			Social norms towards education		
	Student agrees that...			Student agrees that...		
	women should be allowed to work	community thinks women should be allowed to work	women should be allowed to work and thinks community will not oppose them	women should be allowed to study in college even if it is far away	community thinks women should be allowed to study in college even if it is far away	women should be allowed to study in college and thinks community will not oppose them
	(1)	(2)	(3)	(4)	(5)	(6)
Treated	0.129***	0.052***	0.072***	0.084***	0.056***	0.067***
	[0.011]	[0.013]	[0.012]	[0.008]	[0.014]	[0.013]
Basic controls	Yes	Yes	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No	No	No
Observations	6862	6464	6409	7074	6752	6717

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. All columns control for grade-gender and district-gender fixed effects. Standard errors are clustered by school.

Appendix Table 1: Descriptive statistics on gender attitudes and aspirations

Variable	Boys	Girls
Disagree: A woman's most important role is being a good homemaker	0.202 [0.401]	0.403 [0.490]
Disagree: A man should have the final word about decisions in his home.	0.335 [0.471]	0.495 [0.500]
Disagree: A woman should tolerate violence to keep her family together	0.606 [0.488]	0.665 [0.471]
Disagree: Wives should be less educated than their husbands.	0.562 [0.495]	0.748 [0.433]
Disagree: Boys should get more opportunities/ resources for education	0.177 [0.382]	0.421 [0.493]
Men and women should get equal opportunities in all spheres of life	0.901 [0.298]	0.918 [0.275]
Girls should be allowed to study as far as they want.	0.869 [0.337]	0.959 [0.199]
Daughters should have a similar right to inherited property as sons.	0.824 [0.381]	0.874 [0.331]
It would be a good idea to elect a woman as the village Sarpanch	0.685 [0.464]	0.814 [0.388]
Student has discussed education goals with parent or adult relative	0.840 [0.367]	0.794 [0.405]
Student's highest desired level of education is above sample median	0.604 [0.480]	0.517 [0.482]
Student expects white collar job when he/she is 25 years old	0.772 [0.419]	0.717 [0.450]
Number of students	6,614	8,195

Notes. Table reports variable means and standard deviations.

Appendix Table 2: Descriptive statistics on school enrollment and program participation

Outcome Variable	Endline Statistics
Number of observations	13,988
School attendance	0.919 [0.273]
Same school	0.816 [0.387]
Private school in same village/town	0.036 [0.186]
Govt school in different village/town	0.036 [0.186]
Private school in different village/town	0.031 [0.174]
Dropped out of school	0.079 [0.270]
Aware of program (treatment group only)	0.865 [0.323]
Program participation (treatment group only)	0.728 [0.421]

Notes. Table reports variable means and standard deviations.

Appendix Table 3: Determinants of endline survey location and sample attrition

	Survey conducted in school (1)	Survey conducted in school (2)	Attrited (3)	Attrited (4)
Treated	-0.008 [0.013]	-0.009 [0.013]	0.007 [0.007]	0.007 [0.007]
Treat*Baseline Gender Attitudes Index		-0.011 [0.008]		-0.005 [0.004]
Treat*Baseline Aspirations Index		0.010 [0.007]		0.003 [0.004]
Treat*Baseline Behavior Index		-0.014 [0.009]		0.007 [0.004]
Baseline Gender Attitudes Index		0.018*** [0.006]		-0.002 [0.003]
Baseline Aspirations Index		0.008 [0.005]		-0.009*** [0.003]
Baseline Behavior Index		0.017*** [0.006]		-0.007** [0.003]
Basic controls	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No
Observations	13988	13988	14809	14809

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. Sample consists of endline respondents in Column (1) and baseline respondents in Column (2). All columns control for grade-gender and district-gender fixed effects. Standard errors are clustered by school.

Appendix Table 4: Reasons for sample attrition

	Female	Male	Total
Tracked			
Surveyed			
In school	6226	4328	10554
At home	1548	1868	3416
Over phone	14	5	19
Could not be surveyed			
Student deceased or unwell	24	26	50
Student or parent refused assent	43	38	81
Rescheduled but never completed	15	31	46
Not tracked			
Address unavailable	150	113	263
Family and student had moved	113	102	215
Family is in village but student had moved	47	13	60
Other	61	90	151

Notes: Sample comprises baseline respondents.

Appendix Table 5: Average effects of the intervention with extended set of control variables

	Gender Attitudes Index (1)	Aspirations Index (2)	Girls' Behavior Index (3)	Boys' Behavior Index (4)	Behavior Index (5)
Treated	0.240***	0.050***	0.191***	0.461***	0.323***
	[0.019]	[0.019]	[0.031]	[0.031]	[0.022]
Basic controls	Yes	Yes	Yes	Yes	Yes
Extended controls	Yes	Yes	Yes	Yes	Yes
Observations	13988	13988	7787	6201	13988

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. All columns control for the baseline analogue of the outcome variable, grade-gender, and district-gender fixed effects, plus a set of additional controls selected via LASSO. All regressions also control for an indicator for whether any component of the index was missing and thus imputed with the gender-district-treatment average. Standard errors are clustered by school.

Appendix Table 6: Lee bounds on treatment effects

	Gender Attitudes Index (1)	Aspirations Index (2)	Girls' Behavior Index (3)	Boys' Behavior Index (4)	Behavior Index (5)
Treated	0.250***	0.052***	0.199***	0.461***	0.323***
	[0.019]	[0.019]	[0.031]	[0.031]	[0.022]
Treated (Lower bound)	0.232***	0.033*	0.115***	0.326***	0.312***
	[0.019]	[0.019]	[0.029]	[0.030]	[0.022]
Treated (Upper bound)	0.261***	0.061***	0.313***	0.593***	0.331***
	[0.019]	[0.019]	[0.030]	[0.029]	[0.021]
Basic controls	Yes	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No	No
Observations	13,988	13,988	7,787	6,201	13,988
Observations (Lee bounds)	13,944	13,944	7,620	5,975	13,944

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. All columns control for the baseline analogue of the outcome variable, grade-gender, and district-gender fixed effects. All regressions also control for an indicator for whether any component of the index was missing and thus imputed with the gender-district-treatment average. Standard errors are clustered by school. The attrition rate is 0.56 percentage points higher in the treatment group than control group. Thus, the Lee bound estimates are calculated by trimming 0.56% of control group observations (44 observations).

Appendix Table 7: Benchmarking the effect sizes

	Gender Attitudes Index (1)	Aspirations Index (2)	Girls' Behavior Index (3)	Boys' Behavior Index (4)	Behavior Index (5)
Female	0.679***	0.268***			1.031***
	[0.026]	[0.024]			[0.028]
Baseline Parent Gender Attitudes Index	0.033***	0.026**	0.042**	0.033**	0.035***
	[0.011]	[0.011]	[0.018]	[0.015]	[0.009]
Basic controls	Yes	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No	No
Observations	7327	7327	3980	3347	7327

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. Sample consists of endline respondents in the control group. All columns control for grade and district fixed effects. (We do not include grade-gender and district-gender fixed effects because we are interested in the coefficient on *Female*.) All regressions also control for an indicator for whether any component of the index was missing and thus imputed with the gender-district-treatment average. Standard errors are clustered by school.

Appendix Table 8: Effects of intervention on attitude subindices

	Education Attitudes	Employment Attitudes	Attitudes towards Female Gender Roles	Fertility Attitudes
	(1)	(2)	(3)	(4)
Treated	0.190***	0.319***	0.223***	0.036**
	[0.020]	[0.020]	[0.021]	[0.018]
Basic controls	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No
Observations	13988	13988	13988	13988

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. All columns control for the baseline analogue of the outcome variable (except for column 4), grade-gender, and district-gender fixed effects, as well as an indicator for whether any component of the index was missing and thus imputed with the gender-district-treatment average. Standard errors are clustered by school.

Appendix Table 9: Heterogeneity of effects by gender, controlling for heterogeneity by wealth proxies

	Gender Attitudes Index	Aspirations Index	Behavior Index
	(1)	(2)	(3)
Treated	0.258***	0.114**	0.472***
	[0.050]	[0.051]	[0.050]
Treated*Female	-0.058	-0.046	-0.249***
	[0.038]	[0.036]	[0.036]
Treat*Father works full-time	0.006	-0.015	-0.046
	[0.042]	[0.041]	[0.037]
Treat*House is pukka	0.003	-0.045	0.010
	[0.034]	[0.039]	[0.032]
Treat*Flush toilet	-0.010	0.015	0.028
	[0.041]	[0.043]	[0.042]
Treat*Household gets newspapers daily	0.062	-0.047	-0.036
	[0.047]	[0.045]	[0.042]
Treat*Household owns some land	0.039	0.039	0.075
	[0.057]	[0.050]	[0.048]
Father works full-time	0.059*	0.045	0.024
	[0.030]	[0.029]	[0.028]
House is pukka	0.049**	0.098***	0.010
	[0.024]	[0.027]	[0.022]
Flush toilet	0.058**	0.080**	0.036
	[0.028]	[0.031]	[0.030]
Household gets newspapers daily	0.054	0.122***	0.080***
	[0.034]	[0.033]	[0.029]
Household owns some land	0.066	0.107***	0.042
	[0.044]	[0.035]	[0.031]
Treat+Treat*Female=0	0.00	0.21	0.00
Basic controls	Yes	Yes	Yes
Extended controls	No	No	No
Observations	13988	13988	13988

Notes: Asterisks denote significance: $*p < .10, **p < .05, ***p < .01$. All columns control for the baseline analogue of the outcome variable, grade-gender, and district-gender fixed effects, as well as an indicator for whether any component of the index was missing and thus imputed with the gender-district-treatment average. Standard errors are clustered by school.

Appendix Table 10: Effects of intervention on behavior subindices

	Interaction with the Opposite Sex	Participation in HH Chores	Supporting Female Relatives' Ambitions	Girls' Mobility	Girls' Decision-making
	(1)	(2)	(3)	(4)	(5)
Treated	0.277***	0.078**	0.484***	0.092***	0.016
	[0.041]	[0.035]	[0.029]	[0.026]	[0.029]
Treated*Female	0.146***	-0.070	-0.453***		
	[0.045]	[0.044]	[0.033]		
Basic controls	Yes	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No	No
Observations	13988	13988	13988	7787	7787

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. All columns control for the baseline analogue of the outcome variable (except column 3), grade-gender, and district-gender fixed effects, as well as an indicator for whether any component of the index was missing and thus imputed with the gender-district-treatment average. Standard errors are clustered by school.

Appendix Table 11: Effects of intervention on self-esteem, awareness of gender discrimination, and implicit association test

	Girls' Self-esteem Index	Boys' Self-esteem Index	Gender-based Discrimination Index	Implicit preference for girls (Good vs Bad)	Implicit preference for girls (Occupation)
	(1)	(2)	(3)	(4)	(5)
Treated	0.101***	0.139***	0.069***	-0.008	-0.029
	[0.023]	[0.025]	[0.019]	[0.014]	[0.029]
Basic controls	Yes	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No	No
Observations	7787	6201	13988	2620	2840

Notes: Asterisks denote significance: $*p < .10, **p < .05, ***p < .01$. All columns control for the baseline analogue of the outcome variable (except column 3), grade-gender, and district-gender fixed effects, as well as an indicator for whether any component of the index was missing and thus imputed with the gender-district-treatment average. Standard errors are clustered by school.

Appendix Table 12: Effects of intervention on school performance

	SCERT school data (2014-16)						10th board exam data (2017)					
	Proportion scoring >50 in...						Proportion passing in...					
	Hindi	English	Math	Science	Social Science	All subjects	Hindi	English	Math	Science	Social Science	All subjects
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treated	0.013	-0.007	0.012	-0.020	-0.012	-0.002	0.001	-0.005	-0.010	-0.011	-0.021	-0.013
	[0.018]	[0.019]	[0.018]	[0.019]	[0.018]	[0.008]	[0.010]	[0.023]	[0.027]	[0.026]	[0.022]	[0.027]
Control group mean	0.55	0.43	0.35	0.51	0.46	0.32	0.92	0.67	0.75	0.73	0.73	0.55
Control group s.d.	0.14	0.15	0.15	0.15	0.14	0.06	0.09	0.22	0.25	0.26	0.20	0.26
Basic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No	No	No	No	No	No	No	No	No
Observations	234	230	229	228	228	237	307	307	307	307	307	307

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. Each observation is a sample school. We were able to match only 237 and 307 sample schools with the SCERT and board exam datasets, respectively. The first panel uses data for both cohorts in our sample, from when each was in Grade 8. The second panel uses only the older cohort of our sample in Grade 10, because the outcome is an exam taken in Grade 10. Some schools have missing observations in the SCERT dataset for certain subjects, so the sample size varies across columns within the first panel. All columns control for district fixed effects. Standard errors are heteroskedasticity-robust.

Appendix Table 13: Effects of intervention on observed classroom behavior

	% girls among quiz representatives	% of comments given by girls	% girls among class discussion participants	% of groups that are mixed-gender
	(1)	(2)	(3)	(4)
Treated	-0.027	0.004	0.012	0.018
	[0.032]	[0.023]	[0.021]	[0.014]
Control group mean	0.60	0.56	0.56	0.06
Control group standard deviation	0.30	0.19	0.18	0.13
Basic controls	Yes	Yes	Yes	Yes
Extended controls	No	No	No	No
Observations	336	335	335	336

Notes: Asterisks denote significance: $*p < .10$, $**p < .05$, $***p < .01$. Each observation is a school-grade. We have data from 197 schools, 145 of which extend through grade 12 and 52 of which extend through grade 10 only. We are missing data for 10th graders for 4 of the schools because the exams were occurring during our visit. We also have missing data for 11th graders for 2 schools, either because the principal did not give us permission or the boys' section did not exist. All columns control for average baseline gender attitudes index for girls and boys, average baseline behavior index for girls and boys, and grade and district fixed effects. Standard errors are clustered by school.

Appendix Table 14: LASSO-selected extended set of control variables

Extended control variable	Gender Attitudes Index	Aspirations Index	Girls' Behavior Index	Boys' Behavior Index	Behavior Index
Student's age	X	X	X		
Student's grade at baseline					
Rural location					
Dummy for scheduled caste	X				
Dummy for scheduled tribe					
Dummy for Muslim					
Number of female siblings					
Number of male siblings	X	X	X		
Whether student stays with parents					
Whether mother has completed 8th grade	X	X			
Whether mother works part-time					
Whether mother works fulltime					
House is pukka		X	X		
House is connected to electricity					
House has flush toilet		X			
House has a no-flush toilet					
Family owns the house					
Household owns radio or tape recorder					
Household owns TV					
Household owns refrigerator					
Household gets newspaper daily					
Household gets tapwater					
Household owns water pump					
Self-efficacy index		X	X		
Social desirability score	X	X	X		
Parent's baseline gender attitudes index					
Number of guest teachers in the school					
Number of fulltime teachers in school					
Fraction of female teachers					
Availability of counsellor in the school					
Number of PTA meetings held in the last year					
Functional library in the school					
Functional toilets					
School has electricity					
School has access to computers					
School has access to internet					
School has sports field					
School has mid-day meals					
School has auditorium					
School has EduSat					
Bal Sabha sessions: number of times in a week					
Library sessions: number of times in a week					
School is coed					
Village-level adult female literacy rate	X				
Village-level adult male literacy rate					
Village-level female labor force participation					

A Data Appendix

A.1 Sample selection and tracking

From the universe of 607 government secondary schools in the study districts, we focused on 347 schools with medium to high enrollment based on DISE (2011) data, and with low dropoff in enrollment between grades (as a proxy for attrition from the school). In villages with multiple schools, only one school per village was randomly selected. If the schools were adjacent to each other or shared a building, we considered them a single school. After initial visits, we excluded 33 schools because of chronically low actual attendance despite high official enrollment, leaving 314 schools that form the sample.

We distributed consent forms to 30,685 students. Of these, 84 percent returned the form signed by their parent or guardian. Most students who did not return a consent form said they "forgot to bring it" on the day the enumerator visited the school. Providing consent is uncorrelated with the student's gender, which is suggestive that it is not closely related to parental gender attitudes. Our sample of students for each school is randomly selected from those returning the consent form who were present on the baseline survey day in their school and assented to participate.

For the parent survey, if after multiple visits and follow-up phone calls, we could not interview the selected parent, we randomly chose a replacement household. We collected data for 2,586 fathers and 3,540 mothers. The completion rate was higher for mothers (89.6%) than for fathers (70.2%) because fathers were more often away for work during the daytime hours when the survey was conducted.

To reduce sample attrition between baseline and endline, we conducted two tracking surveys to verify respondents' contact information in January to March 2015 (98.5% tracking rate) and February to June 2016 (93.8% tracking rate).

A.2 Gender attitudes index

The gender attitudes outcome variable is constructed by aggregating responses to a wide-ranging set of individual questions into indices (both an endline index and a baseline index). For questions that used a 5-point Likert scale, the response was first converted to a binary variable coded as 1 if the respondent answered "Strongly Agree" or "Agree" with a gender-progressive statement (or "Strongly Disagree" or "Disagree" with a gender-regressive statement), and 0 otherwise. The index is the weighted average value of the individual variables, with weights constructed by normalizing the variables to have the same standard deviation and then recovering the weights given by the inverse covariance matrix (Anderson, 2008).[18] We normalize the index to have mean 0 and standard deviation 1 in the control group. A higher value of the index means more gender equitable views.

The baseline attitude index aggregates the following survey questions.

B1. A woman's most important role is being a good homemaker

B2. A man should have the final word about decisions in his home

B3. A woman should tolerate violence to keep her family together

B4. Wives should be less educated than their husbands

B5. Boys should get more opportunities/resources for education

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[18]Some questions were asked to a random 50% of respondents to reduce the survey's length. For missing values, the value was imputed as the sample average for the gender-district-treatment status.

B6. Men and women should get equal opportunities in all spheres of life

B7. Girls should be allowed to study as far as they want

B8. Daughters should have a similar right to inherited property as sons

B9. It would be a good idea to elect a woman as the village Sarpanch

The endline index aggregated responses to 18 questions. We also divided the attitude questions into four mutually exclusive sub-indices for use in auxiliary analyses: gender equality in education, gender equality in employment, women's roles, and fertility preferences.

Education attitudes

E1. Wives should be less educated than their husbands

E2. Boys should be allowed to get more opportunities and resources for education than girls

E3. Education Vignette: If you were the head of the family, who would you have sent to the town for further studies?

Employment attitudes

E4. A woman's most important role is to take care of her home, feeding kids and cook for her family

E5. Men are better suited than women to work outside of the house

E6. Work Vignette: Marriage is more important for Pooja than her job[19]

E7. Work Vignette: Being a teacher would be a more suitable job for Pooja

E8. Do you think women should be allowed to work outside home?

Women's role attitudes

E9. Daughters should have a similar right to inherited property as sons

E10. It would be a good idea to elect a woman as the village Sarpanch

E11. A man should have the final word about decisions in his home

E12. A woman should tolerate violence in order to keep her family together

E13. Parents should maintain stricter control over their daughters than their sons

E14. Girls should attain higher education so that they find better husbands *minus* Boys should attain higher education so that they find better wives

E15. A shy demeanour makes a boy a more suitable groom *minus* A shy demeanour makes a girl a more suitable bride[20]

E16. When a girl laughs, she should cover her mouth *minus* When a boy laughs, he should cover his mouth

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[19]Based on a vignette/hypothetical scenario about a young woman named Pooja who wants to delay marriage to pursue a job as a police officer.

[20]Only one of these two questions was asked to each respondent (determined by randomizing). We thus use the school mean rather than the individual's response. We code the question as gender-regressive if the value for demure bride is greater than a demure groom.

E17. At what age would you like your sister/female cousins/friends to get married *minus* At what age would you like your brother/male cousins/friends to get married?[21]

Fertility attitudes

E18. Suppose the first two children born to a husband and wife are both girls. Which of the following should they do? *minus* Suppose the first two children born to a husband and wife are both boys. Which of the following should they do?[22]

A.3 Aspirations index

We construct a gender aspirations index that measures educational and occupational aspirations. The questions used for the baseline aspirations index were as follows.

B1. Have you ever discussed your education goals with your parent or adult relative?

B2. What is the highest level of education you would like to complete if finances and opportunity of the school/college are available?

B3. What occupation do you expect to have when you are 25 years old?

The questions used for the endline aspirations index were as follows.

E1. How many marks, according to you, will you score in the SSE 10th board examinations?

E2. Have you ever discussed your education goals with your parents or adult relatives?

E3. Suppose you were to get married right after school, would you want to continue your education after marriage?

E4. What is the highest level of education you would like to complete if finances and opportunity of the school/college are available?

E5. What occupation do you expect to have when you are 25 years old?[23]

A.4 Gender behavior index

We construct a gender behavior index that measures gender equitable behavior. Questions marked with * are used in the index for girls only, and questions marked with # are coded with opposite signs for boys and girls. The questions used for the baseline behavior index were as follows.

B1. Are you comfortable talking to children of the opposite gender who are not related to you inside or outside school?

B2. In the past week, did you help with cooking/cleaning/washing clothes?#

B3. Are you allowed to travel to school alone or with friends?*

B4. During last week, were you absent from school?*

The endline behavior index was constructed using the following questions.

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[21]We code two dummies from this – the first for saying that the age for girls > 19 and the other that the gap between boys and girls is larger than the control group median response.

[22]The question is coded as -1 (gender regressive) if the respondent said 'have no more children' after having two boys but not after having two girls, 1 (gender progressive) if she said 'have no more children' after two girls but not two boys, and 0 otherwise.

[23]White collar occupations are coded as more progressive.

Interaction with the opposite sex

E1. Are you comfortable talking to children of the opposite gender who are not related to you inside and outside school?

E2. Do you sit next to students of the opposite gender in class?[24]

Participation in household chores

E3. In the past week, did you cook/clean/wash dishes?[#]

E4. In the past month, have you missed school due to household based responsibilities?[#]

Girls' decision-making

E5. I am able to talk to my parents about what work I would like to do in the future.[*]

E6. Who mostly makes decisions about the following, or if this is in the future for you, who do you expect will make this decision- Will you make the decision, make the decision jointly with parents or will parents make the decision for you?[*]

    – Whether or not you will continue in school past 10th grade

    – If you will work after you finish your studies

    – What type of work you will do after you finish your studies

E7. How many days were you absent from school last week?[*]

Girls' mobility

E8. Are you allowed to travel to school alone or with friends?[*]

Supporting female relatives' ambitions

E9. Do you discourage your sister/female cousin from working outside home?

E10. Do you discourage your sister/female cousin from studying in college if it is far away?

A.5 Social desirability score

The following questions from Crowne and Marlowe (1960) were asked at baseline with two answer choices: agree or disagree. We use a 13-question short form of the Marlowe-Crowne module developed by Reynolds (1982). The social desirability score sums how many of the responses are the socially desirable one; a low score means a lower tendency to given answers that have social desirability bias.

B1. It is sometimes hard for me to go on with my work if I am not encouraged

B2. I sometimes feel resentful when I don't get my way

B3. On a few occasions, I have given up doing something because I thought too little of my ability

B4. There have been times when I felt like rebelling against people in authority even though I knew they were right

B5. No matter who I'm talking to, I'm always a good listener

B6. There have been occasions when I took advantage of someone

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[24]This question was not asked in single-sex schools. The value is imputed as the gender-treatment status-district average for these students.

B7. I'm always willing to admit it when I make a mistake

B8. I sometimes try to get even rather than forgive and forget

B9. I am always courteous, even to people who are disagreeable

B10. I have never been irked when people expressed ideas very different from my own

B11. There have times when I was quite jealous of the good fortune of others

B12. I am sometimes irritated by people who ask favors of me

B13. I have deliberately said something that hurt someone's feelings

A.6 Gender discrimination awareness index

E1. Do you know about female foeticide and infanticide?

E2. Are female foeticide and infanticide practiced in Haryana?

E3. According to you, what is the main reason for female foeticide and infanticide?

E4. In Haryana, are the number of girls less than the number of boys?

A.7 Self esteem index

E1. On the whole, I am satisfied with myself

E2. I feel that I have a number of good qualities

E3. I am able to do things as well as most other people

A.8 Social norms

The following questions were used to construct our social norms outcome variables. Students were randomized to receive either Set 1 questions or Set 2 questions.

Set 1

E1. Do you think that people in your village/community think that women should be allowed to work outside home?

E2. Do you think that people in your village/community think that women should be allowed to work outside home?

E3. Do you think the community will oppose you since [if] you disagree with them?

E4. If the community did not oppose you, would you encourage your sister/cousin sister to work outside home after marriage?

Set 2

E1. Do you think that girls should be allowed to study in college even if it is far away

E2. Do you think that people in your village/community think that girls should be allowed to study in college even if it is far away?

E3. Do you think the community will oppose you since [if] you disagree with them?

E4. If the community did not oppose you, would you encourage your sister/cousin sister to study in college even if it is far away?

A.9 Implicit association tests

We use two gender-related implicit association tests as secondary outcomes. Fifty percent of all student respondents took an IAT associating good-bad behavior characteristics to boys and girls during baseline. During endline, the same students were administered either the baseline IAT or a second IAT which asked them to associate gender stereotypical occupations to boys and girls. We calculate the implicit preference for girls for each of the two IATs.

A.10 School performance

We examined academic outcomes to test if the intervention crowded out other academic instruction. We used overall pass rates and subject-wise test scores from primarily two data sources:

- State Council of Educational Research and Training (SCERT): We were able to match 237 sample schools with the SCERT data. We have data for both cohorts in our sample, from when each was in Grade 8.

- Haryana Board of School Education: We were able to match 307 sample schools with the board exam dataset. We have data for only the older cohort of our sample, because the outcome is an exam taken in Grade 10, and the younger cohort had not taken the exam at the time of data collection.

A.11 Parent's gender attitude index

To understand how parental attitudes influence program impacts, one parent of a random 40% subsample of the surveyed students participated in a survey during baseline. The following questions were used to construct our parent's gender attitudes index at baseline.

B1. A woman's most important role is being a good homemaker

B2. A man should have the final word about decisions in his home

B3. A woman should tolerate violence to keep her family together

B4. Wives should be less educated than their husbands

B5. Boys should get more opportunities/resources for education

B6. Men and women should get equal opportunities in all spheres of life

B7. Girls should be allowed to study as far as they want

B8. Daughters should have a similar right to inherited property as sons

B9. It would be a good idea to elect a woman as the village Sarpanch

The heterogeneity analysis with the parent index is restricted to students whose parents were surveyed. We also use the parent attitude index as a possible control variable in our LASSO extended controls procedure. We impute missing values at the mean value for those students whose parent was not surveyed.

A.12 Observed classroom behavior

After analysis of our initially collected data was complete and we had presented our results to some audiences, based on feedback we decided to collect additional data that objectively measured gender-related behaviors in our sample schools. We developed and conducted three activities in

the co-ed schools in our sample schools; the activities we developed were appropriate for co-ed schools only. The three activities aimed to measure (1) girls participation in classroom discussions (2) students views about girls' knowledge, and (3) interaction with opposite-gender peers in the classroom. In activity (1), a surveyor facilitated a class discussion about "What changes do you want to see in your society?" Another surveyor took note of how many girls and boys made comments in the discussion. In activity (2) students were told about an inter-school competition based on a general knowledge quiz. The winning classroom in each district would get school bags for every student in the class. Students were asked to vote for three students in their class to represent them. The outcome is how many girls are elected for the quiz competition. For activity (3), students were asked to form groups of five to for a poster-making activity about "Swachh Bharat Abhiyan" (India's Cleanliness Drive). The surveyor recorded how many of the groups were mixed-gender.

Appendix Table 13 reports the impact of the intervention on these observed classroom behaviors. Interestingly, for both participation in class discussion and voting for girls to participate in the quiz competition, girls are not underrepresented in the control group. Under the status quo, these are not outcomes where girls are disadvantaged. We find no effect of the intervention. Our final outcome is how many groups of 5 students who self-formed to make posters were mixed-gender. Here, the mean in the control group is strikingly low (5 percent) and the treatment has no detectable impact on this outcome.

There are a few limitations worth noting. First, our pilot sample size was too small to clearly indicate to us that two of our outcomes show no disadvantage for girls. Second, we have low power to detect changes in these outcomes. An ex post power analysis based on the estimated standard errors and control group standard deviation imply that, at 80% power, the minimum detectable effect size is 0.38 to 0.44 standard deviations, which is larger than the estimated effect on our primary outcomes.

A.13   Extended control variables

These variables are used in the LASSO procedure to select the extended controls.

Student-level variables from baseline survey

- Student's age

- Student lives with both his or her mother and father

- Number of sisters

- Number of brothers

- Mother has completed 8th grade

- Mother works part-time

- Mother works full-time

- Scheduled caste

- Scheduled tribe

- Muslim

- Asset variables: House is pukka, House is connected to electricity, Flush toilet, No flush toilet, Family owns the house, Household owns radio or tape recorder, Household owns TV/cable TV/satellite TV/dish TV, Household owns refrigerator, Household gets newspapers daily, Tap water, Household owns water pump

- Self-efficacy index

  - On the whole, I am satisfied with myself.
  - I enjoy learning.
  - I feel that I have a number of good qualities.
  - I am able to do things as well as most other people.
  - I help make my community a better place.
  - I am full of ideas.
  - I think about social problems.
  - I have parents who try to help me succeed.
  - Some people say that it is important to have definite opinions about lots of things, whereas other people think that it is better to remain neutral on most issues. I think it is better to have definite opinions.

- Social desirability score
- Parent's gender attitude index[25]

  School and village characteristics from other data sources

- Number of full-time teachers
- Number of guest (i.e., temporary) teachers
- Fraction female teachers
- Has school counselor
- PTA meetings
- Frequency of extracurricular activities
- School facilities (Indicators for has library, has toilets, has electricity, has computers, has internet, has sports field, has mid-day meals, has auditorium, has EduSat (satellite-based service delivering educational content)
- Coed versus single sex school
- Rural location
- Village-level adult literacy rate by gender
- Village-level female labor force participation

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[25]We include a flag for having parent survey data and impute the value for those without a parent survey.