Transmitting Rights

Extended Abstract

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In this paper, we provide experimental evidence of intergenerational transmission of gender norms from teachers to students. Using a randomized controlled trial with a network of charter schools in Pakistan, we find that teachers treated with a visual narrative and gender-rights curriculum increase their support for women's rights and reduce their bias in gender IATs by 0.3 sigma. The treatment transmitted to students, with the students in treated classrooms becoming more supportive of women rights by 0.3 sigma. These changes in attitudes accompanied an increase in test scores, up to 0.3 sigma and with the gender gap in mathematics achievement tests disappearing in classrooms randomly assigned to form mixed-gender study groups. No significant effects appear in classrooms that were randomly assigned to form same-sex student study groups. Overall, our results provide causal evidence that gender norms are transmissible and suggest that segregation of gender within classes may hurt academic achievement and impose economic costs.

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"*The distance between the rights and privileges enjoyed by boys in the school next door, and us girls in this house is ostensibly one that is a wall of a few inches, but the real distance between us and them extends thousands of miles*." Quote from Bol Movie (2011)

1. Introduction

How do rights revolutions transmit in societies? The last century has witnessed extraordinary diffusion of civil rights and freedoms for women, religious, sexual and ethnic minorities. Rights of women, in particular, have seen unprecedented advances, especially in economically developed societies relative to the developing world. In much of the world, compared to men, women still have fewer labor market and educational opportunities, lesser physical mobility, autonomy to run for political office, make their own decisions about marriage, finances and even lesser freedom to choose their friends (Duflo, 2012; Jayachandran, 2015; Cheema et al., 2019; Field et al., 2021). These disparities are often rooted in cultural norms and transmitted from generation to generation (Maurin and McNally, 2008; Bisin and Verdier, 2011; Alesina et al., 2013; Dhar et al., 2019). In this paper, we show that norms can be transmitted from teacher to students and that more progressive gender attitudes can even impact test scores and achievement. We focus on an oft-neglected norm transmission channel and show teachers shape not only student achievement, but also attitudes about the rights of vulnerable populations.

Attitudes about rights are formed at a young age. Typical models of transmission of attitudes have parent-to-child transmission of norms (Bisin and Verdier, 2001). Teachers, however,

are also likely to have a formative impact on the development of norms of fairness, equality, and justice in students. Recent work has shown children of impoverished parents may have little time with their parents who may have to work multiple jobs and lack time for the non-cognitive development of children and their social emotional learning (Bessone et al. 2021; Seror, 2022). As such, teachers likely play a key role in shaping attitudes.

We implemented a randomized control trial in collaboration with the Progressive Education Network (PEN) in Pakistan, one of the largest networks of charter schools in the world with 277 schools operating across Pakistan. We study transmission of gender rights by randomly assigning teachers to one of the following five treatment arms. The first treatment arm presents a visual narrative to teachers. We identified the causal effects of the visual narrative separately from the causal effects of visual narrative combined with a gender rights class that the teachers then taught to their students in a semester-long class. We pre-register a horse race of the visual narrative treatment arms against other treatment arms aimed to shift attitudes towards rights. One of these treatment arms is inspired by the principle of effective altruism (the idea that one should evaluate actions by the utility it achieves for oneself and society as a whole). The second treatment arm is malleability of one's identity, in particular, regarding one's identity as an empathic person (Benabou and Tirole 2011). Our placebo treatment arm provided training on procedures to open a bank account in Pakistan. We measure the impacts of these five treatment arms on teacher's own attitudes and their students' attitudes as well as the impacts on field measures of support for gender rights, student achievement, and gender gaps in student achievement.

The gender rights lessons included structured discussions where students envisioned roles for men and women and prompted self-reflection. To create the opportunity for reflective equilibrium, deliberative mutual adjustment among general principles, we cross-randomized teachers to form either mixed-gender or same-gender study groups. The classrooms were monitored to ensure that teachers complied with their treatment status: the assigned type of study group. This cross-randomization enables us to experimentally study a causal mediating channel through which gender rights transmission occurs. Our outcomes are measured five to eleven months after the treatment.

We leverage our close collaboration with the Progressive Education Network to gather a suit of outcomes capturing stated and revealed preference measurements of gender attitudes. Gender attitudes among teachers are captured in three ways. Our first measure is perceptions on gender rights. We field a survey to elicit views concerning Women's Economic, Social, Legal and Political Rights. Our second measure of gender attitudes is the teacher's IAT (implicit association test), a computer-based tool developed by social psychologists, designed to minimize the risk of social desirability bias in self-reported answers (e.g., Greenwald et al., 2009). The IAT measures stereotypes using the difference in reaction times when teachers are asked to associate attributes with names. Our third measure is a high-stakes decison by teachers to sign and send petitions to the Pakistani parliament to repeal "Islamic" laws allowing polygamy for men in Pakistan.

To investigate the teachers-to-students rights transmission, we then measure outcomes on students' gender attitudes and achievement. Gender attitudes of students are measured first with an embedded attitudinal survey within the general knowledge exam. Our second measure of gender attitudes is behavior in games where the interaction partner is either the same or opposite gender. Achievement is measured in math, english, and the general knowledge exams.

Three aspects of our experiment offer clear interpretation of attitudinal data as having real consequences. First, we use the implicit association test, which is based on the key idea that the easier the mental task, the faster the response. IATs have the advantage of (1) avoiding social-desirability bias in the responses and (2) capturing implicit associations that may be unknown to the individual, but may nevertheless affect attitudes and behavior. Second, we use the Marlowe-Crowne social desirability scale, a survey module developed by social psychologists to measure a person's propensity to give socially desirable answers (Crowne and Marlowe, 1960). When we discard individuals who score highly on social desirability, the results are essentially identical. Third, we track behavioral change over a longer time frame. The persistence of the effects even eleven months after the treatment and the effects on achievement gaps among students provides reassurance that the treatments genuinely shifted attitudes and have real consequences.

We contribute to three strands of literature. First, we present experimental evidence of intergenerational transmission attitudes on gender rights from teachers to students. Children acquire preferences, social norms, and ideological attitudes through adaptation and imitation of a parent as well as role models like teachers (Bisin and Verdier, 2001). Recent studies investigate the role of school curriculum (Alan et al, 2020, Seema et al., 2021). We show that teaching teachers may be sufficient in effectuating norm change with ourin our treatment arm that includes only the visual narrative alone having substantial impact on gender attitudes of both teachers and their pupilson gender rights to teachers. Teachers can serve as important role models for students in decisions that have labor market consequences (Porter and Serra 2020; Bettinger and Long 2005). The prosocial attitudes and preferences of role models have been shown to transmit to children (Kosse et al 2020). We contribute to this literature by providing experimental evidence assess for the transmission of gender rights attitudes from teachers to students.

Second, we show that teacher implicit stereotypes are malleable and that they affect disparities in outcomes. Sustained changes are observed five and eleven months after the initial training. A vibrant literature documents the importance and impact of exposure to teacher's implicit stereotypes during middle school on student outcomes, including standardized test scores in math and reading, choice of the field of study, and self-confidence (Carlana 20xx). Teachers matter for students' performance and later-life outcomes (Chetty, Friedman, and Rockoff 2014a, 2014b) and their gender stereotypes may be an important channel. We provide causal evidence that implicit attitudes on gender are malleable through persuasion (DellaVigna and Gentzkow, 2010) and that changing regressive gender attitudes reduce gender achievement gaps.

Our third key contribution is on the mechanism for mediating a rights revolution. A growing body of work deems empathy to play a significant role in reducing antagonism towards out-groups (Hangartner 2021; Chatruc 2021)**.** We cross-randomize teachers to have mixed or same-gender study groups to assess the mediating channel for intergenerational transmission of norms. We show that classrooms assigned to mixed-gender study groups show behavioral and attitudinal change.

II. Background Context and Study Design

Background.— We conduct our field experiment in Punjab, Pakistan, the most populous province of Pakistan with a population of 110 million. We collaborate with the largest network of schools in Pakistan, Progressive Education Network, a Non-Profit-Organization (NGO) aiming to improve the quality of education in Pakistani government schools via a public-private partnership. The approach of the "The PEN schools" is similar to charter schools in the United States (Angrist and Pishke, 2014). These schools are managed using public funds by the private actors in a public-private partnership. In the largest province of Pakistan, the network employs over 600 teachers and oversees about 15000 students. According to the PEN mission statement, the focus is not on infrastructure investments as is often is government policy since decades but rather on raising the quality of their education via improving the quality of teachers:

"*We believe that instead of investing resources on 'brick and mortar', we can leverage the existing infrastructure of public schools to focus on what goes on inside the classroom. The highest percentage of our resources goes towards academic improvement and educational initiatives for the children; which entails teachers' training*."

We collaborate with PEN in their annual teacher training drive and conduct a large field experiment with all teachers in PEN all schools in the State of Punjab.

Study Design.— We conducted a randomized control trial with 607 teachers all across Punjab. The teachers were randomly assigned to one of the treatment arms using a random number generator: (i) utilitarian treatment (121 teachers); (ii) malleability treatment (121 teachers); (iii) Bol or Gender Rights Movie treatment (122 teachers) (iii) Bol or Gender Rights Movie with in class discussion treatment (121 teachers) and (iv) placebo macroeconomic facts lecture (122 teachers). The treatments were delivered with a live zoom call within each treatment arm in March 2021. The baseline, midline and endline surveys were also conducted in Zoom calls with individual teachers in March, August and December 2021, respectively. We also further random assignment within each treatment arm for causal mediation analysis. Building on the informal norm among PEN schools to form study groups two months before mathematics examinations, we randomly assigned teachers within each treatment arm into a two-student study group for two months before the math exam. The first group was the status quo study group of same-gender students, while the second group of teachers were randomly assigned to form mixed-gender student study groups. PEN network monitored and ensured the treatment was enforced. There was not much resistance from teachers because most students were still relatively young (up to grade 8 with an average age of 9 years). Random visits by one of the authors in this study and PEN administrative staff also corroborate that the study group intervention was being enforced by teachers in class. Further details on each treatment are discussed below.

Utilitarian Treatment.— Our first treatment involved the participants attending a live zoom lecture emphasizing the utility of empathy and how it can benefit them in their teaching. The training reinforced this message by relying on two approaches: narratives and research studies, that is, both qualitative and quantitative evidence. The training lecture begins by a motivating example or a "puzzle": why profit maximizing firms like Google invest millions in training their employees in showing empathy, e.g., at the *Google Empathy Lab*, especially when it is costly for them. We argue this is a profit maximizing response on the part of Google. We build on this

example and emphasize several (truthful) real-life stories of teachers who were known to be prosocial and empathic, as well as effective teachers. The training goes on to present main findings and discuss several studies that back up these narrative accounts. For instance, we discuss studies that show that demonstrating empathy benefits firms by making employees better able to deal with complex social relationships and hierarchies. The utilitarian treatment concludes by reiterating the main message of this treatment: "*All types of evidence backs the idea that empathy is good for you. It is not just the right thing to do but also the most sensible thing to do for your performance as a teacher.*" The complete transcript of the training is presented in Table A1 of Appendix A.

Malleability Treatment.— Our second treatment arm was provided with training emphasizing the malleability of empathy. That is, how empathy changes over time within a person and across populations. This treatment was inspired by prior work in psychology that documents that the degree of empathy a person has is not a fixed personality trait but is rather malleable. This literature finds that reminding subjects that empathy is not fixed can increase short-term empathic behavior (see Weisz and Zaki, 2017 for a review of this literature). The malleability training reinforced the malleability of empathy message by relying on two earlier approaches: qualitative and quantitative evidence. That is, this training relied on narratives of personal transformation – stories emphasizing the malleability of empathy – and quantitative research in psychology that argues that empathy is malleable and that people can become more prosocial over time. The malleability training also concludes by reinforcing the main message of this treatment: "*All types of evidence backs the idea that empathy is not fixed but malleable. It is a skill that can be developed.*"

Bol Movie Visual Narrative Treatment.— Our third treatment group watched a movie. We along with PEN staff ensured that all teachers had their video camera on during a live screening of the movie within the treatment arm. The emotionally charged social drama was 2 hours and 45 minutes long and we had an intermission for live discussion with the participants after 1.5 hours of the movie and a more detailed Q&A and discussion on how regressive gender norms may adversely affect society and rights of women in particular. The movie, Bol (literally, *to speak up*), is a Pakistani Urdu language social drama with strong female lead, on death row telling her story about why she found it necessary to murder her father. The movie is critically acclaimed and one of the highest-grossing Pakistani films of all time. The theme revolves around the the strong female lead and her sisters dealing with the obsession of her father to have a son, his perpetuation and strict enforcement of regressive gender norms (such as limiting right to employment, inheritance, education and public spaces for her daughters), and his staunch rejection of his existing intersex child. One dialogue from the movie is illustrative:

> "*The distance between the rights and privileges enjoyed by boys in the school next door, and us girls in this house is ostensibly one that of a wall of a few inches, but the real distance between us and them extends thousands of miles*."

The movie was followed by a one-hour structured discussion on women rights and gender attitudes in society. During this discussion, the teachers empathized with the strong female gender lead and discussed the movie's portrayal of inequitable gender attitudes, norms, and rights, including, e.g. right to work, right to go outside, right for public spaces.

Bol Movie, Gender Rights Curriculum Treatment.— Our fourth treatment intensified the visual narrative of the movie with instruction and training teachers to conduct a semester long gender rights course. This is inspired by theory and empirical evidence on the efficacy of social-emotional learning (Yeager et al., 2019; Eskreis-Winkler et al., 2019). In this treatment arm,

immediately after the movie, these individuals were trained in a 3-hour long workshop to teach a semester-long course designed by gender activists, the authors of this study, educators, pedagogical consultants, and multimedia developers. The teachers were instructed to discuss gender-rights as it would personally apply to the child and organize exercises with students. This class lasted once a week for 2 hours for 4 months from March to June 2021. The classroom exercises involved games, readings, and other activities that encouraged students to reflect on gender rights and privileges. A typical class held on 11th April 2021 is as follows:

Task 1) Draw all the work that your father does.
Task 2) Draw all the work that your mother does.
Task 3) Which of these are the same? Which are different?
Task 4) Why is that?
Task 5) Would you want the job of your mother or your father when you grow up?
Task 6) Why is that?
Task 7) Draw the picture of your role model .
Task 8) Why is he/she your role model?
Task 9) What kind of things your father cannot do (e.g. cook)?
Task 10) What kind of things your mother cannot do? (e.g. drive a motorbike, go out alone)
Task 11) Why is that?

III. Data and Empirical Strategy

A. *The Data*

Sample.— The sample consists of all 607 teachers and 13, 932 students across 52 schools chartered by the Progressive Education Network (PEN) in the State of Punjab. As is common in most government schools in Pakistan, all teachers are female and teach every course (English, Urdu and Mathematics) to every class from Kindergarten to Grade 5 (Pakistan's Ministry of Education, 2021). The PEN network organizes training workshops for teachers every year. We embed our experiment within the annual PEN teacher training drive. As a result of our experimental intervention embedded within the regular training program we essentially have zero attrition. All 607 PEN school teachers in the State of Punjab participated in the experiment. Baseline Survey took place in the first week of March, midline survey in August and endline in December 2021. The close collaboration and cooperation with PEN leadership also allowed us unprecedented access to detailed administrative data on teachers which crucially allowed us to match teachers to their students at the classroom level.

Outcome Variables on Teachers' Gender Attitudes.— Our first set of outcome variables concern teachers' attitudes on gender rights conducted 5 months following the treatment rollout. To summarize gender attitudes of teachers, we use the average effect size (AES) approach of Kling et al. (2004) and Kremer et al. (2009), and construct rights indices based on survey responses of teachers. The AES averages the normalized effects obtained from a seemingly unrelated regression in which each dependent variable is an index of several variables. Normalization is relative to the placebo group. Women's Rights Overall is an index combining all the statements concerning Women's Economic, Social, Legal and Political Rights. Women's Economic Rights is an index combining women rights relevant to education and work. Women's political rights is based on the right of women to hold political office, while women's social rights and legal rights concern rights of women to to not conform to social norms and legal discrimination, respectively. For more details, see our survey instrument in Appendix B.2.

Outcome Variables on Teachers' IAT and Signed Petitions.— Our second set of outcome variables concern teachers' Implicit Association Test (IAT) is conducted 5 months following the treatment and signed petitions teachers sent to the parliament 11 months after. The gender IAT measures implicit associations towards women. The key idea behind the test is that easier the mental task, the faster the response prediction. IATs have the great advantage of (1) avoiding social-desirability bias in the responses and (2) capturing implicit associations that may be unknown to the individual, but may nevertheless affect attitudes and behavior. The test requires categorizing words to the left or right of a computer and measures the strength of association between two concepts based on response times. We use a standard Gender-Career IAT tests to see if respondents associate women with "Family" and men with "Career" (Greenwald et al., 2009). The IAT hence measures female sounding names and gender stereotypes.

It is unlikely the results we observe in IATs are likely due to experimental demand. First, it is hard to respond to IAT in away that is socially desirable as it would require strategically speeding up or slowing down in certain blocks of associations (Alesina et al., 2018). Second, and more rigorously, in following psychological literature our IAT algorithm discards observations that are too slow or too fast (Greenwald et al., 2003). Last, it is highly unlikely that within our sample —primary and middle school teachers in Punjab—would know about IATs. All this suggests our results are unlikely due to experimental demand effects.

Main Explanatory Variables.— Our key explanatory variables are dummies for the four treatments. U_i and M_i denote dummies that switch on if the teachers were assigned the Utilitarian and Malleability treatment, respectively. Bol Movie_i and Bol Movie Gender Rights Classi are dummies that switch on if the teachers were assigned the Bol Movie (a visual narrative in favor of gender rights) and Bol Movie combines the visual narrative with a semester-long gender rights teaching curriculum. The placebo macroeconomic facts lecture such as GDP, inflation and unemployment trends in Pakistan.

B. *Attrition and Balance*

Close cooperation with the leadership of the PEN organization in providing administrative data and our embedding the experiment within PEN's regular training meant that attrition was very low. Nevertheless, a lack of balance may still complicate causal interpretation of our results. Therefore, we begin by examining if our randomization was successful in creating balance among teachers and students. Table 1 reports individual level characteristics with Panel A reporting balance over teacher characteristics, and Panel B reporting balance of our treatments over student characteristics. Differences across treatment groups are small in magnitude, and almost all p-values estimates are larger than 0.10, suggesting that the randomization was effective at creating balance between the groups. For instance, teachers' education, experience, class size, number of hours of teaching and marital status are balanced. Likewise, from Panel B of Table 1, we observe that pretreatment Mathematics, English and Urdu Language test scores of students are also balanced. The similarity of test scores strongly suggest that the students are balanced in our treatment and placebo group.

C. *Estimation Strategy*

The impact of our four treatments can be evaluated by comparing outcomes across groups in a simple regression framework. For each outcome, the estimation equation is:

$$Yi = \alpha + \beta\, Ui + \gamma Mi + \delta\, BM + BMCi + Xi\ \mu + \epsilon i \qquad (1)$$

where Yi is respective outcome for a teacher *i*, Ui is a dummy equal to one if the teacher is assigned to the utilitarian empathy treatment arm; Mi is a dummy variable equal to one if the deputy minister is assigned to the malleability empathy treatment arm; BMi is a dummy variable equal to one if the teacher is assigned to the Bol Movie visual narrative in favor of more equitable gender rights while BMCi complements the visual narrative with training and a semester-long gender rights teaching curriculum to students. Xi is a vector of individual-level teacher and student controls. Following Chetty et al. (2014), in student level regressions, we also always control for prior test scores of students. We cluster standard errors at the teacher level since that is our level of randomization. In equation (1), β measures the effect of utilitarian treatment; γ the effect of malleability treatment; δ the effect of visual narrative; and measures the effect of visual narrative when complemented with a semester-long gender rights course.

IV. Impact on Teachers

A. *Effect on Teachers' Attitudes*

Short-term Effects.— 5 months following the treatment, we observe quantitatively and qualitatively significant impact of visual narrative combined with the semester-long gender rights curriculum treatment. Table 2 reports these results. The Bol In Class Gender Rights treatment makes overall gender norms more supportive of women rights by about 0.21 standard deviation. Disaggregating the overall index for women rights, we find the largest impact on women's political rights, i.e. women's right to vote and hold political shift by over half a standard deviation for the teachers assigned the visual narrative and gender rights curriculum. Utilitarian and Malleability did not have much impact on gender attitudes. The visual narrative itself does have some effects, albeit weaker, than the effects of the visual narrative along with the gender-rights curriculum.

B. *Effect on Teachers' IAT and Petitions to Ban Polygamy and Dowry*

Short- and medium-term Effect on IATs.— Interestingly, we find that our visual narrative combined with gender rights curriculum treatment impacts Implicit Association Test (IAT) scores. The IAT is a computer-based tool developed by social psychologists, designed to reduce the risk of social desirability bias in self-reported answers (Greenwald et al., 2009). From Figure 2, we observe that the Bol Movie's visual narrative combined with the semester-long gender rights curriculum treatment reduces implicit gender bias to the tune of 0.34 standard deviation.

Complete paper with all the results available on request.