Targeting men, women or both to reduce child marriage.*

Rachel Cassidy†, Anaya Dam‡, Wendy Janssens§, Umair Kiani¶, and Karlijn Morsink‖

June 17, 2023

Abstract

Interventions that aim to change outcomes for women and children typically target women. Yet in contexts where men are dominant decision-makers, male preferences and beliefs may remain the binding constraint. We ask – when we target men, women, or both, with the same intervention in the same context – how their updating of beliefs trade off to change household outcomes. We conduct a cluster-randomized control trial of an edutainment intervention aimed at delaying marriage of adolescent children in rural Pakistan. We find that targeting men only reduces child marriages in the short- and long-run, but only in target households. Targeting women only has limited impacts in the long-run in target households, but does reduce child marriages at village-level. Only when men and women are jointly targeted do reductions in child marriages occur both in target households in the long-run, and at village-level. Underlying this, we show that whenever men or women are treated, they both update on the spousal quality returns to delaying marriage. When women are treated, either alone or jointly, prevailing age-of-marriage norms become salient to them. Changes in child marriage outcomes in target households then only occur when beliefs about these norms are updated, consistent with village-level reductions in child marriages.

Keywords: Targeting, Gender, Child Marriage, Edutainment, Field Experiment

*We are grateful to Dan Anderberg, Alison Andrews, Chris Barrett, Michele Belot, Lauren Bergquist-Falco, Pierre-Andre Chiappori, Paul Collier, Brian Dillon, Seema Jayachandran, Rachel Glennerster, John Hoddinott, Travis Lybbert, Bob Rijkers, Tavneet Suri, Nicholas Swanson and Frank Schilbach for comments. We thank audiences at the Workshop in Gender and Family Economics 2022, PacDev 2022, 100 Years of Economic Development 2022, NEUDC 2022, and seminars at Cornell, UChicago, Passau, Tinbergen Institute, Wageningen, and the Institute for Fiscal Studies. We are grateful to Mayan Ali, Vinh Phan, Gabriella Villanueva and Anouk van Veldhoven for excellent research assistance. We are indebted to Carmen Reinoso, Wasim Durrani, Mohammed Qazilbach, Raffat Shuja, Saleem Ahmed, Brigitte Obertop, Ronald van Moorten and Katinka Moonen. This research project was funded by ESRC-DFID Grant No: ES/N014650/1, Oxfam Novib and Center for Economic Analysis of Risk, Georgia State University. The research in Punjab was conducted in partnership with the Punjab Social Protection Authority. IRB approval was obtained from University of Oxford, Approval No. R56430/RE001. AEA RCT Registry number AEARCTR-0006098: https://doi.org/10.1257/rct.6098

†Institute for Fiscal Studies & World Bank. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, nor those of the Executive Directors of the World Bank or the governments they represent.

‡Utrecht University

§Vrije Universiteit Amsterdam, Tinbergen Institute & AIGHD

¶Centre for Economic Research in Pakistan

‖Corresponding Author. Utrecht University, Wageningen University, & Center for Economic Analysis of Risk (CEAR), Georgia State University. k.morsink@uu.nl

1 Introduction

Interventions that aim to change outcomes for women and children — such as female labor force participation, fertility, early marriage, and children's health, education and nutrition — have typically targeted women. Common interventions either address women's preferences and beliefs, or their bargaining power, including through teaching skills, or providing resources (e.g., Duflo et al. (2015); Ashraf et al. (2020a); Bandiera et al. (2020); Edmonds et al. (2021)). Women's beliefs may be more responsive to such interventions — for example if women perceive a higher private benefit from changing such outcomes, or have lower previous access to information or opportunities. Yet, across many contexts, men remain the dominant decision-makers in households and communities. Hence, male preferences and beliefs may remain the binding constraint for promoting household change (Ashraf et al., 2014; Bernhardt et al., 2018; Bursztyn et al., 2020; Cassidy et al., 2021; Lowe and McKelway, 2021). Targeting women only, without changing men's preferences or beliefs, may even have perverse impacts — such as increasing intimate partner violence, or worsening marriage market conditions (Bloch and Rao, 2002; Bobonis et al., 2013; Buchmann et al., 2021). There is emerging evidence that targeting men's beliefs could be effective in changing outcomes such as female labor-force participation and gender-based violence (Bursztyn et al., 2020; Sharma, 2021; Shah et al., 2022). This raises the question of how changes in men's and women's beliefs, and their power to change household outcomes, trade off when we target men, women, or both?

We study this question in the context of household decisions to delay marriage of their adolescent children in rural Pakistan. Early marriage is widespread and persistent. One third of women aged 20 to 49 globally — and more than half of women in the least developed countries — were married before 18 (UNICEF, 2014), and 110 million child marriages are expected in the next 10 years (UNICEF, 2021). The negative welfare consequences of early marriage for health, education, domestic violence and labor market participation are well documented (e.g., Jensen and Thornton (2003); Field and Ambrus (2008); Chari et al. (2017); Hicks and Hicks (2019)). Individual household members' preferences over delaying children's marriage weigh beliefs about household income, such as dowry and bride price (Jensen and Thornton, 2003; Chari et al., 2017; Corno et al., 2020; Corno and Voena, 2023), health of children and grandchildren (Jensen and Thornton, 2003; Chari et al., 2017), spousal and match quality (Adams and Andrew, 2021), as well as social norms governing the age of marriage (Anderson, 2007; Buchmann et al., 2021).

Men and women within the household may systematically differ in these beliefs, as well as the extent to which they weigh them in their individual utility functions. Data from our study show that mothers are more accepting of early marriage, and are less likely to want to deviate from age-of-marriage norms than fathers. In our context in rural Pakistan, where 90% of marriages happen between spouses from the same village, traditional village-level norms strongly favor early marriage, especially for girls. Data from our study show that mothers are more accepting of early marriage, and are less likely to want to deviate from age-of-marriage norms than fathers. Fathers are the final decision makers about marriage of their children, but mothers are involved in marriage decisions in 70% of households.

These gender differences between fathers and mothers on key domains that matter for decisions to marry an adolescent early or delay their marriage, raise the question how interventions that either target fathers or mothers affect household marriage decisions and outcomes differentially. Therefore, we study how changes in father's and mother's beliefs about delaying marriage of their adolescent children, and their power to change household outcomes, trade off when we target men, women, or both with the same intervention in the same context. We study this in a cluster-randomized control trial (RCT) in 177 villages. From each village, 10 households with unmarried adolescents are randomly sampled to be part of the study (henceforth: target households). We randomly assigned, at the village-level, whether we target the women in these target households, the men, both jointly, or none (control group villages) with the same educational entertainment ("edutainment") intervention. Other households in our study villages do not participate in the edutainment intervention. We estimate that, on average, we treat 15% of the households with children on the marriage market in a village.[1] Our intervention consists of a mobile cinema screening of a street-theater performance, developed by local NGOs and performed by local actors. The screening was followed by facilitated group discussions. The edutainment intervention discusses the costs and benefits of delaying marriage in terms of health costs, spousal quality and age-of-marriage norms. It uses emotion, immersion, and perspective-taking, and does so in a group setting to help facilitate coordination on a new village norm. This approach is distinct from existing interventions to delay marriage, which typically focus on household financial constraints and/or girls' education (Baird et al., 2010, 2011, 2019; Duflo et al., 2015; Buchmann et al., 2021).

[1] In our 177 villages we observe 1383 marriages over 26 months, and thus 3.6 marriages per village per year. Over that same period of time, we observe 188 marriages in our targeted households, so that is roughly 0.53 marriages in a year. So 15% of the "village market" is treated.

We conduct a baseline, midline, and endline panel survey with 1700 targeted households and 5100 individuals within these households: an adolescent boy or girl aged 12-17, plus their primary male and female caregivers ("fathers" and "mothers"). The midline panel survey took place six months after the intervention, and the endline panel survey approximately eighteen months after the intervention. We collect data on marriage outcomes, beliefs about health outcomes, spousal quality (i.e., in terms of expected education of the future spouse conditional on delaying a girls' marriage), and incentivized measures of beliefs about age-of-marriage norms (i.e., beliefs regarding other community members' acceptability of early marriage). We also collect monthly observational data on all marriages in the 177 villages, and age and origins of brides and grooms, during the entire study period.

In the targeted households in the control group we find that 11% of girl adolescents were married by midline, and 22% by endline , and specifically, 7% at midline and 12% at endline were child married. In terms of impacts on the hazard of child marriage, we find that in the short-run, briefly after the intervention, targeting men reduces the hazard of child marriage at ages between 12 to 17 by 1.2 percentage points per year on average, a 71% reduction relative to the average annual hazard in the control group. There are no significant reductions in the short-run when women only, or men and women jointly are targeted, as compared to the control group, and effects are significantly different from targeting men only. In the long-run, 18 months after the intervention, however, both targeting men only, and men and women jointly, significantly reduces the annual hazard of child marriage by 1.2 percentage points, relative to a 2.8 annual hazard rate in the control group, a 43% reduction. When targeting women, the effect is not significant as compared to the control group, but we can not reject the null that the effect is the same when targeting men only, or men and women jointly. When we target men and women jointly, the long-run effect is significantly different from the short-run effect. Robustness checks show that reported marriages, and estimated treatment impacts, are highly consistent across fathers, mothers and adolescent respondents within the same households. Participation rates are not different between men and women across treatment arms.

At the village-level, unlike in target households, we observe a brief, initial reduction in child marriages in all arms immediately after the intervention. This effect is, however, only sustained in the long-run in the arms where women are treated, either alone or jointly with their spouse. Targeting women and men jointly leads to a decrease of 24 percentage points in the probability that a child marriage is observed in a given month *at the village level*,

equivalent to 58% of the control group mean. Unlike in the target households, targeting men does not lead to sustained reductions in child marriages in the village-level data, and effects at village level are significantly different between the male only, and female+male intervention. Despite the lack of effects in targeted households when only women are targeted, targeting women alone does lead to a significant reduction of 20 percentage points (50%) in the probability of observing a girl child marriage in the village level data. This effect, however, is not significantly different from the effect in the male arm. We provide suggestive evidence that the impacts of the joint arm and the female-only arm at the village level are driven by villages where our target women have "high agency" in their communities, as proxied by their ability to leave their compounds of residence, their education and their attendance in community meetings. We offer the interpretation that women spark coordination on a new age-of-marriage norm in the village, for example via conversations about the intervention and about reductions in child marriage as they emerge at the village level.

To explain this pattern of results across arms, we consider treatment effects of our intervention on beliefs of fathers and mothers. We observe updating of beliefs on two domains: (i) beliefs about returns to spousal quality; (ii) beliefs about age-of-marriage norms. With respect to beliefs about returns to spousal quality, both fathers and mothers in all arms update their beliefs that – conditional on delaying their daughters' marriage to 18 or 20 – it is more likely that the education level of the future spouse of their daughter is at least secondary school or high school. While effect sizes on updating of fathers on these spousal quality returns in the female arm appear lower, and are not significantly different from the control group at midline, we cannot reject the null that updating on spousal quality returns is the same for fathers and mothers in all arms. With respect to beliefs about age-of-marriage norms, however, only in arms where women are treated, either alone or jointly, do prevailing age-of-marriage norms become salient. It is in these arms where women – consistent with village-level reductions in child marriages – update their beliefs about age-of-marriage norms, and believe that other men and other women in their community become significantly less accepting of early marriage. Furthermore, and in contrast to the female arm, when men are jointly treated with women, fathers also significantly update on these age-of-marriage norms, in the same direction that mothers do.

To rationalize these results we offer an interpretation where fathers and mothers decide whether or not to delay the marriage of their daughter. Parents are assumed to have prefer-

ences over two domains (i) spousal quality returns and; (ii) deviation from age-of-marriage norms in their village. We assume that individuals that learn from the intervention that they may be able to increase their likelihood of a higher educated spouse, conditional on delaying their daughter's marriage, ceteris paribus, prefer to delay the marriage of their daughter immediately. Furthermore, we assume that individuals who prefer not to deviate from age-of-marriage norms and who are reminded – through the intervention – that delaying marriage may imply such a deviation, may be reluctant to delay marriage. However, as soon as they observe that other men and other women in the community become less accepting of early marriage – consistent with village level reductions in early marriage – this reluctance disappears. Given that we observe that fathers and mothers have similar beliefs about returns to spousal quality, but mothers are more accepting of early marriage, and less willing to deviate from age-of-marriage norms than fathers, this leads us to make the following predictions:

1. When women are targeted, mothers learn about potential returns to delaying marriage of their daughter in terms of spousal quality. However, the salience of age-of-marriage norms makes them initially reluctant to delay. When child marriages at village-level reduce, and they believe others in the community are less accepting of early marriage, they also prefer to delay. We offer the suggestive interpretation that they may even decide to not communicate spousal quality returns to fathers initially, until changes in norms are observed.

2. When men are targeted, both fathers, and through spillovers, mothers only learn about spousal quality returns, and both prefer to delay in the short- and long-run.

3. When men and women are targeted jointly, fathers prefer to delay immediately due to updating on spousal quality. Mothers, similar to the female arm, learn about potential returns to delaying marriage of their daughter in terms of spousal quality. However, the salience of age-of-marriage norms makes them initially more reluctant to delay than fathers. In the long-run, however, both fathers and mothers believe others in the community are less accepting of early marriage, and both prefer to delay.

We expand a recent literature that **targets men to change outcomes for women and children**, with some success (Bursztyn et al., 2020; Ashraf et al., 2020b; Sharma, 2021; Dhar et al., 2022; Shah et al., 2022). We provide a clean test of the extent to which household outcomes change if men, women or both are targeted with the same intervention

in the same context. We explain these results by showing that impacts relate to men's and women's updating of beliefs and information in response to the intervention, and their relative bargaining power in the household. A related literature provides evidence on the impacts of targeting the same conditional cash transfers at men versus women (Haushofer et al., 2019; Akresh et al., 2016), and adolescents versus parents (Berry, 2015; De Walque and Valente, 2018).

We also advance a literature that aims to **change information and beliefs of different members of the household** (e.g., Ricardo et al. (2011); Doyle et al. (2018); Bursztyn et al. (2020); Ashraf et al. (2020b); Vaillant et al. (2020)). Traditional models of intra-household decision-making typically assume symmetry of information between spouses (Lundberg and Pollak (1996); Chiappori (1992); Bourguignon et al. (1993)). However, subsequent empirical work finds that information asymmetry between spouses may explain household outcomes (e.g., Ashraf et al. (2014)). An emerging literature studies intra-household information flows and spillovers (Apedo-Amah et al., 2020; Ashraf et al., 2020b; Conlon et al., 2021; Fehr et al., 2022). We contribute to this literature by providing novel evidence that men and women in the household appear to update beliefs on different domains when provided with the same information, unless information is provided to both.

We also contribute to a literature on **interventions that seek to delay marriage;** see Malhotra and Elnakib (2021) for a review. Laws prohibiting child marriage — where they exist — often suffer from implementation issues in low-resource contexts and have limited to no impact on delaying child marriage (Collin and Talbot, 2017; McGavock, 2021; Wilson et al., 2022). Economists have typically focused on poverty and consumption-smoothing as drivers of early marriage (Corno et al., 2020; **?**; Tapsoba, 2022). Many child marriage interventions address these drivers by seeking to ease households' financial constraints, for example through cash transfers and education subsidies (Baird et al., 2010, 2011, 2019; Duflo et al., 2015). While such interventions have been shown to delay marriage, they require relatively large upfront costs, and are typically conditional on schooling or provided through the schooling system. Such interventions may have less impact in contexts such as Pakistan where girls leave school very early, several years before the age where they are at greatest risk of child marriage (14-17 years). Instead, we provide evidence on an intervention that is aimed at information and beliefs. Our intervention is low-cost and does not depend on costly financial transfers or girls being in school, and can be straightforwardly replicated by local NGOs elsewhere. It produces sizeable impacts on delaying marriage, with spillovers

at the village level as well as the household level.

In contexts such as Pakistan where child marriage is prevalent, marriage markets tend to coordinate on an early age of marriage due to social norms related to chastity and obedience (Bicchieri et al., 2014), and expectations about match quality and dowry payments (Anderson, 2007; Adams and Andrew, 2021). Even if parents wish to deviate from the prevailing norm and delay their daughter's marriage, marriage markets may get stuck at an early-marriage norm due to coordination failure. In theory, a signal to coordinate on a new norm could shift the norm in the community to later marriage (Buchmann et al., 2021). We provide evidence that a community-based intervention delivered to the right decision-makers (in our case, audiences involving women) can do so.

Related, we contribute to a growing literature on the effectiveness of **edutainment interventions** in promoting improvements in outcomes for women, e.g., health, education, women's empowerment, as well as in broader social cohesion (Jensen and Oster, 2009; La Ferrara et al., 2012; Banerjee et al., 2019; Roy et al., 2019; Armand et al., 2020; Green et al., 2020; Glennerster et al., 2021; Donati et al., 2022). We directly test the impact of broadcasting the same content to different groups of individuals within a community.

2 Context and child marriage intervention

Pakistan is a context with particularly high rates of early marriage: even among girls currently aged 20-24, 21% were married before 18 (UNICEF, 2019). Only 13% of girls study beyond the ninth year of school, corresponding to approximately age 14 (*ibid.*). Our study takes places in the provinces of Sindh and Punjab, where the legal marriage age for girls and boys is 18 years. We worked with local NGOs to design an intervention to inform participants of the costs and benefits to delaying marriage. In our setting, early marriage happens in a context of dowry and village-level age-of-marriage norms. On average there are 200 households per village and 3.6 marriages per village per year. 90% of marriages observed in our study happen between spouses from the same village.

In our context, in 90% of households, fathers are expected to make the final decision about marriage of the adolescent, but in 70% of them, mothers are involved in the decision. The gender of the adolescent does not lead to significant differences in terms of involvement by either of the parents. In terms of beliefs about the health risk of early marriage, fathers are more likely to name poor health of the future bride and her children, while mothers are more likely to name maternal mortality. In terms of future expectations of spousal

quality, there are no significant differences between fathers and mothers in terms of expected education and best education of the future spouse. Mothers are more accepting of early marriage and are less likely to want to deviate from the village age-of-marriage norm. However, fathers and mothers do not significantly differ in their beliefs about the attitudes of community members towards early marriage, nor their misperception of these norms (See Table A1 and A2).

The intervention was implemented by local NGO partners. The NGO staff invited individuals from our target households (see below) to participate in the intervention, selecting the gender of the individuals according to the village's treatment status (see below) — men, women, or both. The intervention was mainly held indoors, and spaces were naturally limited to twenty participants, and only individuals from our target households were invited. Other households in our study villages did not participate, and we estimate that, on average, we treat 15% of the households with children on the marriage market.[2]

The intervention consisted of an educational entertainment (edutainment) intervention through a mobile cinema screening of a pre-recorded street-theatre play, developed by the local NGOs and performed by local actors, followed by a facilitated group discussion. Approximately three months later, the local NGO held a follow-up facilitated group discussion with the same participants, following a carefully scripted format focusing on the themes raised in the screening. The intervention took place over the first six months of 2019.

The content of the play focused on everyday situations related to marriage that had been observed by the local NGOs in these communities. Focus group discussions (FGDs) were held separately with men, adolescent boys, women, and adolescent girls in these communities to inform the details of the intervention content. The characters in the play embodied the various positions on early marriage that emerged in the FGDs. The characters discussed costs and benefits of marrying a child early or late, again as mentioned by participants in the FGDs. In particular, the script stressed the rights of women and girls; the costs of early marriage in terms of health, education, and potential labor-market opportunities for both the young married couple and their children; perceived costs of deviating from prevailing age-of-marriage norms; and other potential impacts on the match quality in terms of desirable spousal attributes. The play lasted approximately ten minutes.

The format of "street theater" was chosen to make the content engaging and because

[2]In our 177 villages we observe 1383 marriages over 26 months, and thus 3.6 marriages per village per year. Over that same period of time, we observe 188 marriages in our targeted households, so that is roughly 0.53 marriages in a year. So 15% of the "village market" is treated

it is familiar to participants. Street theater is a popular art form in South Asia, and uses emotion, immersion, and perspective-taking to address sensitive social and political themes and raise awareness among the public in an entertaining way. The theater performance was written, directed and performed by local actors and organizations with extensive feedback and piloting from the research team. The seriousness of the educational content was juxtaposed with scenes of situational humor, to enhance engagement with the intervention.

The movie screening was followed by a group discussion, which followed a standardized format and was facilitated by a gender specialist from the local NGOs. The facilitator asked questions about participants' experiences with the movie, the views of the various characters, and the consequences of early marriage. The discussion lasted for 30 minutes. Community discussion, sometimes with facilitation, is common after a street theater performance. In the second visit to each village approximately three months later, the implementing organizations again conducted structured group discussions based around the content of the movie with the same participants. The same gender specialist led these discussions, which lasted 50 minutes. In the female+male intervention, two separate sessions were conducted - one for males and one for females from the same household, which is seen as culturally appropriate in the given context. In this treatment arm participants were explicitly informed that the other gender was participating in the same intervention.

3 Experimental design

We conducted a cluster-randomized controlled trial in 177 villages in Sindh and Punjab provinces in Pakistan. The villages were randomly assigned into four treatment groups:

1. The female intervention (F): Targeting women only;
2. The male intervention (M): Targeting men only;
3. The female+male intervention (F+M): Targeting the intervention at both genders simultaneously; or
4. The control group (C): No intervention.

The screening of the theater performance and the group discussions were held in communal areas in the village: typically a compound or a room of a community building. In most villages men and women were not allowed to attend the intervention jointly in the

female+male arm. Therefore, in this arm men and women attended separately but simultaneously. Care was taken to inform both groups that the other group would be watching the same screening and would be discussing the same topics at the same time.

Our target households were mobilized to participate in the intervention a few days prior to the theater performance screening, by a designated focal person from the village who announced the intervention to them. This focal person, along with the staff of the local NGO encouraged these target households to attend.

3.1 Sampling and randomization

We conducted the sampling and randomization in three stages. First, the local NGOs selected villages for inclusion in the study. To minimize the risk of contamination across villages, we excluded villages that had less than 1.6 kilometers between their outer boundaries, based on a mapping exercise conducted with the local NGOs and local government offices. This left 80 eligible villages from Sindh Province and 97 eligible villages from Punjab Province. Next, we collected baseline village-level data on key village characteristics including presence of and distance to primary and secondary boys/girls/mixed schools, presence of female teachers, distance to nearest town, presence of health center and tea shop, population size, and mobility of women in the village.

We next conducted a household listing exercise to obtain a census of households in each village that were eligible to participate in our study. The eligibility criteria were that households needed to have at least one unmarried adolescent son or daughter aged 14-17 years and needed to have at least one adult father or male caregiver and one adult mother or female caregiver in the household. A household was defined as eating from the same stove ("choola"). Ages of adolescents were verified either through National Identity Card (NIC), or a Birth Registration Certificate (B-Form) where applicable.[3]

From the census of eligible households, we randomly selected ten households per village to participate in our study: five households with an adolescent boy ("boy households") and five households with an adolescent girl ("girl households"). As a result, the planned sample size was 1,770 households (10 households in each of the 177 villages – with three respondents per household: father, mother, and either an unmarried adolescent boy or an

[3]In Pakistan, citizens who are age 18 years and older are eligible for a National Identity Card. It is possible, given that our villages are remote and rural, that not all households have applied for these cards. Birth Registration Certificates (B-Form) are issued by the local government at the time of birth. They contain the name and date of birth (DOB) of the individual in question and the name and DOB of their parents as well as siblings.

unmarried adolescent girl). Some villages did not have a sufficient number of households meeting the selection criteria due to their small size, leading to a final sample size of 1,687 households (5,061 respondents): 756 households (2268 respondents) in Sindh province, and 931 households (2793 respondents) in Punjab province.

After the baseline survey, we randomly assigned villages to one of the four treatment arms, after stratification first by district and second by Mahalanobis distance matching on village-level characteristics.[4] 44 villages were assigned to receive the male intervention; 45 villages were assigned to receive the female intervention and 44 villages the female+male intervention. The remaining 44 villages were assigned to the control group.

4 Data and descriptive statistics

Baseline data were collected in July and August 2018, before the intervention was introduced in the treatment villages. In Punjab Province, we were able to conduct the baseline household listing exercise (including adolescent's gender, age and marital status) and select our target households; but we were unable to conduct a full baseline survey due to the security situation at the time of the baseline. Randomization of villages into treatment arms was conducted after the baseline survey, and before the start of the interventions. The security situation in Punjab subsequently eased, and allowed the intervention to go ahead in Punjab according to the assigned treatment arms. The midline survey was conducted from November 2019 until March 2020, i.e. four to six months after the intervention had ended in the treatment villages and just before the start of the COVID-19 pandemic. When we visited the target households in Punjab for the midline survey, we included retrospective baseline questions on some outcomes of interest. An endline survey was conducted between September 2020 and March 2021, i.e., 18 months after the intervention and during the later stages of the COVID-19 pandemic. We pre-registered the RCT and submitted pre-analysis plans for the analysis of the midline and endline.

[4]Our study area covered two districts in Sindh, and two in Punjab. Within each district, the Mahalanobis distance score was computed for each of our sample villages based on the following list of village-level baseline variables: boys only primary school; girls only primary school; mixed gender primary school; girls only secondary school; distance to nearest primary girls' school (in minutes); distance to nearest girls' secondary school (in minutes); are girls allowed to leave the compound; distance to the nearest town (in minutes); presence of teashop; whether the village is a main village or sub-village; total number of households; availability of female teachers in girls' school; and presence of a primary health care center. If in a district, the variable had less than or equal to 2 observations or a correlation $>= 0.6$ with other variables it was not included in its score computation. Villages were grouped into groups of 8 villages based on the Mahalanobis distance score, and these 8 villages were subsequently randomly assigned to either one of the treatment arms or the control arm.

4.1 Household survey data

Household survey data were collected at baseline in Sindh, and at midline and endline in both provinces with three respondents per household: the father, the mother and the adolescent child. From the father we collected data on household demographic information; education, employment, and marital status of all household members; household financial and wealth indicators; and expenditures. From both the father and mother we collected data on their marital history and on decision-making in the household. From all three respondents we collected data on preferences, attitudes, expectations, and beliefs about marriage, with a focus on child marriage (i.e., marriage before age 18) and early marriage of girls. We also asked all three household members about the adolescent child's education, marital status, and (conditional on marriage) the age at the time of marriage and spousal characteristics. Finally, we elicited all three respondents' attitudes towards domestic violence, but elicited actual experiences of violence from the mother only.

4.2 Village-level observational data on marriages

Throughout the entire study period from September 2018 until March 2021, we collected monthly village-level marriage data in both Sindh and Punjab provinces. We do not use official administrative data on marriage registrations, since pilot investigation showed that few marriages are registered, and we would especially expect child marriage to remain unregistered due to its illegal nature. Instead our research field coordinators visited a central location in each village at monthly intervals. The field coordinator mapped out all marriages that happened in the village since their last visit by interviewing a series of individuals independently, and continuing to question different individuals until they had cross-checked that the information was complete and correct. Village-months after and including July 2019 are considered post-treatment months, i.e., after completion of the intervention; while village-months before (not including) July 2019 are considered pre-treatment months, i.e. before or during intervention. The data provide a listing of each marriage that took place in that month, the age of the bride and groom, and the origin of the bride and groom as either from the village or another village.

4.3 Balance

Table 1 shows descriptive statistics and balance checks for household-level variables,[5] while Table A3 shows the same for a pre-specified list of village-level variables.[6] We report the mean and standard deviation in each experimental arm, the p-value for the test that the difference in means between each combination of experimental arms is zero, and the normalized differences between each combination of experimental arms. Our household- and village-level variables are well balanced across treatments. The p-value on the difference in means for each household-level variable is never statistically significant. Only one out of 72 tests for village-level variables has a p-value of less than 0.10. The p-value of the F-statistic of joint significance is never significant. Normalized differences in means are never above 0.13 for the household-level variables; and mostly below the rule of thumb of 0.25, as suggested by Imbens and Rubin (2015), for the village-level variables.

Table 1 confirms that, by construction, 50% of target households had an adolescent girl surveyed ("girl households") and 50% of target households had an adolescent boy surveyed ("boy households"). The average age of the surveyed adolescent was 15.3 years, and consistent with our selection criteria, their ages ranged from 14 to 17 years at baseline. 36% of the surveyed adolescents were promised/engaged to be married at baseline, but as per our selection criteria none were married. 56% of adolescents were in school at baseline, with the percentage of girls who are in school much lower than that for boys. Parents' average years of schooling is low: 4.5 years for fathers and just 1.2 years for mothers. The average age of (first) marriage of the father was 22.4 years, and the average age of the father's (first) spouse was 18.4 years. Most of parents' marriages (72%) involved a dowry, i.e., a transfer of money or property by the family of the bride to the family of the groom at the time of marriage. Meanwhile, Table A3 highlights that in about 70% of the study villages females

[5] Adolescents' age and gender were the only household-level variables pre-specified for balance checks, since there was only a pre-survey listing in Punjab rather than a full baseline survey due to the security situation. In case there were inconsistencies between adolescents' age at midline compared to their age at baseline (Sindh province) or pre-survey listing (Punjab province), age was verified at midline by the enumerator using National Identity Card, Child Registration Certificate or Birth registration Certificate as applicable. For adolescent age, we report balance checks on this verified midline age minus one year. For 32 adolescents we do not have their age at midline, so we use their baseline age instead. Robustness checks using different ways to address inconsistencies in adolescent age are available from the authors upon request. In Punjab, during the midline survey we asked 'retrospective baseline' questions. For balance checks on non-pre-specified variables, we use the baseline values for Sindh, and the responses to the retrospective baseline questions for Punjab. These variables are primarily presented for descriptive statistics, and not balance checks.

[6] In Table A3, two pre-specified dummy variables (whether there is a girls' secondary school in the village and whether there is a primary health care center in the village) had to be dropped since there was insufficient variation in the data.

can leave their compound of residence unaccompanied by a male family member; and on average sample villages have about 170 households.

4.4 Attrition

Tables A4 and A5 present attrition rates by treatment arm for midline and endline respectively; for fathers, mothers and entire households. In Columns 5-10, we test for differential attrition between each experimental arm. In Sindh, where we conducted a baseline survey, we consider a household or individual respondent to have attrited if they participated in the baseline survey but they were not available during the midline or endline survey respectively. In Punjab, since we were not able to conduct a full baseline survey due to security concerns, we consider a household or individual to have attrited if they were randomly selected at baseline from the household listing to participate in the surveys and intervention, and we were not able to survey them during the midline or endline respectively.

The average attrition rates in the control group are low: 5.3% for fathers, 1.2% for mothers, and 0.7% for households at midline; 13% for fathers, 6% for mothers, and 4.6% for households at endline.[7] We are able to recover detailed information on outcome variables for adolescents from their parents or other household members even when the adolescent is absent, as long as the whole household has not attrited.

4.5 Compliance and Participation

Table A6 shows that the gender composition of treatment arms was perfectly complied with. In villages assigned to the male arm, there were no women that participated in the intervention, and in villages assigned to the female arm there were no men that participated. We find no evidence that the gender that was targeted had an influence on the number of individuals participating in the intervention. On average, 18 women from target households participated in the female arm; and on average 16 men from target households participated in the male arm; and 15 men and 16 women participated in the female+male arm. This suggests that it is unlikely that differential participation of men and women across treatment arms explains any of our differential results.

[7] At midline, even though we find that the p-value of one of the 18 tests is significant at the 10% level and one out of the 18 tests is significant at the 5% level, after correcting for the false discovery rate (FDR) across the 6 experimental arm comparisons at the household or the level of each individual, we find that the q-value is not significant. We also note that for the p-values that are significant, the raw difference in the number of attriters is comparatively low: 13 mothers attrited in the male intervention versus 5 in the control group; 9 households attrited in the male intervention versus 3 in the control group.

Table 1: Household-level Descriptives and Balance.

	(1) C	(2) F	(3) M	(4) F+M	(5) F vs C	(6) M vs C	(7) F+M vs C	(8) F vs M	(9) F vs F+M	(10) M vs F+M
Adolecent is female	0.509	0.488	0.475	0.504	-0.022	-0.035	-0.005	0.013	-0.016	-0.029
	(0.500)	(0.500)	(0.500)	(0.500)	(0.320)	(0.125)	(0.847)	(0.578)	(0.421)	(0.177)
					[-0.043]	[-0.069]	[-0.011]	[0.026]	[-0.032]	[-0.058]
Adolecent's age	15.332	15.448	15.473	15.408	0.116	0.142	0.077	-0.025	0.040	0.065
	(1.170)	(1.243)	(1.251)	(1.173)	(0.212)	(0.107)	(0.457)	(0.774)	(0.655)	(0.456)
					[0.096]	[0.117]	[0.065]	[-0.020]	[0.033]	[0.055]
Adolescent is engaged	0.360	0.279	0.324	0.266	-0.081	-0.035	-0.094	-0.045	0.013	0.059
	(0.481)	(0.450)	(0.469)	(0.443)	(0.297)	(0.651)	(0.194)	(0.533)	(0.841)	(0.385)
					[-0.174]	[-0.075]	[-0.204]	[-0.099]	[0.030]	[0.133]
Adolescent in school	0.561	0.540	0.553	0.584	-0.021	-0.007	0.023	-0.014	-0.044	-0.030
	(0.497)	(0.499)	(0.498)	(0.494)	(0.663)	(0.891)	(0.661)	(0.771)	(0.346)	(0.559)
					[-0.042]	[-0.015]	[0.047]	[-0.028]	[-0.089]	[-0.062]
Years of schooling father	4.464	4.835	5.045	5.052	0.371	0.581	0.588	-0.210	-0.217	-0.007
	(4.821)	(4.759)	(5.091)	(5.104)	(0.333)	(0.158)	(0.229)	(0.650)	(0.669)	(0.957)
					[0.078]	[0.117]	[0.118]	[-0.043]	[-0.044]	[-0.001]
Years of schooling mother	1.187	1.274	1.647	1.511	0.087	0.460	0.324	-0.373	-0.237	0.136
	(3.192)	(3.000)	(3.506)	(3.394)	(0.700)	(0.105)	(0.249)	(0.190)	(0.389)	(0.755)
					[0.028]	[0.137]	[0.098]	[-0.114]	[-0.074]	[0.040]
Marriage age - father	22.386	22.492	22.726	22.054	0.106	0.341	-0.332	-0.235	0.438	0.672
	(4.923)	(5.176)	(5.882)	(5.114)	(0.718)	(0.467)	(0.439)	(0.688)	(0.288)	(0.186)
					[0.021]	[0.063]	[-0.066]	[-0.042]	[0.085]	[0.131]
Marriage age - father's spouse	18.363	18.386	18.540	18.297	0.023	0.177	-0.067	-0.153	0.090	0.243
	(3.467)	(3.707)	(4.042)	(3.967)	(0.855)	(0.552)	(0.831)	(0.677)	(0.731)	(0.489)
					[0.006]	[0.047]	[-0.018]	[-0.040]	[0.023]	[0.061]
Parents had dowry	0.723	0.733	0.718	0.691	0.010	-0.006	-0.032	0.015	0.042	0.027
	(0.448)	(0.443)	(0.451)	(0.463)	(0.878)	(0.933)	(0.630)	(0.815)	(0.522)	(0.700)
					[0.021]	[-0.013]	[-0.071]	[0.034]	[0.093]	[0.058]

Notes: Columns 1-4 show the mean of the variable in each experimental arm, i.e. control (C); intervention is targeted at women and girls only (Female intervention: F); at men and boys only (Male intervention: M); or at both genders simultaneously (Female+male intervention: F+M). Standard deviations are reported in parentheses. Column 5-10 shows the difference in means for each combination of experimental arms. In Columns 5-10, values in parentheses are p-values from robust standard errors clustered at the village level (unit of randomization) using a logit regression for binary variables, and an OLS regression for continuous variables. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. Normalized differences are reported in square brackets, calculated as the difference between the sample means of experimental arms divided by the square root of the sum of the sample variances.

"Adolescent is engaged" uses baseline data from Sindh province only, as we did not have a retrospective measure for this in Punjab province. Marriage age of father is of his first marriage, and marriage age of father's spouse is of his first spouse. "Dowry" is a transfer of money or property by the family of the bride to the family of the groom at the time of marriage.

5 Results

Our preferred specification for the household-level data is a discrete approximation of a censored duration model, where we estimate the average annual hazard rate into child marriage for children between 12-17 years old, following (Corno et al., 2020). The censoring of our data happens as a result of the fact that adolescents at baseline are between the ages of 12-17. By the time of our midline and endline, some girls will have been married below the age of 18, some will have passed the 18-year threshold of child marriage without being married, and some will be under 18 by midline/endline, and will still be at risk of child marriage. Therefore the duration we are interested in, is the time between t_0, the age when an adolescent is first at risk of being child married, and the moment when she turns 18, and is no longer at risk of child marriage. We convert our data into an adolescent-year panel, where each adolescent contributes six observations to the sample, one observation for each at-risk year between 12 and 17, until she is either married or passes the 18-year threshold, after which she exits from the data. We then estimate the probability of marriage of adolescent i, in agecohort k, at current age t, in village v and strata s.

$$Y_{iktvs} = \beta T_v + \phi_k + \gamma_t + \delta_s + \epsilon_{iktvs} \tag{1}$$

where Y_{iktvs} is the average annual child marriage hazard rate. T_v is a vector of dummies for the village being assigned to each of our treatment arms — male-only, female only, or female+male — relative to the control group. The vector of estimated coefficients β, is our variable of interest, and represents the intent-to-treat effects of our interventions on the probability of marriage. We estimate the intent-to-treat effects since not all targeted individuals in targeted households in villages assigned to treatment were always able to attend the intervention. δ_s are strata fixed effects based on the Mahalanobis distance strata per district, which are included for inference since randomization was blocked on strata (Bruhn and McKenzie, 2009). Standard errors are robust to village-level heteroskedasticity, as this was the level of randomization. For adolescents that got married between 12 and 17, the dependent variable, Y_{iktvs}, is a variable coded as 1 in the agecohort the adolescent gets married and 0 otherwise. For adolescents that are unmarried at the time of the midline/endline and are still at risk of being child married, the dependent variable will be coded as 0 for agecohorts below the adolescents' current age, and as the probability of marriage at each specific agecohort for any of the agecohorts above the current age of the adolescent.

Our pre-specified specification for the household-level data are logit regressions for the binary outcomes "marriage" and "child marriage," and OLS regressions for the continuous variable "age of marriage" of the following form:

$$Y_{ivst} = \alpha + \beta_1 T_v + \rho T_v \times G_i + \theta G_i + \psi_s + \mu_{ivst} \tag{2}$$

where Y_{ivst} is the outcome variable of interest at survey round t, midline or endline; for individual i, where i is father, mother, or adolescent child; in village v, in strata s. G_i is a dummy that is one if the gender of the adolescent child in the household is a girl. The vector of estimated coefficients β_1, therefore, represent the intent-to-treat effects on households with an adolescent boy, and $\beta_1 + \rho$ represents the intent-to-treat effects on households with an adolescent girl. Other variables are specified as in Equation 1. We also report additional p-values for the treatment coefficients as calculated from randomization inference tests (Young, 2016). Finally, we report q-values correcting for false discovery rate within each pre-specified family using the Benjamini–Hochberg procedure (Benjamini and Hochberg, 1995; Anderson, 2008). These results are presented in Table A7 in the Appendix.

Table 2 presents the average treatment effect of each treatment arm on the average annual child marriage hazard rate for girl adolescents at midline (Column 1) and endline (Column 2) as specified in Equation 1, our preferred specification. In the control group, the average annual probability of child marriage for girls aged 12 to 17 increased across survey rounds from 1.7 percent to 2.8 percent per year, as the girls got older. We find that targeting the intervention at women only does not lead to significant impacts on the probability of child marriage for girl adolescents, either in the short- or the long-run, when compared to the control group. It should be noted however, that the point estimate is positive in the short-run, but negative in the long-run. We show that targeting the intervention at men only, significantly reduces the average annual probability of child marriage for girl adolescents both in the short- and in the long-run. At midline, the reduction is 1.2 percentage points (p-value <0.01) per year on average, a 71% reduction relative to the average annual hazard in the control group. At endline, 1.5 years after the intervention, the average annual reduction is maintained at 1.2 percentage points (p-value <0.05), but now relative to a control group mean of 2.8 percent, implying a 43% reduction. At midline, the estimate for the male arm is significantly larger than the estimate for the female arm (p-value <0.01), while we can not reject the null that the estimate in the male and female arm are similar at

endline. When both women and men are jointly treated, there is also a reduction in the likelihood of marriages for girl adolescents; but these impacts are only significant in the long run. At midline, we find an insignificant reduction in the probability of marriage of 0.5 percentage points; while at endline we find a significant reduction of 1.2 percentage points (p-value<0.05), again representiing a 43% reduction relative to the control group mean. At midline the probability of child marriage is significantly larger in the female+male arm than in the male arm (p-value<0.05), but significantly smaller than in the female arm (p-value<0.10). Again, at endline, we can not reject the null that the estimates in all arms are the same. For robustness, in Columns (3) and (4) we present the marginal effects of a censored (ages 12 to 17 as above) Cox proportional hazard model with failure defined as marriage under 18.[8] The estimates present the percentage reduction in the hazard rate relative to the control group hazard rate at midline (Column 3) and endline (Column 4) Results are qualitatively similar as compared to our preferred specification, except for the fact that the significant point estimate at endline in the female arm suggests a 38.9% (p-value<0.05) reduction in the hazard rate of child marriage as compared to the control group. Note that the percentage changes in the male arm and female+male arm at both midline and endline are of similar magnitude as in our preferred specification. In terms of comparisons across the treatment arms we also draw similar conclusions, namely that the estimate of the reduction in the hazard rate, at midline, is significantly larger than the estimates in the female arm and female+male arm. At endline, however, we can again not reject the null that the reductions in the hazard rate is the same in all treatment arms.

[8] We estimate $h_{ikvs}(t) = h_{0ikvs}(t)\exp(\beta_3 T_v + \zeta_k + \lambda_s)$, where $h_{ikvs}(t)$ is the hazard rate at time t (midline or endline) in the specific treatment arm, h_{0ikvs} is the hazard rate at the same time t in the control arm. Other variables are specified as above.

Table 2: Household - Marriage & Child Marriage Outcomes - Adolescent Girls.

	Probability of child marriage		Cox proportional hazard rate	
	(1)	(2)	(3)	(4)
	Midline	Endline	Midline	Endline
Female	0.003	-0.005	-0.194	-0.389
	(0.005)	(0.006)	(0.248)	(0.174)**
Male	-0.012	-0.012	-0.637	-0.395
	(0.003)***	(0.005)**	(0.125)***	(0.160)**
Female+Male	-0.005	-0.012	-0.274	-0.430
	(0.004)	(0.005)**	(0.209)	(0.156)***
Observations	4927	4718	4927	4718
p-val M $\neq$ F	0.001	0.382	0.001	0.280
p-val FM $\neq$ F	0.088	0.440	0.728	0.751
p-val FM $\neq$ M	0.019	0.874	0.003	0.431
Control Mean	0.017	0.028		

Notes: Table presents treatment effects on the average hazard rate into child marriage for girl adolescents from our target households, using a discrete approximation of a censored duration model estimated from Equation 1. Marriage outcomes are as reported by the adolescent themselves as pre-specified in the pre-analysis plan. In Columns 1 & 3, reports estimation for midline and Column 2 & 4 for endline. Data is a adolescent-year panel, where each adolescent contributes six observations to the sample, one observation for each at-risk years between 12 and 17 until she is either married or passes the 18-year threshold, after which she exits the data. The dependent variable is the average annual child marriage hazard rate for an adolescent in a given age cohort and at current age. Fixed effects for age cohort, current age and randomization strata are included. Standard errors are clustered at village level (unit of randomization), and are indicated in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "Control Mean" indicates the average annual probability of child marriage over cohorts in the control group. *P*-values for all comparisons of treatment effects between each experimental arm are reported at the bottom of the table: male arm (M), female arm (F) and female+male arm (FM).

Table A7 in the Appendix shows the estimates from our pre-specified model, as in Equation 2. Qualitatively, the results in Table A7 are similar, but less precisely estimated. The control group means in Columns (1) and (2) show that, at midline 11% of targeted adolescent girls are married, and this percentage has increased to 22 percent at endline. Columns (3) and (4) show that, conditional on being married, the average age of marriage is 16.6 years at midline and 17.0 years at endline in the control group. Columns (5) and (6) show that, respectively, 7% and 12% of targeted girl adolescents are child-married in the control group at midline and at endline. We note that the rate of child marriage in our control group is substantially smaller than the rate that is reported in the Pakistan Demographic and Health Survey of 2017-2018, due to our selection criteria of adolescents being unmarried and between 12-17 years old at baseline. By midline 75%, and by endline 55% of girls in our target households are still under the age of 18, and hence could still be at

risk of being child-married. In particular, at midline, we still see a significant reduction in child marriages in the male arm (p-value <0.05), and no significant reduction compared to the control group in the female arm and the female+male arm. The estimated reduction in the male arm is also significantly different from the estimated coefficient in the female arm (p-value 0.067), and marginally significantly different from the female+male arm (p-value 0.138). At endline, we again observe significant reductions in child marriage in the male arm (p-value <0.10) and the female+male arm (p-value <0.05), and we can again not reject the null that the coefficient in each treatment arm are the same at endline.

For adolescent boys, we find no impact of the intervention on marriage or age of marriage, at midline or endline. For child marriage, we find a marginally significant increase in the female+male intervention at midline, but no significant impact at endline (Appendix Tables A8 and A12). Boy adolescents aged 14-17 are much less likely to get married than girls: just 3% of boys in the control group are married at midline, and 7% at endline. Boys are also much less likely to be child-married: 1% and 4% of boys in the control group at midline and endline respectively, compared to 7% and 12% of girls at midline and endline respectively.

Our findings are robust to using randomization inference p-values. As explained above, our main specifications in Table 2 and Appendix Table A8 use the reports from the adolescents in the households. Our results on marriage of girl and boy adolescents are, however, robust to using reports by the father, the mother, or any of the three respondents in the household, as presented in Appendix Table A9 and A10.[9]

We focus on early marriage instead of early engagement, since most of the documented severe negative consequences to girls and to future children arise from practices that take place only after the actual ritual of marriage, such as conjugal living, the girl leaving her birth family's household, and consummation. We note that in this context, girls and boys can be promised or engaged by their families at a very early age or even at birth, while they continue to live with their birth family until the time of marriage. Nevertheless, for the majority of adolescent girls that are not yet engaged, we might be concerned that even though households decide to delay marriages, they might substitute this practice with engagements. Reassuringly, we show that, for girl adolescents who are unmarried at midline and endline, there is no significant increase in the likelihood of being engaged or newly engaged between survey rounds (Appendix Table A13).

[9]The qualitatively irrelevant differences in point estimates can largely be accounted for by a small number of respondents having attrited.

5.1 Child marriages at the village level

We use our village-level observational data to estimate impacts on all marriages in our sample villages. Our preferred estimates are village fixed-effects regressions with data aggregated into village-months, i.e. monthly summary statistics, at village-level. The village fixed-effect regressions take the following form:

$$Y_{vst} = \alpha + \beta_1 T_v + \beta_2 T_v \times post_t + \beta_3 post_t + \beta_4 \delta_s + \beta_5 \delta_s \times post_t + \epsilon_{vst} \quad (3)$$

where Y_{vst} is the outcome variable of interest at midline or endline for village v in stratum s at village-month t. T_v is a vector of dummies for the village being assigned to each of our treatment arms — male-only, female only, or female+male — relative to the control group. $post_t$ is a dummy that indicates that a village-month falls in the period after completion of the intervention, i.e. after and including July 2019. β_2 therefore combines the treatment effect of the intervention on treated households in the village, as well as spillover effects on other households in the village. We estimate β_2 for the period upto midline (January 2020) and endline (March 2021). δ_s are strata fixed effects, and $\delta_s \times post_t$ is included for inference since randomization was blocked on strata (Bruhn and McKenzie, 2009). Standard errors are robust to village-level heteroskedasticity, as this was the level of randomization (Abadie et al., 2023).

In Table 3, the variable "child marriage" is a dummy that takes the value 1 if, conditional on there being a marriage in the village in that month, there was at least one girl bride that was below the age of 18. The outcome "average age of marriage" is the average age of all girls who got married in the village in that month.[10] In Column 1 of Table 3, at midline, we find a significant reduction in child marriages of girls at the village level across all treatment arms. At endline (Column 2), we see that significant reductions are only sustained when women are treated alone or jointly, i.e. in the female and female+male arm. We estimate a 20 percentage points (p-value<0.05) reduction in the likelihood that at least one girl is married below 18 in each month in the female arm. In the female+male treatment arm, the effect is 24 percentage points (p-value<0.01). This reduced likelihood is more than a 50% reduction in child marriages as compared to the control mean. At endline, we find no significant impacts on girl child marriage when the intervention is targeted at men only. Our findings are robust to estimating impacts with marriages as the unit of

[10] Appendix Table A25 presents corresponding tables for boys (grooms).

observation (Appendix Table A26) .

Figure 1 decomposes the effect over time by plotting cumulative marriages in each of our post-intervention study months. The figure illustrates how the significant reductions in child marriages are sustained over time in the female and female+male arm. The 95% confidence intervals for the estimated coefficient in each village-month are always below the horizontal red line (zero threshold). Prior to and during midline (left shaded region), we observe significant reductions in child marriages in all three arms. This impact, however, fades out for the male arm over time but remains significantly different from zero for the female and female+male arm until the end of our study period. A possible explanation for the initial village-level reduction in all three treatment arms may be the visits of the local NGO to the community under the auspices of reducing early marriage of girls, which is legally prohibited. Our baseline survey shows that most respondents at baseline are aware of the legal age of marriage. In contrast, the sustained reductions in child marriages long after the intervention ends, which are only observed when women are treated individually or jointly, provide suggestive evidence that treated women play a key role in sustaining the reduction in child marriages at the village level.[11]

Column 3 and 4 in Table 3 show that targeting the intervention at women only significantly increases the average age of marriage of girls by 1.26 years (15 months) at midline and 0.65 years (8 months) at endline; while targeting women and men jointly only leads to a significant increase at endline, by 0.83 years (10 months). We find no significant impacts on the average marriage age of girls when the intervention is targeted at men only. The results are qualitatively similar when we estimate our impacts at the level of marriages, and are robust to using *minimum* age of marriage in a village-month instead of the *average* age.

The number of marriages observed at the village level (N=1383) substantially exceeds the number of marriages observed in our target households (N=188), implying that the large village-level effects are not driven only by marriages in our target households. We find no significant impacts on the likelihood of any marriage nor on the number of marriages per

[11] Women may share information because of strategic concerns. They may either aim to influence decisions of other households in the community per se (e.g., if women place some altruistic weight on reducing child marriage in other households); or they may aim to change the decisions by other households, community norms, or beliefs of local leaders, to affect the marriage market faced by their own children. Women may also spread information because of social returns to sharing new information, such as improved status. Women who do not participate in the intervention may also seek information from those women who do participate, more so than non-participating men seek information from participating men, for example given women's lower exposure than men to other sources of information. Alternatively or additionally, it may be that non-participating men and women feel more comfortable seeking information from participating women rather than participating men. We are not able to distinguish empirically between these potential mechanisms.

month. This finding suggests that the intervention does not change the general marriage market, but only impacts the likelihood of *child* marriages specifically (Appendix Table A29).

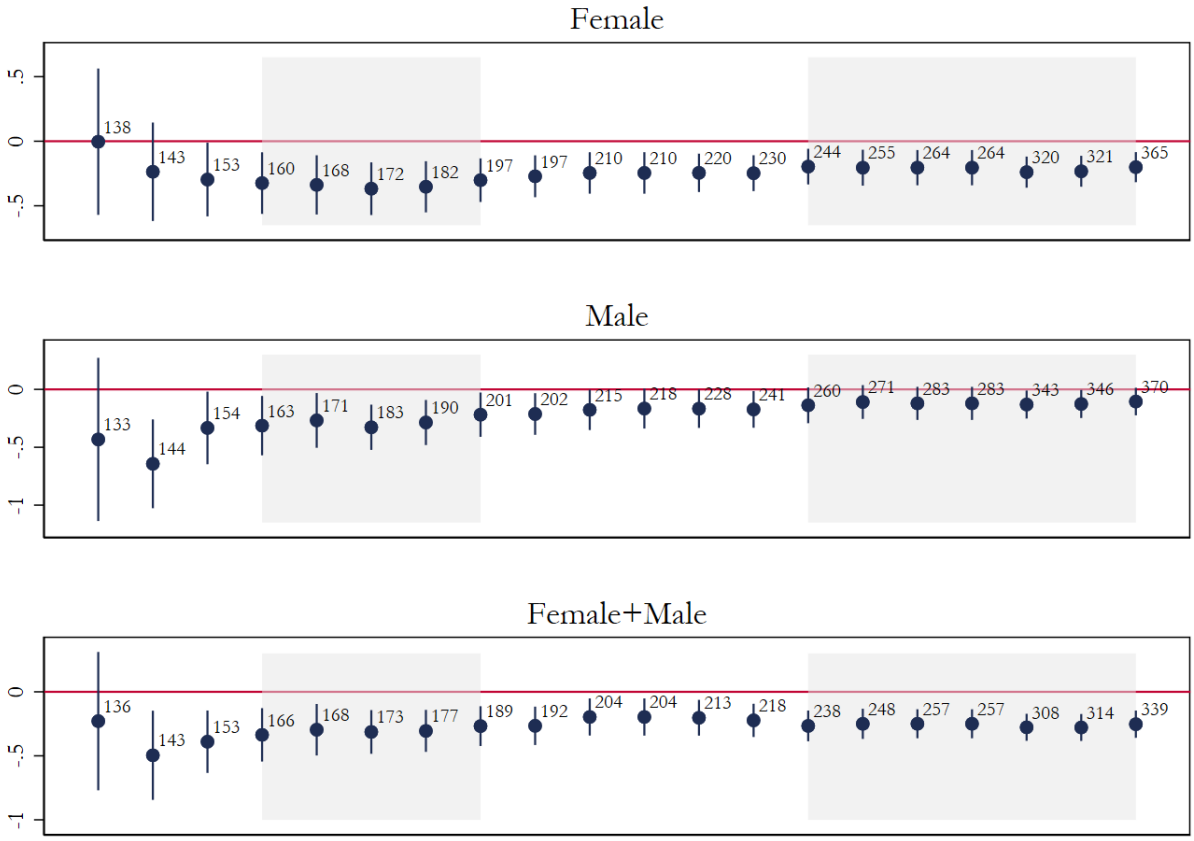
We provide suggestive evidence that sustained reductions in child marriages at the village-level in the female arm and female+male arm are driven by villages in which women from our target households have "high agency." We use three variables to proxy whether the women in our target households have "high agency:" their mobility, their education and their attendance in village meetings. For mobility, we exploit village-level data on whether or not women in the village are allowed to leave the compound of their household without being accompanied by a male household member. This is a rule that is "regulated" at village level. This rule is in effect in 30% of the villages in our sample. For education, we create a variable at the level of the village that takes value 1 if at least one woman among our target households in a village has any education. For attendance in community meetings, we create a variable at the village that takes value 1 if at least one woman among our target households in a village attended a community meeting in the past year. Table A28 shows that for all these three proxies, village-level reductions appear driven by women with "high agency." We offer the suggestive interpretation that women who are treated, if they have high agency in their communities, are able to spark coordination on a new norm in the village, for example via conversations about the intervention and about reductions in child marriage observed at the village level.

Table 3: Village-month level: (Child) Marriage Outcomes for Girls

	Child Marriage		Marriage age	
	(1) Midline	(2) Endline	(3) Midline	(4) Endline
Post × Female	−0.402***	−0.201**	1.265**	0.645*
	(0.132)	(0.082)	(0.577)	(0.341)
Post × Male	−0.335***	−0.097	0.725	0.253
	(0.117)	(0.081)	(0.458)	(0.343)
Post × Female+Male	−0.255**	−0.239***	0.732	0.831**
	(0.115)	(0.074)	(0.510)	(0.334)
Observations	673	1123	673	1123
Control Mean	0.643	0.413	17.333	18.458
p-val M ≠ F	0.621	0.218	0.322	0.268
p-val FM ≠ F	0.262	0.632	0.337	0.597
p-val FM ≠ M	0.505	0.067	0.987	0.101

Notes: Village fixed effects regressions with marriage data aggregated at the village-month level. Reported coefficients are estimates of β_2 from Equation 3. In Columns 1-2, the dependent variable is a dummy that takes value one if, conditional on at least one marriage taking place in the village during the observation month, any marriage had a girl (bride) that was below the age of 18 at the time of marriage. In Columns 3-4, the dependent variable is the average age of marriage of girls in the village in that month. If no marriages were observed in that month, the village-month was coded as missing. "Midline" counts observations between the pre-treatment months and January 2020 and "Endline" counts observations between the pre-treatment months and March 2021. The variable "post" is a dummy variable that takes on the value zero if the village-month lies in the period before (not including) July 2019, the period before or during the intervention; and takes on value one if the observation month lies in the period after the intervention was completed. All regressions include randomization strata dummies and their interaction with "post." Standard errors are clustered at the village level and are presented in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "Control Mean" reports the specific variable in the control group.

Figure 1: Village-marriage level: Cumulative Child Marriage Impacts by Study Month.



Notes: Cumulative treatment effects on child marriage per observation month using village fixed effects regressions at the level of marriages estimated at each subsequent month. All regressions include randomization strata dummies and their interaction with 'post' period. Standard errors are clustered at the village level. The dependent variable is a dummy that takes value one if the marriage involved a girl that was married at an age below 18. The marker represents the point estimate in that month, and the vertical lines above and below the marker the 95% confidence interval. The number above the marker presents the cumulative number of marriages upto that month in the respective treatment arm. The red horizontal line represents the zero threshold. The shaded region on the left represents our midline survey period (November 2019 until March 2020) and the shaded region on the right represents our endline survey months (September 2020 and March 2021). The top panel presents the treatment effects of the female arm versus the control arm over time. The middle panel presents the treatment effect of the male arm versus the control arm over time. The bottom panel presents the treatment effect of the female+male arm versus the control arm over time.

Finally, we find that targeting the intervention at women only does not lead to significant impacts on any of our marriage outcomes for girl adolescents. Distributions of age of marriage trace the control group distribution quite closely (See Figure A1 and Figure

A2). At midline, estimated reductions in marriages and child marriage in the male arm are significantly different from impacts in the female arm (Appendix Table A11), although we lose precision to make this comparison at endline.

The impacts in the female and female+male arm at village level are mirrored by target households reporting on marriage proposals they receive for their girl adolescents. Table A30 shows a significant reduction in marriage proposals for all girls in the female+male arm, as compared to the control arm; and a significant reduction for girls below the age of 18 in the female and female+male arm, as compared to the control. Effects are, however, not significantly different between treatment arms. It seems unlikely that effects are entirely driven by proposals from other target households: first, our households represent only a small fraction of households in the village with adolescents of marriageable age; and second, proposals normally come from boys older than the age of our target households. It therefore seems likely that the reduction in proposals to the girls in our target households reflects a shift in behavior by other households in the village; consistent with the village-level spillovers observed above.

6 Mechanisms: Spousal quality beliefs and age-of-marriage norms

To explain the differential pattern of impacts on child marriages in our targeted households across treatment arms, we next investigate the effect of our treatment arms on beliefs of fathers and mothers. Consistent with the content of our intervention, we collected panel data on beliefs of fathers and mothers about health — costs of early marriage to the child and grandchild; spousal quality — in terms of expected education of the future spouse conditional on delaying marriage; and social norms — beliefs regarding other community members' attitudes towards acceptability of early marriage.

With respect to beliefs about health, our intervention could have made salient information about health costs of early marriage to their adolescent child and any potential grandchildren. However, Appendix Tables A17 to A20 show that there is no consistent pattern of updating on beliefs about health costs, both mental and physical, to the child or grandchild as a result of our treatments. Both fathers and mothers already seem aware at baseline about the most extreme risks of early childbearing — namely the risk of death to young mothers and to their children — suggesting limited scope for interventions to make

such costs even more salient.

We do observe updating of beliefs as a result of our treatments on the two other domains of beliefs that our interventions were designed to address: (i) beliefs about returns to spousal quality; (ii) beliefs about age-of-marriage norms.

6.1 Beliefs about spousal quality conditional on delaying marriage

We measure beliefs about the returns to delaying marriage of a girl adolescent in terms of spousal quality as the expectation that the spouse will have completed secondary (grade 9 or 10) or high school education (grade 11 or 12), conditional on the adolescent girl being married at age 16, 18, or 20. Table 4 shows impacts on these beliefs if a girl's marriage is delayed until she is 18 or 20. The control group mean shows that between 60%-70% of fathers and mothers in the control group expect that – conditional on delaying their girl adolescents' marriage age to 18 or 20, their daughters' future spouse will have completed secondary school. For high school, these shares are substantially lower at 30% to 40% of fathers and mothers in the control group. It is important to mention that the share of fathers and mothers that expect a future spouse with secondary or high school education increases with the conditional age of marriage of the daughter. Appendix Table A16 shows that, conditional on a marriage age of 16, 30%-40% of fathers and mothers expect a future spouse will have completed secondary school and less than 10% expect a future spouse will have completed high school. As the conditional marriage age of the girl becomes higher, at 18 or 20, the share of fathers and mothers that expects a certain education level of the future spouse increases, to 50%-60% and 20%-30% for a marriage age of 18 (See Appendix Table A15) , and 70%-80% and 40%-50% for a marriage age of 20 (See Appendix Table A14). This suggests a positive correlation in expectations about the age of marriage of a girl, and the quality of the spouse in terms of his education level.

Table 4 shows that in the female arm, at midline, mothers significantly increase the expected likelihood that the future spouse of their daughter will have completed secondary or high school. Fathers at midline, although point estimates are positive, do not significantly update these beliefs, as compared to the control group. At endline, however, 18 months after the intervention, fathers do significantly update these beliefs in the female arm, as compared to the control group, while the point estimate for mothers appears to become slightly smaller.

In the male arm, at midline and endline, both fathers and mothers significantly increase

their conditional expectations of the education level of the future spouse. The magnitudes of the effects, and their precision, appears similar at midline and endline. In terms of comparisons of the male and female arm, however, we can in no case reject the null that the updating on these beliefs is the same.

In the female+male arm, both fathers and mothers also significantly increase their conditional expectations of the education level of the future spouse, and we can not reject the null that updating on these beliefs is the same as in the female only and male only arm. At endline however, despite similar reductions in child marriage in the female arm and the male arm, the significant treatment effects on spousal quality, as compared to the control group, disappear and also become marginally significantly smaller than the effects in the male arm in a one-sided test. This may point to the fact that the observed reductions in child marriages in the male and the female+male arm – which are similar in magnitude and precision – may be driven by another mechanism than returns in terms of spousal quality.

Table 4: Expected returns to delaying marriage to 18/20 in terms of education of the future spouse.

	Midline				Endlline			
	Secondary School		High School		Secondary School		High School	
	(1) Father	(2) Mother	(3) Father	(4) Mother	(5) Father	(6) Mother	(7) Father	(8) Mother
Female	0.054	0.111	0.079	0.119	0.096	0.060	0.078	0.087
	(0.191)	(0.042)**	(0.101)	(0.022)**	(0.057)*	(0.256)	(0.090)*	(0.094)*
	[0.191]	[0.042]**	[0.191]	[0.042]**	[0.091]*	[0.256]	[0.091]*	[0.188]
Male	0.086	0.131	0.096	0.146	0.098	0.108	0.093	0.114
	(0.048)**	(0.015)**	(0.043)**	(0.006)***	(0.039)**	(0.047)**	(0.045)**	(0.028)**
	[0.048]**	[0.016]**	[0.048]**	[0.012]**	[0.045]**	[0.048]**	[0.045]**	[0.048]**
Female+Male	0.074	0.121	0.088	0.110	0.033	0.055	0.038	0.004
	(0.062)*	(0.024)**	(0.069)*	(0.035)**	(0.534)	(0.308)	(0.413)	(0.944)
	[0.069]*	[0.035]**	[0.069]*	[0.035]**	[0.534]	[0.616]	[0.534]	[0.945]
Observations	769	815	769	815	721	783	721	783
Control Mean	0.681	0.617	0.372	0.363	0.619	0.643	0.378	0.397
M $\neq$ F	0.483	0.680	0.720	0.605	0.970	0.351	0.768	0.586
M $\neq$ FM	0.787	0.833	0.851	0.490	0.208	0.304	0.281	0.049
F $\neq$ FM	0.634	0.839	0.865	0.858	0.247	0.912	0.430	0.137
M > F	0.241	0.340	0.360	0.302	0.485	0.175	0.384	0.293
M > FM	0.394	0.416	0.426	0.245	0.104	0.152	0.140	0.024
FM < F	0.683	0.580	0.568	0.429	0.123	0.456	0.215	0.069
FM > F	0.317	0.420	0.432	0.571	0.877	0.544	0.785	0.931

Notes: Table presents post-estimated marginal treatment effects from Logit regressions for girl households. The dependent variable takes on value one if the respondent - mother or father - states that they expect that the future spouse of their adolescent daughter will have at least completed secondary (Grade 10 and above) or high school (Grade 12 and above), if she is married at 20 at midline (Columns 1-4) and endline (Columns 5-8). Regressions include fixed effects for randomization strata. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) are reported. In square brackets, q-values correcting for false discovery rate within each family using the Benjamini–Hochberg procedure are reported (Benjamini and Hochberg, 1995; Anderson, 2008). In each survey round, the family consists of the four schooling levels (primary, middle, secondary and high school) we elicited per respondent per treatment arm. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "Control Mean" indicates the share of respondents in the control group who expect the future spouse to have this respective education level when they marry their daughter at 18/20. P-values for comparison of treatment effects between experimental arms for various one-sided and two-sided alternative hypothesis are reported at the bottom of the table: male arm (M), female arm (F) and female+male arm (FM).

6.2 Beliefs about social norms around delaying marriage

We also investigate the impact of the treatment on beliefs about attitudes of other community members towards child marriage, i.e., village age-of-marriage norms. Since 90% of the

marriages we observe during the study period happen between a bride and groom from the same village, the attitudes of community members towards age of marriage of girls is likely important to parents, both as a social norm (with concomitant social returns and social sanctions) and because it impacts the relevant marriage market. We asked respondents to guess, out of ten men and ten women in a community just like theirs, how many would agree or strongly agree with a number of statements regarding the best age to marry a girl (e.g., "the best age to marry a girl is under 14") and the acceptability to marry a girl at a certain age (e.g., "marrying off a girl when she is 12-15 years old is acceptable"). We incentivized fathers and mothers to give their best guess of the correct responses, which we measured through pilot data collected separately in each province at the start of each survey round. In the pilot, we directly elicited individual attitudes towards these statements (unincentivized) from ten male and ten female respondents in villages similar to our study communities.

Table 5 shows the that mothers in the female and female+male arm consistently update their beliefs about the attitudes of other men and other women in the community. Specifically, in the female and female+male arm, mothers are less likely to believe that other community members find early marriage desirable or acceptable, consistently with the changes in village-level reductions in child marriages as observed in Figure 1. These effects remain significant after correcting for multiple hypothesis testing. In the male treatment arm, there are no significant effects on mothers' beliefs, as compared to the control group. We show that mothers in the male arm are significantly more likely to believe, in a one-sided test, that other community members are accepting of early marriage than mothers in the female and female+male arm.

Table 6 shows that fathers do not significantly update beliefs about the attitudes of other men and other women in the community in the female arm or male arm. However, when men and women are treated jointly, fathers marginally significantly update on some of these beliefs, relative to the control group. When we compare differences across arms, however, fathers in the female+male arm are significantly more likely to believe, in a one-sided test, that other community members are accepting of early marriage than fathers in the male arm.

The pattern of updating second-order beliefs is not driven by our intervention correcting a misperceived social norm from baseline, by facilitating a platform to share information about attitudes. We do not find a significant reduction in the difference between second-

Table 5: Mothers' beliefs about attitudes of **other men and women** in the community towards early marriage for girls.

	Best Age < 14		Best Age 14-15		Best Age 16-17		Accept 12-15		Accept 16-17	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Female	-0.255	-0.388	-0.613	-0.753	-0.247	-0.409	-0.646	-0.591	-0.102	-0.461
	(0.205)	(0.090)*	(0.005)***	(0.000)***	(0.253)	(0.053)*	(0.003)***	(0.010)***	(0.613)	(0.040)**
	[0.253]	[0.090]*	[0.016]**	[0.001]***	[0.253]	[0.080]*	[0.007]***	[0.020]**	[0.614]	[0.041]**
Male	-0.185	-0.220	-0.228	-0.046	-0.135	-0.074	-0.302	-0.279	-0.097	-0.072
	(0.283)	(0.262)	(0.323)	(0.839)	(0.531)	(0.739)	(0.157)	(0.206)	(0.656)	(0.740)
	[0.484]	[0.787]	[0.484]	[0.840]	[0.532]	[0.840]	[0.315]	[0.413]	[0.656]	[0.741]
Female+Male	-0.350	-0.408	-0.488	-0.376	-0.217	-0.192	-0.592	-0.478	-0.221	-0.162
	(0.039)**	(0.027)**	(0.031)**	(0.084)*	(0.294)	(0.392)	(0.005)***	(0.032)**	(0.273)	(0.471)
	[0.059]*	[0.083]*	[0.059]*	[0.127]	[0.295]	[0.392]	[0.011]**	[0.065]*	[0.274]	[0.471]
Observations	1649	1650	1649	1650	1649	1650	1649	1649	1648	1649
Control Mean	2.034	2.179	3.618	3.598	5.037	5.152	3.613	3.556	5.098	5.279
M ≠ F	0.706	0.448	0.065	0.003	0.619	0.135	0.111	0.189	0.983	0.076
M ≠ FM	0.275	0.285	0.237	0.189	0.710	0.621	0.171	0.394	0.561	0.684
F ≠ FM	0.606	0.927	0.549	0.103	0.893	0.336	0.803	0.642	0.546	0.190
M > F	0.353	0.224	0.032	0.002	0.310	0.067	0.056	0.095	0.491	0.038
M > FM	0.138	0.143	0.119	0.094	0.355	0.31	0.086	0.197	0.281	0.342
FM < F	0.303	0.463	0.726	0.949	0.554	0.832	0.598	0.679	0.273	0.905

Notes: Table presents average treatment effects from OLS regressions. The dependent variable is the respondent's belief about the number of other men out of 10 in their community and other women out of 10 in their community who find less than 14 the best age (Columns 1-2), 14-15 the best age (Columns 3-4), 16-17 the best age (Columns 5-6), 12-15 an acceptable age (Columns 7-8), and 16-17 an acceptable age (Columns 9 and 10). The top panel displays responses from mothers, and the bottom panel responses from fathers. The dependent variable takes a value from 0-10. Regressions include fixed effects for randomization strata. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) are reported. In square brackets, q-values correcting for false discovery rate within each family using the Benjamini–Hochberg procedure are reported. The family over which we correct reflects the three categories of best age per respondent per treatment arm and the two categories of acceptability per respondent per treatment arm. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "Control Mean" multiplied by 10 indicates the average percentage of other men and women in the community that respondents in the control group believe would agree or strongly agree with the specific statement. P-values for comparison of treatment effects between experimental arms for various one-sided and two-sided alternative hypothesis are reported at the bottom of the table: male arm (M), female arm (F) and female+male arm (FM).

Table 6: Fathers' beliefs about attitudes of **other men and women** in the community towards early marriage for girls.

	Best Age < 14		Best Age 14-15		Best Age 16-17		Accept 12-15		Accept 16-17	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Female	-0.117	-0.085	0.265	0.021	-0.057	-0.159	0.033	-0.131	-0.019	-0.247
	(0.474)	(0.654)	(0.163)	(0.924)	(0.788)	(0.447)	(0.843)	(0.487)	(0.934)	(0.286)
	[0.712]	[0.925]	[0.490]	[0.925]	[0.789]	[0.925]	[0.935]	[0.488]	[0.935]	[0.488]
Male	-0.043	-0.179	0.345	0.203	0.311	0.275	0.157	-0.148	0.138	-0.094
	(0.788)	(0.362)	(0.094)*	(0.328)	(0.204)	(0.246)	(0.329)	(0.357)	(0.533)	(0.696)
	[0.789]	[0.363]	[0.283]	[0.363]	[0.307]	[0.363]	[0.534]	[0.697]	[0.534]	[0.697]
Female+Male	-0.227	-0.382	-0.026	-0.178	-0.377	-0.251	-0.349	-0.234	-0.349	-0.395
	(0.229)	(0.044)**	(0.880)	(0.380)	(0.070)*	(0.241)	(0.027)**	(0.201)	(0.137)	(0.072)*
	[0.344]	[0.133]	[0.881]	[0.380]	[0.212]	[0.361]	[0.054]*	[0.201]	[0.138]	[0.145]
Observations	1560	1558	1559	1558	1560	1558	1559	1558	1559	1558
Control Mean	1.811	2.256	2.925	3.297	5.488	5.742	3.018	3.248	5.525	5.646
M ≠ F	0.599	0.626	0.723	0.413	0.167	0.066	0.492	0.929	0.507	0.521
M ≠ FM	0.272	0.296	0.083	0.068	0.010	0.030	0.005	0.640	0.051	0.190
F ≠ FM	0.519	0.115	0.144	0.356	0.167	0.667	0.034	0.627	0.184	0.497
M > F	0.300	0.687	0.361	0.206	0.083	0.033	0.246	0.536	0.254	0.260
M > FM	0.136	0.148	0.042	0.034	0.005	0.015	0.002	0.320	0.026	0.095
FM < F	0.259	0.058	0.072	0.178	0.083	0.333	0.017	0.313	0.092	0.249

Notes: Table presents average treatment effects from OLS regressions. The dependent variable is the respondent's belief about the number of other men out of 10 in their community and other women out of 10 in their community who find less than 14 the best age (Columns 1-2), 14-15 the best age (Columns 3-4), 16-17 the best age (Columns 5-6), 12-15 an acceptable age (Columns 7-8), and 16-17 an acceptable age (Columns 9 and 10). The top panel displays responses from mothers, and the bottom panel responses from fathers. The dependent variable takes a value from 0-10. Regressions include fixed effects for randomization strata. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) are reported. In square brackets, q-values correcting for false discovery rate within each family using the Benjamini–Hochberg procedure are reported. The family over which we correct reflects the three categories of best age per respondent per treatment arm and the two categories of acceptability per respondent per treatment arm. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "Control Mean" multiplied by 10 indicates the average percentage of other men and women in the community that respondents in the control group believe would agree or strongly agree with the specific statement. P-values for comparison of treatment effects between experimental arms for various one-sided and two-sided alternative hypothesis are reported at the bottom of the table: male arm (M), female arm (F) and female+male arm (FM).

order beliefs of fathers and mothers, and the corresponding average first-order beliefs of men and women surveyed in their village in any treatment arm (Appendix Table A23 - A24). Instead, it seems likely that mothers and fathers update their second-order beliefs in line with real changes in behavior that they observe at the village level. We explore this in the next section.

6.3 Interpretation

To rationalize these results we develop a framework to interpret the results, where fathers and mothers decide whether or not to delay the marriage of their daughter. Parents are assumed to have preferences over two domains (i) spousal quality returns and; (ii) deviation from age-of-marriage norms in their village. We assume that individuals who learn from the intervention that they may be able to increase their likelihood of a higher educated spouse, conditional on delaying their daughter's marriage, ceteris paribus, prefer to delay the marriage of their daughter immediately. Furthermore, we assume that individuals who prefer not to deviate from age-of-marriage norms and who are reminded – through the intervention – that delaying marriage may imply such a deviation, may be reluctant to delay marriage. However, as soon as they observe that other men and other women in the community become less accepting of early marriage – consistent with village level reductions in early marriage – this reluctance disappears. Given that we observe that fathers and mothers have similar beliefs about returns to spousal quality, but mothers are more accepting of early marriage, and less willing to deviate from age-of-marriage norms than fathers, this leads us to make the following predictions:

1. When women are targeted, mothers learn immediately about potential returns to delaying marriage of their daughter in terms of spousal quality. However, the salience of age-of-marriage norms that is brought about through the edutainment intervention, makes them initially reluctant to delay. When child marriages at village-level reduce in the long-run, and they also consistenly update their beliefs that others in the community are becoming less accepting of early marriage, they also prefer to delay. While we can not reject that updating of fathers in terms of spousal quality in the female arm is similar to that in the male and female+male arm, updating of fathers in the female arm is not significantly different from fathers in the control group. This updating appear to become stronger and more precise at endline. We offer the suggestive interpretation that, because women prefer not to delay initially, they may

even decide to not communicate spousal quality returns to fathers immediately after the intervention. Instead, because they prefer to delay when they observe changes in age-of-marriage norms, they community these spousal quality returns later, anticipating that this will make fathers prefer to delay. These would lead us to predict that the household would decide not to change marriage decisions initially, but decide to delay in the long-run.

2. When men are targeted, both fathers and mothers only learn about spousal quality returns, and both prefer to delay in the short- and long-run, leading to predictions of reduced child marriage at both midline and endline. The intervention does not appear to make age-of-marriage norms salient, and neither fathers nor mothers update their beliefs about the attitudes of other men and other women in the community towards early marriage. This is consistent with the fact that we do not observe sustained village-level reductions.

3. When men and women are targeted jointly, fathers prefer to delay immediately due to updating on spousal quality. Mothers, similar to the female arm, learn about potential returns to delaying marriage of their daughter in terms of spousal quality. However, the salience of age-of-marriage norms makes them initially more reluctant to delay than fathers. When child marriages at village-level reduce in the long-run, and they also consistenly update their beliefs that others in the community are becoming less accepting of early marriage, they also prefer to delay. At endline however, updating on returns to spousal quality disappears in the long-run, but fathers, like mothers, now also consistently update their beliefs about age-of-marriage norms. This would lead us to predict that both the father and mother prefer to delay marriage, but only in the long-run.

7 Robustness and extensions

We use our data to rule out alternative explanations for the differential patterns of impact across our treatment arms.

We consider to what extent differential altruism by fathers and mothers over their sons and daughters may explain the difference in treatment effects in the household and village-level data. For example, if fathers care more about daughters, and mothers care more about sons, that could explain stronger treatment effects in the treatment arms where fathers get

treated. Appendix Table A31 shows evidence from a one-shot dictator game in which each respondent was asked to distribute an amount of money across the father, mother, and adolescent. Fathers and mothers do not appear to be differentially altruistic towards their daughters or sons; nor do daughters and sons appear to be differentially altruistic towards their father or mother (the p-values of t-tests of differences in mean amounts given to or received from adolescents are never statistically significant).

The differential impacts observed across the target household data and the village-level data could not be explained by a hypothetical mechanism in which fathers and mothers have differential decision-making power over daughters who marry out of their household and the village, and daughters-in-law who marry into their household and the village. The vast majority of marriages are within-village, and so both daughters and daughters-in-law from new marriages in target households should be captured in the village-level data.

8 Conclusion

We provide novel empirical evidence that targeting women, men, or both women and men jointly leads to significantly different impacts on child marriage of girl adolescents. We find that targeting the intervention at men only, significantly reduces the probability of child marriage for girls in *target households* in the short- and long-run — i.e., households who were surveyed and directly invited to participate in the intervention according to the treatment arm, with near-perfect compliance. The effects are large: the male arm causes a reduction of 71% relative to the average annual hazard rate in the control group mean and a 43% reduction at endline, 1.5 years after the intervention. The female+male arm also leads to a similar and significant reduction in child marriages in target households, but only in the long-run. In contrast, the female arm has no significant impact on child marriages in target households in the short-run, and limited impact in the long-run. The positive effects in the male arm are significantly different from the female arm and female+male arm at midline. At endline, the effects in the three arms are not significantly different from each other.

These child marriage outcomes in target households contrast child marriage outcomes at village-level. Unlike in target households, targeting men only, does *not* lead to sustained reductions in child marriages at the village level. At the village level, targeting women and men jointly leads to a decrease of 24 percentage points in the probability that a child marriage observed in an given month, equivalent to 58% of the control group mean. Despite

the lack of effects in targeted households when women only are treated, targeting women only *does* lead to a significant reduction of 20 percentage points (50%) in the probability of observing a girl child marriage in the village level data. There is suggestive evidence that the village-level impacts of the female+male arm and the female arm are driven by villages where our target women have "high agency" in their communities.

We explain this pattern of results we offer the following interpretation: Fathers are dominant decision-makers but mothers are involved in decision-making. When men only are targeted, we find that both fathers, and through spillovers mothers, update their beliefs about the likelihood of a better educated spouse, conditional on delaying the marriage of their daughter. This is the only domain they update on, and to benefit from these returns they prefer to delay the marriage of their daughter immediately, leading to a reduction in child marriage in the short -and long-run. When women are targeted, mothers update beliefs about returns to spousal quality, but they are also reminded of age-of-marriage norms that promote early marriage. We show that mothers are less likely to want to deviate from these norms than fathers, making them initially reluctant to delay. Only when they actually perceive actual reductions in child marriages at the village-level, and belief that other men and women in the community become less accepting of early marriage do they also prefer to delay. When both men and women are treated jointly, fathers prefer to delay immediately due to updating on spousal quality. Mothers, similar to the female arm have an initial reluctance. This translates into delayed marriage for their girl in the long-run only, as their norms and actual reductions in child marriages in their villages co-move.

Our findings indicate that a relatively low-cost edutainment intervention, which could be straightforwardly replicated by local NGOs elsewhere, produces sizable impacts on reducing child marriage. This approach and finding is novel relative to previous interventions to delay early marriage, as our intervention does not depend on girls being in school or costly financial transfers. The question of whom to target with limited resources also matters from a practitioners' perspective: while our intervention is relatively low-cost, attendance is rationed to small groups by the broadcasting reach of low-tech equipment that are not reliant on reliable electricity supply (given the low-income and rural context); the need to include all participants in group discussions; and constraints on NGO staff time.

More broadly, gender differences in responsiveness to intervention, and in power to enact change, raise the question of whom to target with interventions. This paper focused on the household decision of delaying marriage but can extent to other important development

issues: for example female labor-force participation; intimate partner violence; children's health, education & nutrition; and savings.

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A Appendix

Table A1: Differences in mothers' and fathers' attitudes and beliefs.

	(1) Mother	(2) Father	(3) Difference
Beliefs Spousal Quality			
Expected spousal education	8.442	8.627	-0.184
	(4.345)	(4.168)	(0.617)
Best spousal education	10.809	11.177	-0.368
	(2.882)	(2.595)	(0.129)
High school | delay	0.591	0.592	-0.001
	(0.439)	(0.443)	(0.847)
Secondary school | delay	0.323	0.338	-0.014
	(0.413)	(0.405)	(0.335)
Personal Attitudes - First Order Beliefs			
Accept 12 - 15	0.286	0.216	0.070
	(0.452)	(0.412)	(0.007)***
Accept 16 - 17	0.647	0.702	-0.056
	(0.478)	(0.458)	(0.038)**
Beliefs about Other's Attitudes - Second Order Beliefs			
Accept 12 - 15	4.439	4.517	-0.078
	(2.460)	(2.492)	(0.579)
Accept 16 - 17	5.241	5.390	-0.149
	(2.815)	(2.569)	(0.317)
Misperception of Other's Attitudes			
Accept 12 - 15	0.228	0.236	-0.008
	(0.281)	(0.282)	(0.579)
Accept 16 - 17	-0.178	-0.163	-0.015
	(0.300)	(0.297)	(0.317)

Note: Column 1-2 show the mean of the variable for mothers and fathers respectively using baseline data for *personal attitudes*, *beliefs about other's attitudes* and *misconception of other's attitudes* and endline data in the control group for *beliefs spousal quality*, since this question was only asked at endline. Standard deviations are in parenthesis. In Column 3, difference in means for mother and father are reported and in parentheses, p-values from standard errors clustered at the village level (unit of randomization) using an OLS regression are reported. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance.

Table A2: Differences in mothers' and fathers' compliance with age-of-marriage norms.

	(1) Mother	(2) Father	(3) Difference
Marry their adolescent	6.558	6.388	0.170
at age close to the average age	(1.916)	(1.961)	(0.081)**
You marry your adolescent	6.097	5.826	0.271
at an age close to to the average age	(2.231)	(2.148)	(0.090)***
Expect you to marry your adolescent	6.315	6.029	0.286
at the age close to what they think is the best age	(2.002)	(2.057)	(0.085)***
You marry your adolescent	6.104	5.910	0.194
at the age close to what they think is the best age	(2.243)	(2.180)	(0.098)**

Notes: Column 1 and 2 show the mean and standard deviation (in parentheses) of the endline variable for mothers and fathers respectively, since this question was only asked at endline. Respondents were first asked to imagine their reference group as the people that influence their decision about the marriage of their adolescent. Next they were asked the following questions: (i) the common age to marry an adolescent in this group; (ii) how many, out of 10 randomly selected people from this group will marry their adolescent at an age close to the common age; (iii) how likely is the respondent to therefore also marry their adolescent at that common age (out of 10); (iv) the best age to marry a girl in this group; (v) how many out of 10 random people from their reference group expect you to marry your adolescent at the age close to what they think is the best age; (vi) how likely is the respondent to therefore also marry their adolescent at the age that the reference group thinks is the best age (out of 10). Column 3 presents differences in means for fathers and mothers, with standard errors clustered at the village level (unit of randomization) using an OLS regression in parenthesis. Stars indicate: * 1 percent ** 5 percent * 10 percent level of significance.

Table A3: Village-level Descriptives and Balance.

	(1) C	(2) F	(3) M	(4) F+M	(5) F vs C	(6) M vs C	(7) F+M vs C	(8) F vs M	(9) F vs F+M	(10) M vs F+M
Boys primary school	0.227	0.311	0.364	0.364	0.084	0.136	0.136	-0.053	-0.053	0.000
	(0.424)	(0.468)	(0.487)	(0.487)	(0.372)	(0.157)	(0.157)	(0.601)	(0.601)	(1.000)
					[0.188]	[0.299]	[0.299]	[-0.110]	[-0.110]	[0.000]
Girls primary school	0.182	0.200	0.273	0.273	0.018	0.091	0.091	-0.073	-0.073	0.000
	(0.390)	(0.405)	(0.451)	(0.451)	(0.828)	(0.307)	(0.307)	(0.419)	(0.419)	(1.000)
					[0.046]	[0.216]	[0.216]	[-0.170]	[-0.170]	[0.000]
Mixed primary school	0.432	0.400	0.409	0.500	-0.032	-0.023	0.068	-0.009	-0.100	-0.091
	(0.501)	(0.495)	(0.497)	(0.506)	(0.761)	(0.829)	(0.522)	(0.931)	(0.342)	(0.391)
					[-0.064]	[-0.046]	[0.135]	[-0.018]	[-0.200]	[-0.180]
Girls can leave compound	0.636	0.733	0.750	0.773	0.097	0.114	0.136	-0.017	-0.039	-0.023
	(0.487)	(0.447)	(0.438)	(0.424)	(0.324)	(0.246)	(0.157)	(0.858)	(0.667)	(0.803)
					[0.207]	[0.245]	[0.299]	[-0.038]	[-0.090]	[-0.054]
Teashop in village	0.432	0.444	0.455	0.477	0.013	0.023	0.045	-0.010	-0.033	-0.023
	(0.501)	(0.503)	(0.504)	(0.505)	(0.905)	(0.831)	(0.669)	(0.924)	(0.757)	(0.831)
					[0.025]	[0.045]	[0.090]	[-0.020]	[-0.065]	[-0.045]
Female teachers in girls' school	0.636	0.711	0.727	0.750	0.075	0.091	0.114	-0.016	-0.039	-0.023
	(0.487)	(0.458)	(0.451)	(0.438)	(0.457)	(0.364)	(0.251)	(0.867)	(0.683)	(0.811)
					[0.158]	[0.194]	[0.245]	[-0.036]	[-0.087]	[-0.052]
Distance to nearest primary girls' school (km)	2.703	2.453	2.690	2.767	-0.250	-0.013	0.064	-0.237	-0.314	-0.078
	(1.486)	(1.499)	(1.520)	(1.634)	(0.504)	(0.972)	(0.873)	(0.542)	(0.437)	(0.852)
					[-0.168]	[-0.009]	[0.041]	[-0.157]	[-0.200]	[-0.047]
Distance to nearest primary girls' school (min)	14.741	13.964	17.038	15.704	-0.776	2.298	0.963	-3.074	-1.739	1.335
	(9.197)	(7.560)	(10.570)	(9.603)	(0.734)	(0.401)	(0.707)	(0.225)	(0.458)	(0.632)
					[-0.092]	[0.232]	[0.102]	[-0.335]	[-0.201]	[0.139]
Distance to nearest secondary girls' school (km)	8.128	6.993	6.695	7.219	-1.135	-1.433*	-0.909	0.298	-0.226	-0.524
	(3.901)	(3.524)	(3.043)	(3.711)	(0.157)	(0.062)	(0.273)	(0.676)	(0.773)	(0.482)
					[-0.305]	[-0.410]	[-0.239]	[0.091]	[-0.062]	[-0.141]
Distance to nearest secondary girls' school (min)	30.000	30.182	32.325	31.667	0.182	2.325	1.667	-2.143	-1.485	0.658
	(15.392)	(11.384)	(12.799)	(13.098)	(0.950)	(0.454)	(0.591)	(0.420)	(0.576)	(0.818)
					[0.013]	[0.164]	[0.117]	[-0.177]	[-0.121]	[0.050]
Distance to nearest town (min)	30.523	32.267	28.227	28.500	1.744	-2.295	-2.023	4.039	3.767	-0.273
	(14.788)	(13.223)	(12.115)	(11.744)	(0.559)	(0.427)	(0.478)	(0.135)	(0.157)	(0.915)
					[0.124]	[-0.170]	[-0.151]	[0.319]	[0.301]	[-0.023]
Number of households	172.000	198.689	220.909	204.500	26.689	48.909	32.500	-22.220	-5.811	16.409
	(214.764)	(369.649)	(340.191)	(187.771)	(0.677)	(0.421)	(0.451)	(0.768)	(0.925)	(0.780)
					[0.088]	[0.172]	[0.161]	[-0.063]	[-0.020]	[0.087]
Joint Significance(p-value)					0.855	0.180	0.312	0.541	0.826	0.983

Notes: Column 1-4 show the mean of the variable in each experimental arm, i.e. intervention is targeted at women and girls only (Female intervention: F), at men and boys only (Male intervention: M), at both genders simultaneously (Female+male intervention: F+M), and control (C). In Column 1-4 in parentheses, standard deviations are reported. Column 5-10 shows the difference in means for each combination of experimental arms. In Column 5-10 in parentheses , p-values from standard errors clustered at the village level (unit of randomization) using an OLS regression are reported. In box brackets, normalized differences are reported. Normalized difference is the difference in the sample means of experimental arms divided by the square root of the sum of the sample variances. The last row "Joint Significance (p-value)" reports the p-value on the chi-squared test that coefficients and p-values from all 12 regressions on balance variables are jointly unrelated to the treatment assignment. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance.

Table A4: Attrition at midline by experimental treatment arms

	(1) M	(2) F	(3) F+M	(4) C	(5) M vs C	(6) F vs C	(7) F+M vs C	(8) F vs M	(9) F+M vs M	(10) F+M vs F	(11) Observations
Father	0.061	0.062	0.073	0.053	0.008	0.009	0.020	0.002	0.012	0.010	1687
	25	*27*	*31*	*22*	(0.682)	(0.587)	(0.354)	(0.931)	(0.600)	(0.633)	
					[0.818]	[0.818]	[0.818]	[0.932]	[0.818]	[0.818]	
Mother	0.032	0.016	0.014	0.012	0.020	0.004	0.002	-0.015	-0.017	-0.002	1687
	13	*7*	*6*	*5*	(0.098)*	(0.616)	(0.799)	(0.217)	(0.158)	(0.818)	
					[0.435]	[0.818]	[0.818]	[0.435]	[0.435]	[0.818]	
Household	0.022	0.005	0.012	0.007	0.015	-0.003	0.005	-0.017	-0.010	0.007	756
	9	*2*	*5*	*3*	(0.107)	(0.616)	(0.530)	(0.048)**	(0.315)	(0.293)	
					[0.321]	[0.617]	[0.617]	[0.290]	[0.473]	[0.473]	

Notes: Panel consists of 1687 households, with 756 households in Sindh province, and 931 households in Punjab province. In each household, three respondents were to be surveyed, i.e. father, mother and adolescent. In Column 1-4, the attrition rate for each individual respondent, and the household attrition rate (Sindh only) by experimental arm - the female intervention (F), the male intervention (M), the female+male intervention (F+M), and control (C), are presented. An individual respondent is considered an attritor if we were unable to survey him/her at midline. For Sindh province only, a household is considered an attritor if we were unable to survey all three respondents who were part of our baseline panel at midline. Attrition for adolescent respondent is the same as household attrition, that is, attrition rate for adolescents in non-attrited households is 0%. In italics, the raw number of individuals (or household) that attrited are reported. In Column 5-10, the difference in attrition rate between experimental arms is estimated using logit regressions, without fixed effects for randomization strata (due to perfect prediction given our low attrition rate). Reported estimates are in predictive margins. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) from the corresponding logit regression are reported. In box brackets, q-values correcting for false discovery rate using the Benjamini–Hochberg procedure are reported (Benjamini and Hochberg, 1995; Anderson, 2008). Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance.

Table A5: Attrition at endline by experimental treatment arms

	(1) M	(2) F	(3) F+M	(4) C	(5) M vs C	(6) F vs C	(7) F+M vs C	(8) F vs M	(9) F+M vs M	(10) F+M vs F	(11) Observations
Father	0.143	0.122	0.155	0.130	0.013	-0.007	0.025	-0.021	0.012	0.033	1687
	59	*53*	*66*	*54*	(0.637)	(0.782)	(0.387)	(0.455)	(0.697)	(0.254)	
					[0.782]	[0.782]	[0.782]	[0.782]	[0.782]	[0.782]	
Mother	0.080	0.046	0.080	0.060	0.020	-0.014	0.020	-0.034	-0.000	0.034	1687
	33	*20*	*34*	*25*	(0.381)	(0.434)	(0.385)	(0.101)	(0.991)	(0.102)	
					[0.521]	[0.521]	[0.521]	[0.306]	[0.991]	[0.306]	
Household	0.063	0.035	0.061	0.046	0.017	-0.011	0.015	-0.028	-0.002	0.026	756
	26	*15*	*26*	*19*	(0.391)	(0.466)	(0.444)	(0.131)	(0.928)	(0.155)	
					[0.559]	[0.559]	[0.559]	[0.465]	[0.929]	[0.465]	

Notes: Panel consists of 1687 households, with 756 households in Sindh province, and 931 households in Punjab province. In each household, three respondents were to be surveyed, i.e. father, mother and adolescent. In Column 1-4, the attrition rate for each individual respondent, and the household attrition rate (Sindh only) by experimental arm - the female intervention (F), the male intervention (M), the female+male intervention (F+M), and control (C), are presented. An individual respondent is considered an attritor if we were unable to survey him/her at endline. For Sindh province only, a household is considered an attritor if we were unable to survey all three respondents who were part of our baseline panel at endline. Attrition for adolescent respondent is the same as household attrition, that is, attrition rate for adolescents in non-attrited households is 0%. In italics, the raw number of individuals (or household) that attrited are reported. In italics, the raw number of individuals (or household) that attrited are reported. In Column 5-10, the difference in attrition rate between experimental arms is estimated using logit regressions, without fixed effects for randomization strata (due to perfect prediction given our low attrition rate). Reported estimates are in predictive margins. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) from the corresponding logit regression are reported. In box brackets, q-values correcting for false discovery rate using the Benjamini–Hochberg procedure are reported (Benjamini and Hochberg, 1995; Anderson, 2008). Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance.

Table A6: Participation in screening and group discussion per treatment arm

	Male attendees	Female attendees
Female		18.09
		(2.58)
Male	15.77	
	(2.38)	
Female+Male	14.94	16.15
	(2.71)	(3.75)

Notes: The average number of participants in each treatment arm, disaggregated by the gender of the attendees, with the standard deviation in parentheses. In the female+male intervention, two separate sessions were conducted - one for males and one for females from the same household. In this treatment arm participants were explicitly informed that the other gender was participating in the same intervention.

Table A7: Household - Marriage & Child Marriage Outcomes - Adolescent Girls.

	Married		Marriage age		Child Marriage	
	Midline	Endline	Midline	Endline	Midline	Endline
Female	-0.006	-0.064	0.126	0.079	0.008	-0.026
	(0.037)	(0.048)	(0.481)	(0.455)	(0.032)	(0.037)
	[0.877]	[0.194]	[0.716]	[0.747]	[0.816]	[0.547]
Male	-0.058	-0.096	0.475	0.456	-0.046	-0.054
	(0.027)**	(0.043)**	(0.504)	(0.399)	(0.020)**	(0.031)*
	[0.043]**	[0.047]**	[0.471]	[0.117]	[0.035]**	[0.129]
Female+Male	-0.034	-0.083	-0.036	-0.125	-0.019	-0.052
	(0.028)	(0.043)*	(0.490)	(0.382)	(0.023)	(0.030)*
	[0.335]	[0.096]*	[0.919]	[0.894]	[0.531]	[0.150]
Observations	828	798	67	131	828	798
(Child) Married	67	131	67	131	44	73
Control Mean	0.105	0.222	16.636	17.022	0.067	0.123
p-val M $\neq$ F	0.101	0.443	0.506	0.468	0.056	0.423
p-val FM $\neq$ F	0.398	0.643	0.751	0.672	0.361	0.452
p-val FM $\neq$ M	0.258	0.715	0.339	0.174	0.138	0.911

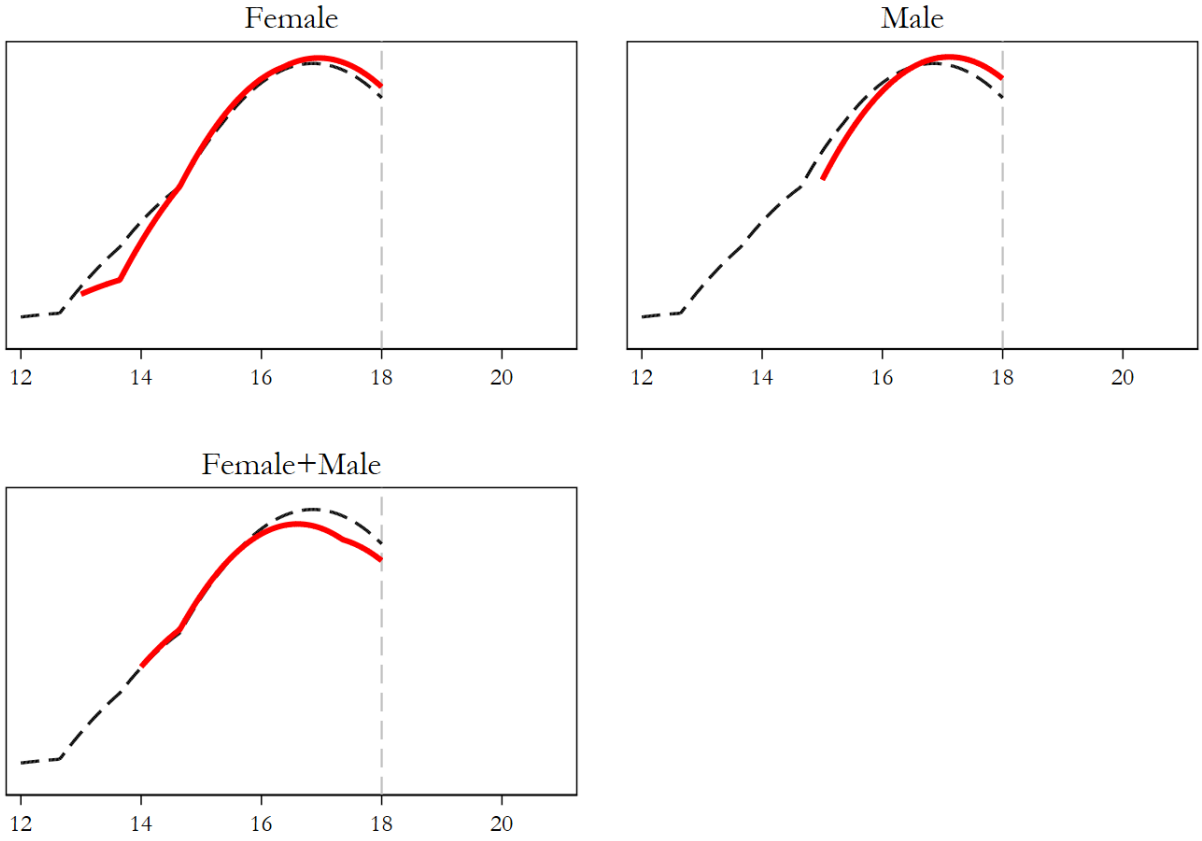
Notes: Table presents marginal treatment effects on marriage outcomes for girl adolescents from our target households, post-estimated as the sum of coefficients β and ϕ estimated from Equation 2. Marriage outcomes are as reported by the adolescent themselves as pre-specified in the pre-analysis plan. In Columns 1-2, marginal treatment effects on marriage for girl adolescents are reported for midline and endline. The dependent variable is a dummy that takes on value one (zero otherwise) if the adolescent said "yes" when asked if she is married. Columns 3-4 present marginal treatment effects on age at the time of marriage, conditional on being married at midline and endline. Columns 5-6 present marginal treatment effects on child marriage, i.e a dummy variable that takes on value one if the adolescent was less than 18 years old at the time of marriage, for midline and endline. Regressions are estimated using logit regressions for dummy variables (marriage and child marriage), and OLS for continuous variables (age at marriage). *P*-values for marginal treatment effects are based on standard errors clustered at village level (unit of randomization), and are indicated in parentheses. Exact *p*-values for marginal treatment effects from randomization inference tests based on 1000 permutations are provided in square brackets. Fixed effects for randomization strata are not included at midline, due to perfect prediction. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "Control Mean" indicates the marriage rate, average age of marriage and child marriage rate in the control group. The row "(Child) Married " indicates the total number of (child) marriages of girl adolescents.

Table A8: Household: (Child) Marriage Outcomes - Adolescent Boys.

	Married		Marriage age		Child Marriage	
	Midline	Endline	Midline	Endline	Midline	Endline
Female	-0.002	-0.006	-1.000	-0.100	0.008	0.006
	(0.017)	(0.025)	(1.075)	(0.596)	(0.011)	(0.021)
	[0.872]	[0.812]	[0.472]	[0.951]	[0.385]	[0.747]
Male	0.009	0.012	-0.000	0.469	0.014	0.009
	(0.018)	(0.026)	(0.709)	(0.545)	(0.012)	(0.020)
	[0.644]	[0.675]	[1.000]	[0.511]	[0.240]	[0.690]
Female+Male	0.018	-0.011	-0.500	0.022	0.028	0.005
	(0.021)	(0.024)	(0.731)	(0.514)	(0.017)*	(0.022)
	[0.364]	[0.634]	[0.547]	[0.579]	[0.082]*	[0.804]
Observations	840	800	30	57	840	800
(Child) Married	30	57	30	57	19	33
Control Mean	0.030	0.073	17.000	16.929	0.010	0.036
p-val M $\neq$ F	0.516	0.505	0.303	0.395	0.685	0.915
p-val FM $\neq$ F	0.299	0.850	0.612	0.847	0.266	0.941
p-val FM $\neq$ M	0.635	0.389	0.370	0.454	0.437	0.860

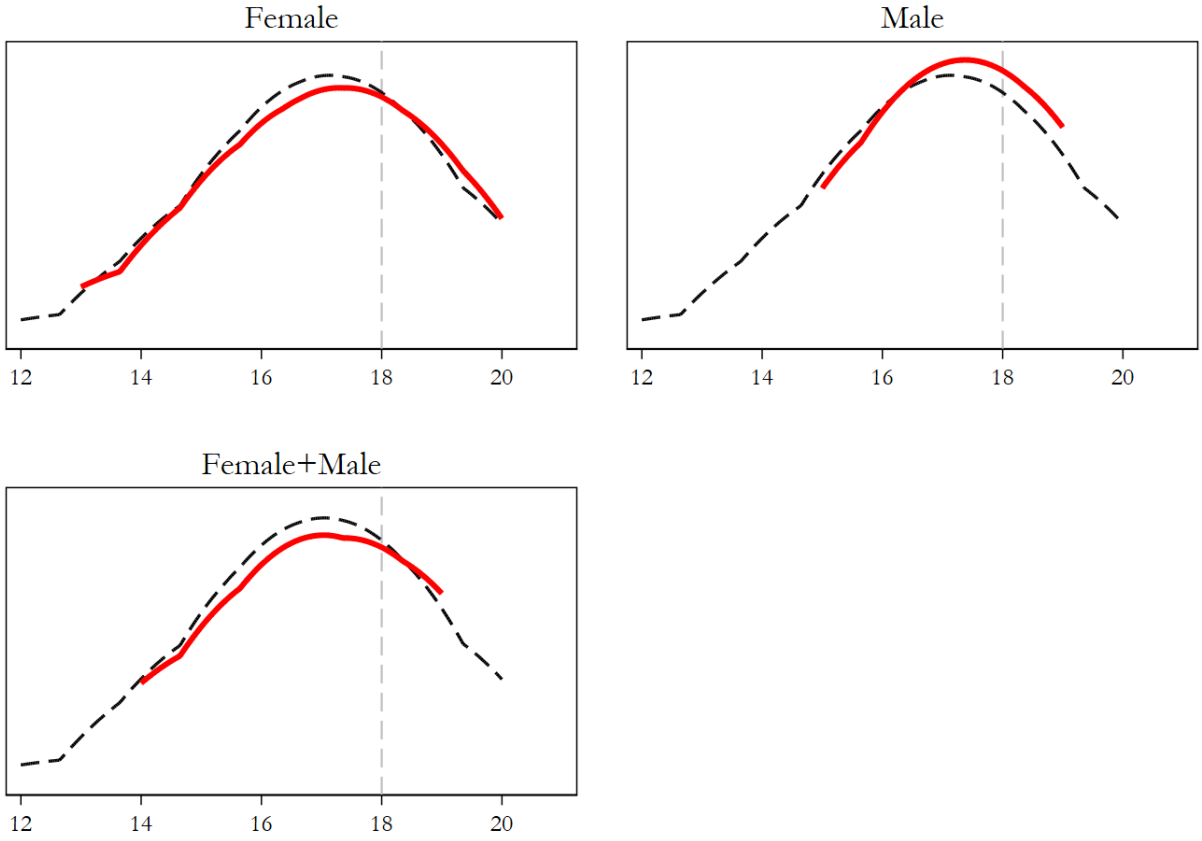
Notes: Table presents marginal treatment effects on marriage outcomes for boy adolescents from our panel households, i.e., coefficient β estimated from Equation 2. Marriage outcomes are as reported by the adolescent themselves, as pre-specified in the pre-analysis plan. In Column 1-2, marginal treatment effects on marriage for boy adolescent, are reported for midline and endline. The dependent variable is a dummy that takes on value one (zero otherwise) if the adolescent said yes he is married. Column 3-4 presents marginal treatment effects on age at the time of marriage conditional on being married at midline and endline. Column 5-6 presents marginal treatment effects on child marriage, i.e a dummy variable that takes on value one if the adolescent was less than 18 years old at the time of marriage, for midline and endline. Regressions are estimated using logit regressions for dummy variables (marriage and child marriage), and OLS for continuous variables (age at marriage). *P*-values for marginal treatment effects are based on standard errors clustered at village level (unit of randomization), and are indicated in parentheses. Exact *p*-values for marginal treatment effects from randomization inference tests based on 1000 permutations are provided in square brackets. Fixed effects for randomization strata are not included at midline, due to perfect prediction. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. Row "Control Mean" indicates the marriage rate, average age of marriage and child marriage rate in the control group. The row "(Child) Married " indicates the total number of (child) marriages of boy adolescents.

Figure A1: Age of Marriage Midline.



Notes: Kernel density plots of age at the time of marriage for girl adolescents from our panel households at midline. Age at the time of marriage is plotted on the x-axis. Black dashed line represents the variable's distribution in the control group. Red line represents the distribution of the variable in each treatment arm, i.e., Female arm (top-left), Male arm (top-right), Female+Male arm (bottom-left). Vertical grey line is the 18 years threshold, below which a marriage is considered to be a child marriage as per the law in our study regions.

Figure A2: Age of Marriage Endline.



Notes: Kernel density plots of age at the time of marriage for girl adolescents from our panel households at endline. Age at the time of marriage is plotted on the x-axis. Black dashed line represents the variable's distribution in the control group. Red line represents the distribution of the variable in each treatment arm, i.e., Female arm (top-left), Male arm (top-right), Female+Male arm (bottom-left). Vertical grey line is the 18 years threshold, below which a marriage is considered to be a child marriage as per the law in our study regions.

Table A9: Household: Marriage of Girl Adolescent reported by Father, Mother, Any.

	Father's response		Mother's response		Any respondent	
	(1) Midline	(2) Endline	(3) Midline	(4) Endline	(5) Midline	(6) Endline
Female	0.005	−0.050	−0.006	−0.056	−0.006	−0.052
	(0.036)	(0.051)	(0.036)	(0.049)	(0.038)	(0.049)
Male	−0.047∗	−0.098∗∗	−0.054∗∗	−0.088∗∗	−0.057∗∗	−0.089∗∗
	(0.025)	(0.046)	(0.026)	(0.045)	(0.027)	(0.044)
Female+Male	−0.039	−0.106∗∗	−0.030	−0.099∗∗	−0.034	−0.086∗
	(0.027)	(0.045)	(0.028)	(0.042)	(0.030)	(0.045)
Observations	775	722	820	784	828	793
Married	59	113	65	124	75	137
Control Mean	0.096	0.220	0.101	0.216	0.114	0.228

Notes: Table presents marginal treatment effects on marriage outcomes for girl adolescents from our panel households, post-estimated as the sum of coefficients β and ϕ estimated from Equation 2. Marriage outcomes of the adolescent is reported separately by the father, mother or any respondent. That is, Column 1-2 if the father said the adolescent was married, Column 3-4 if the mother said the adolescent was married, and Column 5-6 if any respondent (father, mother or adolescent) said that the adolescent was married. Regressions are estimated using logit regressions. Standard errors for marginal treatment effects are clustered at village level (unit of randomization) and are indicated in parentheses. Fixed effects for randomization strata are not included at midline due to perfect prediction. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. Row "Control Mean" indicates the marriage rate for girl adolescents in the control group. Row "Married" indicates the total number of girl adolescents that are married at midline and endline.

Table A10: Household: Marriage of Boy Adolescent reported by Father, Mother, Any.

	Father's response		Mother's response		Any respondent	
	(1) Midline	(2) Endline	(3) Midline	(4) Endline	(5) Midline	(6) Endline
Female	−0.002	−0.004	−0.002	−0.005	−0.007	0.003
	(0.018)	(0.025)	(0.017)	(0.025)	(0.017)	(0.025)
Male	0.009	0.011	0.009	0.013	0.008	0.012
	(0.019)	(0.027)	(0.018)	(0.026)	(0.019)	(0.025)
Female+Male	−0.001	−0.037∗	0.009	−0.026	0.004	−0.026
	(0.018)	(0.022)	(0.018)	(0.022)	(0.018)	(0.021)
Observations	787	735	836	789	840	802
Married	26	51	28	54	30	56
Control Mean	0.032	0.078	0.030	0.073	0.034	0.072

Notes: Table presents marginal treatment effects on marriage outcomes for boy adolescents from our panel households, i.e., coefficient β estimated from Equation 2. Marriage outcomes of the adolescent is reported separately by the father, mother or any respondent. That is, Column 1-2 if the father said the adolescent was married, Column 3-4 if the mother said the adolescent was married, and Column 5-6 if any respondent (father, mother or adolescent) said that the adolescent was married. Regressions are estimated using logit regressions. Standard errors for marginal treatment effects are clustered at village level (unit of randomization) and are indicated in parentheses. Fixed effects for randomization strata are not included at midline due to perfect prediction. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. Row "Control Mean" indicates the marriage rate for boy adolescents in the control group. Row "Married" indicates the total number of boy adolescents that are married at midline and endline.

Table A11: Household Marriage Outcomes - Girls (other treatments comparisons)

	Married		Marriage age		Child Marriage	
	Midline	Endline	Midline	Endline	Midline	Endline
Male vs. Female	-0.052	-0.032	0.349	0.377	-0.054	-0.027
	(0.101)	(0.443)	(0.506)	(0.468)	(0.056)*	(0.423)
	[0.067]*	[0.410]	[0.513]	[0.285]	[0.026]**	[0.383]
Female+Male vs. Female	-0.028	-0.019	-0.162	-0.204	-0.028	-0.024
	(0.398)	(0.643)	(0.751)	(0.672)	(0.361)	(0.452)
	[0.395]	[0.669]	[0.702]	[0.728]	[0.396]	[0.418]
Female+Male vs. Male	0.024	0.013	-0.511	-0.581	0.026	0.003
	(0.258)	(0.715)	(0.339)	(0.174)	(0.138)	(0.911)
	[0.292]	[0.702]	[0.408]	[0.097]*	[0.133]	[0.896]
Observations	828	798	67	131	828	798
(Child) Married	67	131	67	131	44	73
Control Mean	0.105	0.222	16.636	17.022	0.067	0.123

Notes: Table tests the difference in marginal treatment effects in each treatment arm against the other - by experimental arm - the male arm versus the female, the Female+male arm versus the female arm, and the Female+male arm versus the male arm, on marriage outcomes for girl adolescents from panel households. Marriage outcomes are as reported by the adolescent themselves as pre-specified in the pre-analysis plan. In Column 1-2, marginal treatment effects on marriage for girl adolescent, are reported for midline and endline. The dependent variable is a dummy that takes on value one (zero otherwise) if the adolescent said yes she is married. Column 3-4 presents difference in marginal treatment effects on age at the time of marriage conditional on being married at midline and endline. Column 5-6 presents difference in marginal treatment effects on child marriage, i.e a dummy variable that takes on value one if the adolescent was less than 18 years old at the time of marriage, for midline and endline. Estimated using logit regressions for dummy variables (marriage and child marriage), and OLS for continuous variables (age at marriage). *P*-values for marginal treatment effects are based on standard errors clustered at village level (unit of randomization), and are indicated in parentheses. Exact p-values for marginal treatment effects from randomization inference tests based on 1000 permutations are provided in square brackets. Fixed effects for randomization strata are not included at midline, due to perfect prediction. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. Row "Control Mean" indicates the marriage rate, average age of marriage and child marriage rate in the control group. The row "(Child) Married " indicates the total number of (child) marriages of girl adolescents.

Table A12: Household Marriage Outcomes - Boys (other treatments comparisons)

	Married		Marriage age		Child Marriage	
	Midline	Endline	Midline	Endline	Midline	Endline
Male vs. Female	0.011	0.018	1.000	0.568	0.005	0.002
	(0.516)	(0.505)	(0.303)	(0.395)	(0.685)	(0.915)
	[0.544]	[0.515]	[0.583]	[0.491]	[0.695]	[0.915]
Female+Male vs. Female	0.020	-0.005	0.500	0.121	0.020	-0.002
	(0.299)	(0.850)	(0.612)	(0.847)	(0.266)	(0.941)
	[0.313]	[0.784]	[0.491]	[0.679]	[0.306]	[0.932]
Female+Male vs. Male	0.010	-0.023	-0.500	-0.447	0.014	-0.004
	(0.635)	(0.389)	(0.370)	(0.454)	(0.437)	(0.860)
	[0.670]	[0.368]	[0.741]	[0.194]	[0.504]	[0.866]
Observations	840	800	30	57	840	800
(Child) Married	30	57	30	57	19	33
Control Mean	0.030	0.073	17.000	16.929	0.010	0.036

Notes: Table tests the difference in marginal treatment effects in each treatment arm against the other - the male arm versus the female, the female+male arm versus the female arm, and the Female+male arm versus the male arm, on marriage outcomes for boy adolescents from panel households. Comparison against the control group is presented in Table A8. Marriage outcomes are as reported by the adolescent themselves as pre-specified in the pre-analysis plan. In Column 1-2, marginal treatment effects on marriage for boy adolescent, are reported for midline and endline. The dependent variable is a dummy that takes on value one (zero otherwise) if the adolescent said yes she is married. Column 3-4 presents difference in marginal treatment effects on age at the time of marriage conditional on being married at midline and endline. Column 5-6 presents difference in marginal treatment effects on child marriage, i.e a dummy variable that takes on value one if the adolescent was less than 18 years old at the time of marriage, for midline and endline. Regressions are estimated using logit regressions for dummy variables (marriage and child marriage), and OLS for continuous variables (age at marriage).*P*-values for marginal treatment effects are based on standard errors clustered at village level (unit of randomization), and are indicated in parentheses. Exact p-values for marginal treatment effects from randomization inference tests based on 1000 permutations are provided in square brackets. Fixed effects for randomization strata are not included at midline, due to perfect prediction. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. Row "Control Mean" indicates the marriage rate, average age of marriage and child marriage rate in the control group. The row "(Child) Married " indicates the total number of (child) marriages of girl adolescents.

Table A13: Household Engagement Outcomes - Girls

	Engaged		Newly Engaged	
	(1) Midline	(2) Endline	(3) Midline	(4) Endline
Female	−0.020	−0.016	0.033	0.009
	(0.049)	(0.057)	(0.041)	(0.036)
Male	0.042	0.094	0.058	0.044
	(0.052)	(0.059)	(0.041)	(0.032)
Female+Male	−0.015	0.008	0.012	0.012
	(0.053)	(0.054)	(0.041)	(0.031)
Observations	746	665	736	665
Control Mean	0.283	0.293	0.177	0.076

Notes: Table presents marginal treatment effects (MTE) on marriage outcomes for girl adolescents from our panel households, post-estimated as the sum of coefficients β and ϕ estimated from Equation 2. In Column 1-2, marginal treatment effects on engagement for girl adolescent, are reported for midline and endline. The dependent variable is a dummy that takes on value one (zero otherwise) if the adolescent is engaged/promised. Column 3-4 presents marginal treatment effects on new engagements that is adolescents who were not engaged at baseline by engaged at midline (Column 3: midline) and those who were not engaged at midline but engaged at endline (Column 4). For engagement between baseline and midline, for Sindh province we use responses form the baseline survey, from Punjab where security concerns prevented us from having a baseline survey, we estimate newly engaged as those adolescents who are engaged at midline, and their age at engagement is one year less than or equal to their age at midline, as these adolescents are most likely to be engaged between our survey rounds. Regressions are estimated using logit regressions for dummy variables (marriage and child marriage), and OLS for continuous variables (age at marriage). Standard errors for marginal treatment effects are based on clustered at village level (unit of randomization), and are indicated in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. Row "Control Mean" indicates the engagement rate and engagement rate for newly engaged in the control group.

Table A14: Expected returns to delaying marriage to 20 in terms of education of the future spouse.

	Midline				Endlline			
	Secondary School		High School		Secondary School		High School	
	(1) Father	(2) Mother	(3) Father	(4) Mother	(5) Father	(6) Mother	(7) Father	(8) Mother
Female	0.031	0.118	0.105	0.121	0.094	0.049	0.093	0.123
	(0.435)	(0.030)**	(0.059)*	(0.029)**	(0.066)*	(0.373)	(0.102)	(0.032)**
	[0.580]	[0.061]*	[0.235]	[0.061]*	[0.137]	[0.400]	[0.137]	[0.127]
Male	0.056	0.160	0.121	0.150	0.087	0.097	0.112	0.123
	(0.181)	(0.003)***	(0.025)**	(0.009)***	(0.072)*	(0.077)*	(0.040)**	(0.036)**
	[0.363]	[0.012]**	[0.100]	[0.012]**	[0.097]*	[0.095]*	[0.080]*	[0.073]*
Female+Male	0.067	0.132	0.097	0.100	0.027	0.064	0.052	0.026
	(0.075)*	(0.011)**	(0.065)*	(0.075)*	(0.619)	(0.229)	(0.377)	(0.684)
	[0.100]	[0.036]**	[0.100]	[0.100]	[0.812]	[0.305]	[0.812]	[0.685]
Observations	769	815	769	815	721	783	721	783
Control Mean	0.765	0.668	0.480	0.473	0.702	0.734	0.492	0.487

Notes: Table presents post-estimated marginal treatment effects from Logit regressions for girl households. The dependent variable takes on value one if the respondent - mother or father - states that they expect that the future spouse of their adolescent daughter will have at least completed secondary (Grade 10 and above) or high school (Grade 12 and above), if she is married at 20 at midline (Columns 1-4) and endline (Columns 5-8). Regressions include fixed effects for randomization strata. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) are reported. In square brackets, q-values correcting for false discovery rate within each family using the Benjamini–Hochberg procedure are reported (Benjamini and Hochberg, 1995; Anderson, 2008). Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "Control Mean" indicates the share of respondents in the control group who expect the future spouse to have this respective education level when they marry their daughter at 20.

Table A15: Expected returns to delaying marriage to 18 in terms of education of the future spouse.

	Midline				Endlline			
	Secondary School		High School		Secondary School		High School	
	(1) Father	(2) Mother	(3) Father	(4) Mother	(5) Father	(6) Mother	(7) Father	(8) Mother
Female	0.077	0.104	0.054	0.115	0.101	0.074	0.063	0.049
	(0.111)	(0.063)*	(0.284)	(0.034)**	(0.074)*	(0.198)	(0.162)	(0.357)
	[0.395]	[0.127]	[0.395]	[0.127]	[0.173]	[0.358]	[0.216]	[0.358]
Male	0.115	0.103	0.072	0.141	0.110	0.121	0.074	0.105
	(0.019)**	(0.068)*	(0.152)	(0.010)***	(0.035)**	(0.041)**	(0.119)	(0.043)**
	[0.076]*	[0.091]*	[0.203]	[0.020]**	[0.142]	[0.058]*	[0.159]	[0.058]*
Female+Male	0.082	0.109	0.077	0.116	0.040	0.045	0.024	-0.018
	(0.082)*	(0.053)*	(0.124)	(0.031)**	(0.497)	(0.448)	(0.589)	(0.743)
	[0.246]	[0.071]*	[0.246]	[0.062]*	[0.794]	[0.598]	[0.794]	[0.743]
Observations	769	814	769	814	721	783	721	783
Control Mean	0.597	0.566	0.265	0.254	0.536	0.553	0.265	0.307

Notes: Table presents post-estimated marginal treatment effects from Logit regressions for girl households. The dependent variable takes on value one if the respondent - mother or father - states that they expect that the future spouse of their adolescent girl will have atleast completed secondary (Grade 10 and above) or high school (Grade 12 and above), if she is married at 18 at midline (Column 1-4)and endline (column 5-8). Regressions include fixed effects for randomization strata. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) are reported. In box brackets, q-values correcting for false discovery rate within each family using the Benjamini–Hochberg procedure are reported. In each surveyround, the family is the four schooling levels per respondent per treatment arm comparison. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "control mean" indicates the percentage in the control group stating the above expectation at the given age.

Table A16: Expected returns to delaying marriage to 16 in terms of education of the future spouse.

	Midline				Endlline			
	Secondary School		High School		Secondary School		High School	
	(1) Father	(2) Mother	(3) Father	(4) Mother	(5) Father	(6) Mother	(7) Father	(8) Mother
Female	0.082	0.097	0.020	0.027	0.071	0.054	-0.001	0.003
	(0.121)	(0.083)*	(0.468)	(0.392)	(0.097)*	(0.334)	(0.973)	(0.895)
	[0.243]	[0.302]	[0.469]	[0.523]	[0.371]	[0.446]	[0.973]	[0.896]
Male	0.128	0.143	0.031	0.001	0.094	0.090	-0.009	0.040
	(0.019)**	(0.010)**	(0.312)	(0.986)	(0.061)*	(0.095)*	(0.612)	(0.187)
	[0.038]**	[0.042]**	[0.313]	[0.987]	[0.140]	[0.127]	[0.613]	[0.188]
Female+Male	0.100	0.085	0.006	-0.006	0.024	-0.018	-0.012	0.010
	(0.048)**	(0.146)	(0.827)	(0.846)	(0.590)	(0.747)	(0.500)	(0.721)
	[0.096]*	[0.289]	[0.827]	[0.847]	[0.591]	[0.748]	[0.591]	[0.748]
Observations	769	814	769	814	721	783	721	783
Control Mean	0.383	0.361	0.066	0.073	0.293	0.352	0.039	0.060

Notes: Table presents post-estimated marginal treatment effects from Logit regressions for girl households. The dependent variable takes on value one if the respondent - mother or father - states that they expect that the future spouse of their adolescent girl will have atleast completed secondary (Grade 10 and above) or high school (Grade 12 and above), if she is married at 16 at midline (Column 1-4)and endline (column 5-8). Regressions include fixed effects for randomization strata. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) are reported. In box brackets, q-values correcting for false discovery rate within each family using the Benjamini–Hochberg procedure are reported. In each surveyround, the family is the four schooling levels per respondent per treatment arm comparison. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "control mean" indicates the percentage in the control group stating the above expectation at the given age.

Table A17: Father's personal expectations about risks to a girl in case of child marriage at midline.

	Mother			Child		
	(1) Depression	(2) Poor health	(3) Mortality	(4) Low birthweight	(5) Poor health	(6) Mortality
Female	−0.017	0.049	0.015	0.021	0.094**	0.033
	(0.031)	(0.042)	(0.042)	(0.024)	(0.047)	(0.029)
Male	−0.008	−0.002	−0.007	0.017	0.049	0.025
	(0.032)	(0.043)	(0.040)	(0.023)	(0.046)	(0.030)
Female+Male	0.007	0.038	−0.003	0.013	0.054	0.023
	(0.033)	(0.042)	(0.039)	(0.024)	(0.046)	(0.027)
Observations	1545	1545	1545	1545	1545	1545
Control Mean	0.207	0.590	0.308	0.112	0.355	0.112

Notes: Table presents post-estimated average treatment effects from Logit regressions. The dependent variable takes on value one if the respondent, fathers in this case, at midline mentions that the expected risks to a girl (column 1-3) and the girl's resulting child (column 4-6) in case of early marriage or childbearing are: depression to mother (column 1), poor health of mother from early childbearing (column 2), mortality risk to mother from early child bearing (column 3), low birth weight of child from early childbearing (column 4), poor health of child from early childbearing (column 5) or mortality risk to child from early childbearing (column 6). Regressions include fixed effects for randomization strata. Standard errors clustered at village level (unit of randomization) are indicated in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row control mean is the percentage of fathers with the above expectation in the control group.

Table A18: Mother's personal expectations about risks to a girl in case of child marriage at midline.

	Mother			Child		
	(1) Depression	(2) Poor health	(3) Mortality	(4) Low birthweight	(5) Poor health	(6) Mortality
Female	0.015	0.051	0.014	−0.017	0.035	0.003
	(0.027)	(0.040)	(0.047)	(0.042)	(0.049)	(0.032)
Male	−0.044∗	0.033	0.023	−0.041	−0.021	−0.022
	(0.024)	(0.045)	(0.045)	(0.038)	(0.042)	(0.032)
Female+Male	0.006	0.080∗∗	0.006	−0.063∗	−0.029	−0.055
	(0.027)	(0.039)	(0.050)	(0.035)	(0.044)	(0.035)
Observations	1650	1650	1650	1650	1650	1650
Control Mean	0.122	0.501	0.335	0.149	0.213	0.193

Notes: Table presents post-estimated average treatment effects from Logit regressions. The dependent variable takes on value one if the respondent, mothers in this case, at midline mentions that the expected risks to a girl (column 1-3) and the girl's resulting child (column 4-6) in case of early marriage or childbearing are: depression to mother (column 1), poor health of mother from early childbearing (column 2), mortality risk to mother from early child bearing (column 3), low birth weight of child from early childbearing (column 4), poor health of child from early childbearing (column 5) or mortality risk to child from early childbearing (column 6). Regressions include fixed effects for randomization strata. Standard errors clustered at village level (unit of randomization) are indicated in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row control mean is the percentage of mothers with the above expectation in the control group.

Table A19: Father's personal expectations about risks to a girl in case of child marriage at endline.

	Mother			Child		
	(1) Depression	(2) Poor health	(3) Mortality	(4) Low birthweight	(5) Poor health	(6) Mortality
Female	0.023	0.029	−0.068	−0.021	−0.029	−0.030
	(0.031)	(0.044)	(0.043)	(0.031)	(0.047)	(0.028)
Male	−0.019	0.036	−0.039	−0.032	0.045	−0.040
	(0.033)	(0.044)	(0.048)	(0.034)	(0.053)	(0.030)
Female+Male	−0.025	0.045	−0.020	−0.014	0.013	−0.020
	(0.033)	(0.039)	(0.048)	(0.035)	(0.046)	(0.028)
Observations	1457	1457	1457	1457	1457	1457
Control Mean	0.180	0.684	0.302	0.114	0.421	0.133

Notes: Table presents post-estimated average treatment effects from Logit regressions. The dependent variable takes on value one if the respondent, fathers in this case, at endline mentions that the expected risks to a girl (column 1-3) and the girl's resulting child (column 4-6) in case of early marriage or childbearing are: depression to mother (column 1), poor health of mother from early childbearing (column 2), mortality risk to mother from early child bearing (column 3), low birth weight of child from early childbearing (column 4), poor health of child from early childbearing (column 5) or mortality risk to child from early childbearing (column 6). Regressions include fixed effects for randomization strata. Standard errors clustered at village level (unit of randomization) are indicated in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row control mean is the percentage of fathers with the above expectation in the control group.

Table A20: Mother's personal expectations about risks to a girl in case of child marriage at endline.

	Mother			Child		
	(1) Depression	(2) Poor health	(3) Mortality	(4) Low birthweight	(5) Poor health	(6) Mortality
Female	−0.000	0.064	0.029	0.003	0.020	0.009
	(0.023)	(0.045)	(0.047)	(0.034)	(0.035)	(0.026)
Male	0.003	0.067	0.010	−0.038	−0.017	0.041
	(0.023)	(0.046)	(0.052)	(0.031)	(0.032)	(0.029)
Female+Male	−0.000	0.022	0.063	−0.028	−0.024	0.028
	(0.024)	(0.044)	(0.053)	(0.034)	(0.031)	(0.027)
Observations	1572	1574	1574	1574	1574	1574
Control Mean	0.090	0.478	0.279	0.130	0.212	0.102

Notes: Table presents post-estimated average treatment effects from Logit regressions. The dependent variable takes on value one if the respondent, mothers in this case, at endline mentions that the expected risks to a girl (column 1-3) and the girl's resulting child (column 4-6) in case of early marriage or childbearing are: depression to mother (column 1), poor health of mother from early childbearing (column 2), mortality risk to mother from early child bearing (column 3), low birth weight of child from early childbearing (column 4), poor health of child from early childbearing (column 5) or mortality risk to child from early childbearing (column 6). Regressions include fixed effects for randomization strata. Standard errors clustered at village level (unit of randomization) are indicated in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row control mean is the percentage of mothers with the above expectation in the control group.

Table A21: Endline beliefs of mothers about attitudes of **other men and women** in the community towards early marriage for girls.

	Best Age < 14		Best Age 14-15		Best Age 16-17		Accept 12-15		Accept 16-17	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Female	0.032	0.229	-0.161	-0.079	-0.080	-0.174	-0.138	-0.129	-0.092	-0.041
	(0.851)	(0.153)	(0.449)	(0.725)	(0.729)	(0.439)	(0.523)	(0.552)	(0.669)	(0.859)
	[0.852]	[0.459]	[0.852]	[0.725]	[0.852]	[0.659]	[0.670]	[0.859]	[0.670]	[0.859]
Male	-0.069	-0.023	-0.355	-0.291	-0.083	-0.095	-0.015	-0.194	0.032	0.008
	(0.684)	(0.887)	(0.073)*	(0.157)	(0.695)	(0.642)	(0.939)	(0.320)	(0.878)	(0.970)
	[0.696]	[0.888]	[0.220]	[0.471]	[0.696]	[0.888]	[0.940]	[0.640]	[0.940]	[0.971]
Female+Male	-0.205	-0.282	-0.391	-0.371	-0.448	-0.218	-0.095	-0.041	-0.000	-0.003
	(0.227)	(0.075)*	(0.073)*	(0.097)*	(0.054)*	(0.331)	(0.681)	(0.855)	(0.999)	(0.989)
	[0.228]	[0.147]	[0.110]	[0.147]	[0.110]	[0.331]	[1.000]	[0.989]	[1.000]	[0.989]
Observations	1573	1573	1573	1573	1571	1572	1573	1573	1573	1573
Control Mean	1.783	1.785	3.417	3.327	4.895	4.713	3.100	3.128	4.754	4.675
M $\neq$ F	0.566	0.128	0.311	0.283	0.991	0.694	0.538	0.740	0.520	0.819
M $\neq$ FM	0.435	0.109	0.851	0.680	0.092	0.548	0.711	0.441	0.881	0.959
F $\neq$ FM	0.174	0.002	0.273	0.175	0.113	0.842	0.850	0.693	0.674	0.869
M > F	0.717	0.936	0.844	0.859	0.504	0.347	0.269	0.630	0.260	0.409
M > FM	0.217	0.055	0.425	0.340	0.046	0.274	0.355	0.780	0.441	0.479
FM < F	0.087	0.001	0.136	0.088	0.057	0.421	0.575	0.654	0.663	0.565

Notes: Table presents average treatment effects from OLS regressions. The dependent variable is the respondent's belief about the number of other men out of 10 in their community and other women out of 10 in their community who find less than 14 the best age (Columns 1-2), 14-15 the best age (Columns 3-4), 16-17 the best age (Columns 5-6), 12-15 an acceptable age (Columns 7-8), and 16-17 an acceptable age (Columns 9 and 10). The top part of table is for responses from mothers, and the bottom part of the table for responses from fathers. The dependent variable takes on a value from 0-10. Regressions include fixed effects for randomization strata. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) are reported. In square brackets, q-values correcting for false discovery rate within each family using the Benjamini–Hochberg procedure are reported. The family over which we correct reflects the three categories of best age per respondent per treatment arm and the two categories of acceptability per respondent per treatment arm. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "Control Mean" multiplied by 10 indicates the average percentage of other men and women in the community that respondents in the control group believe would agree or strongly agree with the specific statement. P-values for comparison of treatment effects between experimental arms for various one-sided and two-sided alternative hypothesis are reported at the bottom of the table: male arm (M), female arm (F) and female+male arm (FM).

Table A22: Endline beliefs of mfathers about attitudes of **other men and women** in the community towards early marriage for girls.

	Best Age < 14		Best Age 14-15		Best Age 16-17		Accept 12-15		Accept 16-17	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Female	0.454	0.394	0.133	0.065	-0.032	0.137	0.111	0.059	-0.129	0.004
	(0.001)***	(0.013)**	(0.492)	(0.752)	(0.883)	(0.536)	(0.543)	(0.752)	(0.537)	(0.986)
	[0.005]***	[0.040]**	[0.738]	[0.753]	[0.883]	[0.753]	[0.543]	[0.987]	[0.543]	[0.987]
Male	0.118	0.173	0.004	0.047	0.101	0.134	0.038	0.208	-0.167	0.040
	(0.373)	(0.228)	(0.981)	(0.813)	(0.651)	(0.551)	(0.834)	(0.261)	(0.457)	(0.850)
	[0.977]	[0.684]	[0.982]	[0.814]	[0.977]	[0.814]	[0.835]	[0.523]	[0.835]	[0.850]
Female+Male	-0.061	-0.148	0.005	-0.134	-0.206	-0.160	-0.226	-0.133	-0.541	-0.398
	(0.629)	(0.308)	(0.981)	(0.503)	(0.394)	(0.528)	(0.203)	(0.443)	(0.021)**	(0.070)*
	[0.945]	[0.528]	[0.982]	[0.528]	[0.945]	[0.528]	[0.203]	[0.443]	[0.043]**	[0.140]
Observations	1451	1451	1451	1451	1451	1451	1451	1451	1451	1451
Control Mean	1.308	1.628	2.517	2.792	4.761	4.869	2.628	2.644	5.158	5.061
M ≠ F	0.030	0.189	0.492	0.930	0.523	0.988	0.702	0.435	0.848	0.860
M ≠ FM	0.202	0.040	0.999	0.366	0.199	0.213	0.158	0.056	0.105	0.041
F ≠ FM	0.001	0.001	0.510	0.336	0.449	0.199	0.070	0.280	0.056	0.064
M > F	0.717	0.906	0.754	0.535	0.261	0.506	0.649	0.217	0.576	0.430
M > FM	0.101	0.020	0.500	0.183	0.100	0.107	0.079	0.028	0.053	0.021
FM < F	0.000	0.001	0.255	0.168	0.225	0.099	0.035	0.140	0.028	0.032

Notes: Table presents average treatment effects from OLS regressions. The dependent variable is the respondent's belief about the number of other men out of 10 in their community and other women out of 10 in their community who find less than 14 the best age (Columns 1-2), 14-15 the best age (Columns 3-4), 16-17 the best age (Columns 5-6), 12-15 an acceptable age (Columns 7-8), and 16-17 an acceptable age (Columns 9 and 10). The top part of table is for responses from mothers, and the bottom part of the table for responses from fathers. The dependent variable takes on a value from 0-10. Regressions include fixed effects for randomization strata. In parentheses, p-values from standard errors clustered at the village level (unit of randomization) are reported. In square brackets, q-values correcting for false discovery rate within each family using the Benjamini–Hochberg procedure are reported. The family over which we correct reflects the three categories of best age per respondent per treatment arm and the two categories of acceptability per respondent per treatment arm. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row "Control Mean" multiplied by 10 indicates the average percentage of other men and women in the community that respondents in the control group believe would agree or strongly agree with the specific statement. P-values for comparison of treatment effects between experimental arms for various one-sided and two-sided alternative hypothesis are reported at the bottom of the table: male arm (M), female arm (F) and female+male arm (FM).

Table A23: Over- and underestimation of other men's and women's attitudes towards acceptability of girl child marriage by Mothers

	Midline				Endline			
	Accept 12-15		Accept 16-17		Accept 12-15		Accept 16-17	
	(1) Men	(2) Women	(3) Men	(4) Women	(5) Men	(6) Women	(7) Men	(8) Women
Female	−0.086***	−0.011	−0.065**	0.031	0.030	0.014	−0.050	0.084*
	(0.030)	(0.028)	(0.031)	(0.032)	(0.037)	(0.035)	(0.040)	(0.046)
Male	−0.058*	−0.010	−0.024	0.017	0.054	0.045	−0.048	0.044
	(0.032)	(0.030)	(0.030)	(0.031)	(0.038)	(0.037)	(0.041)	(0.048)
Female+Male	−0.030	−0.021	0.012	0.071**	0.053	−0.032	0.057*	0.063
	(0.030)	(0.033)	(0.029)	(0.030)	(0.040)	(0.039)	(0.034)	(0.049)
Strata	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1649	1649	1573	1573	1648	1649	1573	1573
Control Mean	0.219	0.129	0.222	0.124	-0.190	-0.068	-0.092	-0.121

Note: Table presents average treatment effects from OLS regressions. The dependent variable is difference between the percentage of men (women) in the corresponding village in the corresponding surveyround who find that 14-15 (Columns 1-2 & Columns 5-6) or 16-17 (Columns 3-4 & Columns 7-8) an acceptable age to marry a girl, and the respondent's belief about how many other men (women) in the village agree with the respective statements. The dependent variable takes on a value from 0-1. Regressions include fixed effects for randomization strata. Standard errors clustered at village level (unit of randomization), and are indicated in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row 'control mean' multiplied by 100, indicates the average percentage point under- or over-estimation in the control group.

Table A24: Over- and underestimation of other men's and women's attitudes towards acceptability of girl child marriage by Mothers

	Midline				Endline			
	Accept 12-15		Accept 16-17		Accept 12-15		Accept 16-17	
	(1) Men	(2) Women	(3) Men	(4) Women	(5) Men	(6) Women	(7) Men	(8) Women
Female	−0.019	0.033	−0.043	0.047	0.042	0.028	−0.049	0.082∗
	(0.027)	(0.031)	(0.027)	(0.035)	(0.035)	(0.043)	(0.035)	(0.046)
Male	−0.014	0.001	−0.014	0.057	0.076∗∗	0.038	−0.069∗	0.045
	(0.027)	(0.033)	(0.025)	(0.036)	(0.032)	(0.048)	(0.036)	(0.050)
Female+Male	−0.011	0.006	0.002	0.065∗∗	0.041	−0.046	0.009	0.027
	(0.027)	(0.037)	(0.023)	(0.033)	(0.035)	(0.051)	(0.032)	(0.048)
Strata	✓	✓	✓	✓	✓	✓	✓	✓
Observations	1559	1558	1451	1451	1559	1558	1451	1451
Control Mean	0.162	0.098	0.174	0.075	-0.146	-0.031	-0.049	-0.077

Note: Table presents average treatment effects from OLS regressions. The dependent variable is the difference between the percentage of men (women) in the corresponding village in the corresponding surveyround who find that 14-15 (Columns 1-2 & Columns 5-6) or 16-17 (Columns 3-4 & Columns 7-8) an acceptable age to marry a girl, and the respondent's belief about how many other men (women) in the village agree with the respective statements. The dependent variable takes on a value from 0-1. Regressions include fixed effects for randomization strata. Standard errors clustered at village level (unit of randomization), and are indicated in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row 'control mean' multiplied by 100, indicates the average percentage point under- or over-estimation in the control group.

Table A25: Village-month level: (Child) Marriage Outcomes for Boys

	Child Marriage		Marriage age	
	(1) Midline	(2) Endline	(3) Midline	(4) Endline
Post × Female	−0.101	−0.063	2.617**	1.547***
	(0.087)	(0.049)	(1.251)	(0.524)
Post × Male	−0.147*	−0.114**	0.490	0.851*
	(0.076)	(0.053)	(0.784)	(0.510)
Post × Female+Male	−0.080	−0.035	1.198	0.810*
	(0.091)	(0.050)	(0.764)	(0.443)
Observations	673	1123	673	1123
Control Mean	0.163	0.118	19.826	21.171

Notes: Village fixed effects regressions with marriage data aggregated at the village-month level. Reported coefficients are estimates of β_2 from Equation 3. In Column 1-2, the dependent variable is a dummy that takes value one if, conditional on there being at least one marriage in the village during the observation month, any marriage had a boy (groom) that was below the age of 18 at the time of marriage. In Column 3-4, the dependent variable is the average age of marriage of boys in the village in that month. "Midline" counts observations between the pre-treatment months and January 2020, and "Endline" counts observations between the pre-treatment months and March 2021. The variable "post" is a dummy variable that takes on the value zero if the village-month lies in the period before (not including) July 2019, the period before or during the intervention; and takes on value one if the observation month lies in the period after the intervention was completed. All regressions include randomization strata dummies and their interaction with "post". Standard errors are clustered at the village level and are presented in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row 'control mean' reports the specific variable in the control group.

Table A26: Village-marriage level: (Child) Marriage Outcomes for Girls

	Child Marriage		Marriage age	
	(1) Midline	(2) Endline	(3) Midline	(4) Endline
Post × Female	−0.407***	−0.206***	1.293**	0.676*
	(0.131)	(0.072)	(0.579)	(0.343)
Post × Male	−0.337***	−0.107	0.790*	0.350
	(0.116)	(0.072)	(0.462)	(0.344)
Post × Female+Male	−0.262**	−0.251***	0.678	0.949***
	(0.116)	(0.068)	(0.505)	(0.313)
Observations	697	1383	697	1383
Control Mean	0.614	0.348	17.386	18.429

Notes: Village fixed effects regressions at the level of marriages. In Columns 1 and 2, the dependent variable is a dummy that takes value one if the marriage involved a girl (bride) that was married at an age below 18. In Columns 3 and 4, the dependent variable is the age of marriage of the girl respectively. "Midline" counts observations between the pre-treatment months and January 2020, and "Endline" counts observations between the pre-treatment months and March 2021. The variable "post" is a dummy variable that takes on the value zero if the marriage lies in the period before (not including) July 2019, the period before or during the intervention; and takes on value one if the marriage lies in the period after the intervention was completed. All regressions include randomization strata dummies and their interaction with "post". Standard errors are clustered at the village level and are presented in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance.

Table A27: Village-marriage level: (Child) Marriage Outcomes for Boys

	Child Marriage		Marriage age	
	(1) Midline	(2) Endline	(3) Midline	(4) Endline
Post × Female	−0.113	−0.062	2.571**	1.592***
	(0.088)	(0.046)	(1.234)	(0.507)
Post × Male	−0.152**	−0.103**	0.568	0.948*
	(0.073)	(0.050)	(0.784)	(0.507)
Post × Female+Male	−0.076	−0.027	1.000	0.950**
	(0.088)	(0.045)	(0.777)	(0.433)
Observations	698	1382	698	1382
Control Mean	0.156	0.097	19.889	21.130

Notes: Village fixed effects regressions at the level of marriages. In Columns 1 and 2, the dependent variable is a dummy that takes value one if the marriage involved a boy (groom) that was married at an age below 18. In Columns 3 and 4, the dependent variable is the age of marriage of the boy respectively. "Midline" counts observations between the pre-treatment months and January 2020 and "Endline" counts observations between the pre-treatment months and March 2021. The variable "post" is a dummy variable that takes on the value zero if the marriage lies in the period before (not including) July 2019, the period before or during the intervention; and takes on value one if the marriage lies in the period after the intervention was completed. All regressions include randomization strata dummies and their interaction with "post". Standard errors are clustered at the village level and are presented in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance.

Table A28: Village-level child marriage outcomes by village-level agency of targeted women

	Leave compound		Education		Community meetings	
	(1) No	(2) Yes	(3) No	(4) Yes	(5) No	(6) Yes
Post × Female	-0.019	-0.297	-0.022	-0.263	-0.219	-0.171
	(0.143)	(0.118)**	(0.206)	(0.103)**	(0.189)	(0.100)*
		[0.100]		[0.249]		[0.809]
Post × Male	-0.038	-0.151	0.094	-0.170	-0.021	-0.135
	(0.167)	(0.115)	(0.182)	(0.105)	(0.164)	(0.108)
		[0.538]		[0.164]		[0.520]
Post × Female+Male	-0.134	-0.322	-0.171	-0.287	-0.237	-0.237
	(0.104)	(0.110)***	(0.166)	(0.094)***	(0.133)*	(0.106)**
		[0.172]		[0.503]		[0.999]
Observations	311	812	296	827	429	694

Notes: Village fixed effects regressions with marriage data aggregated at the village-month level. The dependent variable is a dummy that takes value one if, conditional on there being at least one marriage in the village during the observation month, any marriage had a bride that was below the age of 18 at the time of marriage. Column 1-2 presents impacts on child marriage in the sample of villages where women *cannot* or *can* leave the compound of the household, respectively. Column 3-4, presents impacts on child marriage in the sample of villages where *at least one woman* or *none of the women* among our target households has any education, respectively. Column 5-6, presents impacts on child marriage in the sample of villages where *at least one woman* or *none of the women* among our target households attended a community meeting, respectively . Standard errors are clustered at the village level and are presented in parentheses. In box brackets the p-value of the *chi-squared* test, that estimated treatment effects from the two seemingly unrelated regressions (SUR) are significantly different from each other. The variable "post" is a dummy variable that takes on the value zero if the village-month lies in the period before (not including) July 2019, the period before or during the intervention; and takes on value one if the observation month lies in the period after the intervention was completed. All regressions include randomization strata dummies and their interaction with endline. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance.

Table A29: Village-month: Number of Marriages

	Any Marriage		Number of Marriages	
	(1) Midline	(2) Endline	(3) Midline	(4) Endline
Post × Female	−0.015	0.041	−0.020	0.001
	(0.044)	(0.046)	(0.040)	(0.038)
Post × Male	0.055	0.068	0.043	0.043
	(0.045)	(0.043)	(0.039)	(0.034)
Post × Female+Male	−0.006	0.025	−0.003	0.012
	(0.040)	(0.041)	(0.037)	(0.033)
Observations	2452	4746	2452	4746
Control Mean	0.176	0.229	0.168	0.175

Notes: Village fixed effects regressions with marriage data aggregated at the village-month level. In Column 1-2, the dependent variable is a dummy that takes value one if there was at least one marriage in a given village during the month. In Column 3-4, the dependent variable is a count variable of the number of marriages in a given village during the month. "Midline" counts observations between the pre-treatment months and January 2020, and "Endline" counts observations between the pre-treatment months and March 2021. The variable "post" is a dummy variable that takes on the value zero if the village-month lies in the period before July (not including) 2019, the period before or during the intervention; and takes on value one if the observation month lies in the period after the intervention was completed. All regressions include randomization strata dummies and their interaction with "post". Standard errors are clustered at the village level and are presented in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. The row 'control mean' reports the specific variable in the control group.

Table A30: Proposals coming in for girl adolescents.

	(1) All	(2) Age <18	(3) Age >=18
Female vs. Control	-0.058	-0.127	0.131
	(0.283)	(0.026)**	(0.176)
Male vs. Control	-0.077	-0.109	0.021
	(0.189)	(0.104)	(0.844)
Female+Male vs. Control	-0.114	-0.141	-0.019
	(0.020)**	(0.010)**	(0.865)
Male vs. Female	-0.019	0.018	-0.110
	(0.729)	(0.774)	(0.267)
Female+Male vs. Female	-0.057	-0.014	-0.150
	(0.213)	(0.761)	(0.152)
Female+Male vs Male	-0.037	-0.032	-0.039
	(0.464)	(0.590)	(0.725)
Observations	722	548	174
Control Mean	0.324	0.336	0.289

Notes: Table presents marginal treatment effects on marriage proposals coming in to the household for girl adolescents from panel households at endline. The dependent variable is a dummy that takes on value one (zero otherwise) if the adolescent received a marriage proposal. In Column 1, effects on proposals coming in for all girl adolescents are reported. In Column 2, effects are estimated on the sub-sample of girl adolescents who are below 18 prior to the endline and in Column 3 for those who are 18 and over. Estimated using logit regressions and reported estimates are in predictive margins. *P*-values from standard errors clustered at village level (unit of randomization) are indicated in parentheses. Stars indicate: *** 1 percent ** 5 percent * 10 percent level of significance. Row "Control Mean" indicates the marriage proposal rate in the control group.

Table A31: Three-way dictator game between fathers, mothers, and boy and girl adolescents

	Amount given to adolescent		Amount given by adolescent	
	by father	by mother	to father	to mother
Girl adolescent	128.02	134.51	185.05	163.32
	(78.11)	(61.36)	(63.78)	(64.56)
Boy adolescent	119.72	131.96	191.49	163.66
	(74.22)	(59.14)	(68.43)	(64.55)
p-value difference	0.126	0.551	0.242	0.941
Observations	756	756	756	756

Notes: Columns 1 and 2 presents the average amount of money out of 500 Rs. that a father or mother give a girl adolescent or boy adolescent in a one-shot unincentivized dictator game. Columns 3 and 4 present the average amount of money out of 300 Rs. that a girl adolescent or a boy adolescent give to their mother or father, in a one-shot unincentivized dictator game. In parentheses, standard deviations are reported. Row 'p-value difference' is a t-test for the difference in means. Analysis is restricted to baseline responses (only Sindh province). Analysis on midline data (Sindh and Punjab province) controlling for treatment dummies yields similar results. Note that a panel household being a girl or boy household is independent of treatment assignment as explained in Section 3.1.