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The behavioural implications of women's empowerment programmes

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Abstract: Participatory community programmes are a potentially important tool for social empowerment and economic development. How do participatory programmes that specifically target women affect community trust and cohesion? This question is important since the long-term success of such programmes might depend critically on the behavioural transformation that they generate. We examine this question in the context of JEEViKA, a community-based empowerment programme that targets women in Bihar, India. Field experiments and surveys in 40 villages in Bihar reveal that JEEViKA is associated with significantly greater trust by and towards women suggesting an important role for community programmes in building economic relationships. We do not find significant differences between JEEViKA and non-JEEViKA villages in term of trustworthiness. Finally, we also find evidence that exposure to JEEViKA is associated with changes in attitudes towards women and their appropriate role in society.

Keywords: community development programmes, women's empowerment, artefactual field experiments, trust, Bihar, India

JEL classification: C93, D03, H43, H53, H75, J16

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1 Introduction

Community participation has long been thought of as an important component of service delivery and provision of public goods. Between 2002 and 2012, for example, the World Bank allocated over \$85 billion to local participatory development (Mansuri and Rao, 2013). Development practitioners have argued that engaging the community in development projects will create a closer connection between those who distribute funds and its intended beneficiaries. An engaged community will not only hold the government accountable, but also influence decisions that directly affect their lives. This can result in tangible improvements in the types of, quality, and access to government services (Bardhan, 2005; Bardhan and Mookherjee, 2006; Desai and Joshi, 2014; Rao and Ibanez, 2005; Wong, 2012).

However, programs with community participation can falter when a subgroup is able to mobilise to further their self-interest to the detriment of the rest of the community. These subgroups may have greater information and power over decision-making, leading to potential theft and corruption. This can significantly affect the provision of public goods in these communities. This appropriation is often to the detriment of minorities and disadvantaged groups such as women who often have little voice or authority within the community. Indeed, (Mansuri and Rao, 2013) point out that local participation in community development programs is often driven by wealthier, more educated, male participants with higher social status. These factors often imply that benefits from such programs bypass women as well as other marginalized sections of the community.

This dynamic is particularly important in the context of India where gender inequality is particularly stark. Despite two decades of rapid economic growth and social transformation, women in India fare considerably worse than men. Sex selective abortions, disparity in education and healthcare provision, and unequal access to economic opportunities are

common, especially in rural areas of the country. For example, consider the difference in educational outcomes: while boys and girls have almost equal enrolment at the primary level and the start of secondary school, only 73 girls enrol in tertiary school for every 100 boys. Women tend to marry young and have children quickly, and face persistent barriers to mobility outside the home, labor force participation, and career development.

Community based programs have the potential to alleviate gender inequality, but only when they encourage female participation in decision making processes, thereby increasing women's control over economic resources, leading to greater accountability, better social relationships and changed gender norms (World Bank, 2015). As a result policy makers have introduced targeted community programs with the specific aim of empowering women as alternatives to both quotas and standard community-based programs.¹

At the same time, mutual trust and cooperation are crucial for economic development. Trust reduces transaction costs and is directly linked to social capital (Fafchamps, 2006). Economic interactions particularly in developing countries where law enforcement is weak, rely on trust to facilitate interactions and trade. Indeed, Arrow (1972) states that “virtually every commercial transaction has within itself an element of trust. It can plausibly be argued that much of the economic backwardness in the world can be explained by lack of mutual confidence.” These factors suggest that citizens' trust in other citizens is a key component in economic and social development. Therefore, measuring the impact on trust and other behavioral factors is important from the perspective of policymakers examining community development programs and policies. Yet the academic literature has paid little attention to developing methods for such measurement and virtually no program systematically collects data on its behavioral implications.

¹ An extensive literature examines the causes and consequences of gender disparity in India. See, for example, the literature examining reasons for gender discrimination including Rosenzweig and Schultz (1982), Das Gupta and Bhat (1997), Bhat and Xavier (2007), Das Gupta (2010) and Jain (2014). The consequences of gender discrimination are discussed by a large literature as well, perhaps best summarized by Duflo (2012).

This paper asks how do participatory programs that specifically target women affect community trust and cohesion? The long term success of community based programs might depend critically on the behavioral transformation that they generate, but the answer is not straightforward as an empirical matter. If the program is associated with greater trust among both men and women, then the entire community moves towards ‘good’ equilibria with benefits beyond the program. Conversely, the targeted nature of the program might generate negative behavioral reactions, which reduces social capital and potentially destroys long term economic and social relationships. Given this theoretical ambiguity, our main contribution is to use a unique field experiment to examine the behavioral response to a participatory program and in particular the behavioral response towards women. The effects of this program on behavioral characteristics such as trust and trustworthiness is an open empirical question.²

We examine this question in the context of the Bihar Rural Livelihoods Project, or JEEViKA, undertaken by the Government of Bihar and the World Bank. The program is designed specifically to empower rural women, both socially and economically, through the creation of self-managed community microfinance institutions, greater access to social protection (including food security) and a greater community voice.³ Our field experiment involves a trust task conducted in both JEEViKA and non-JEEViKA villages, we compare if program villages exhibit differences on measures of trust and trustworthiness.

We conduct field experiments to understand the relationship between community development programs and behavioral transformation. Given the explicit gender targeting of the JEEViKA program, our field experiment is designed to account for gender differences

² Given our focus on behavioral outcomes, this research directly relates to the literature examining the behavioral effects of development programs and policies. Feigenberg et al. (2013) use a public goods experiment to examine how microfinance programs in West Bengal in India impact cooperation. Using a set of lab-in-the-field experiments, Cameron et al. (2013) find that the one-child policy in China had significant behavioral impacts on a whole generation of Chinese children. Using similar methods, Gangadharan et al. (2015) examine backlash from men against female leaders in Indian villages who were elected under a quota policy reserving seats for women.

³ Section 2 describes the program in detail. Also see the implementation plan (BRLPS, 2009).

in behavioral responses. The field experiments and respondent surveys were conducted among 960 participants from 40 villages in Bihar in 2014. JEEViKA was operational in 20 of these villages and not in the remaining 20 villages. The format of the field experiment allows subjects to be randomized into groups, hence reducing selection bias and enabling causal inference. In addition to the experiments, we collected extensive individual and community-level survey data to understand experiences with JEEViKA and attitudes towards women.

Our central finding is that women in JEEViKA villages are significantly more trusting and more trusted than in non-JEEViKA villages, a result perhaps of participating in the community activities that are at the core of the program. Simultaneously, our regression results do not reveal any differences in trustworthiness among women in the JEEViKA villages. Thus, the experimental results suggest that the JEEViKA program is positively associated with trust by and towards women, but cannot conclude that the program comprehensively affected other types of community behavior.

Surveys of the experimental participants reveal greater aspirations for their children's education among JEEViKA village residents, and lower desire for girls to enter traditional female occupations. In addition, men in JEEViKA villages are more likely to appreciate the value of women in leadership roles. These findings suggest that the experimental findings on increased trust are also correlated with other attitudinal changes that can translate into long term women's empowerment and economic development.

2 The JEEViKA Program

The Bihar Rural Livelihoods Project (or "JEEViKA") is a poverty reduction program undertaken by the Government of Bihar and the World Bank. The program aims to socially

and economically empower the rural poor by focusing on women. It focuses on creating sustainable livelihoods through self-managed community institutions, improved access to social protection (including food security) and greater community voice.

The main instrument to achieve these aims are women's community-based self-help groups (SHG) that provide a mechanism for savings and borrowing.⁴ The objective is that over time and with regular repayments these groups will become self sustaining organizations. Each village contains a number of SHGs which are federated at the village or hamlet level to form a Village Organisation (VO). The VO operates as a forum or voice of the poor in the village and provides resources to their member SHGs through the Community Investment Fund. The VOs are also responsible for development projects that aim to reduce poverty. Each VO comprises of all SHG members and an Executive Committee that consists of two representatives from each member SHG. VOs are further federated at the block level to form community level federations that act as lenders to VOs.

In addition to community institutional development, the JEEViKA program comprises of three other components.

1. *Community Investment Fund (CIF)*. Over half of programs funds are channelled through the CIF which is responsible for the initial capitalisation of the Community Level Federations, funding village food security programs, skill building and village social services such as funding education and health programs.
2. *Special Technical Assistance and Development Funds*. This component is responsible for establishing a technical assistance facility which supports the community institution (including SHGs and VOs) by improving access to financial services. The Bihar Innovation Fund finances innovations to improve livelihoods.
3. *Project Management*. This component comprises human resources training, com-

⁴ The government of India aims to have functioning SHGs in all villages throughout India.

munication and monitoring and evaluation services.

The JEEViKA project commenced in 2007 and mobilized 1.3 million households into 93,000 self-help groups and federations by May 2014. These households contributed USD 9.5 million in the form of savings and received USD 56 million of financing from commercial banks. Financial literacy and counselling interventions have also been implemented in 18 blocks.

The blocks targeted under the JEEViKA program were not randomly selected. Specifically, the program provided targeted assistance to about 1,220,000 households in 42 blocks in six districts (Nalanda, Gaya, Khagaria, Muzaffarpur, Madhubani, Purnea) in the state. Within each block, the beneficiaries were the poor, especially the socially and economically deprived class such as the Scheduled Castes, marginalised backward classes, people with no productive resources, daily wage laborers, bonded labor, unskilled marginal farmers, unskilled migrants, disabled and child labor. The relevant districts and blocks were selected using a poverty and social assessment of the state conducted by the Bihar Rural Livelihoods Promotion Society. This assessment examined each district and block on four aspects – poverty, social vulnerability, livelihood potential and social capital. The blocks that were selected had a high incidence of disadvantaged groups as reflected in the percentage of SC and ST population, were characterized by adverse status of women reflected in adverse sex ratio and low female literacy, and had low basic infrastructure availability. This means that villages included in the program were poorer across a number of traits and therefore not representative of the average village in the state.⁵

In a retrospective evaluation of the program, Datta (2015) examines a range of outcomes among beneficiary versus non-beneficiary households. The main finding is that the structure of household debt in beneficiary households is different. JEEViKA SHG members have significantly lower burden of high cost debt, and instead access smaller loans repeat-

⁵ See BRLPS (2009) and Datta (2015) for more discussion on this issue.

edly and borrow more often for productive purposes. Women in beneficiary households demonstrate higher levels of mobility, decision making, and collective action. The evaluation also reports some increases in asset ownership, food security and sanitation preferences of beneficiary households. Concurrently, the program did not affect long term income dynamics, changing neither land ownership or land leasing patterns, nor shift away or toward agricultural activities.

Based on ethnographic fieldwork in four villages in rural Bihar, Sanyal et al. (2015) find that JEEViKA's focus on women's empowerment created new "cultural configurations" and broke down normative restrictions on gender roles. These researchers argue that the program not only offered women access to physical resources such as credit, but also a new social identity of SHG member (distinct from identities of caste, religion or ethnicity). In addition, membership in JEEViKA meant that women were participating in new institutional environments, thereby gaining access to knowledge, skills and social networks outside their traditional domain. Thus, programs such as JEEViKA can have a transformative social effect beyond the direct economic impact. In the long run, these direct effects can change social norms (for instance, whether to trust women in financial transactions) in a way that fundamentally change the nature of economic relationships.

3 Experimental design

We investigate the extent to which participant behavior in experiments is influenced by perceptions or experience with the JEEViKA program. Harrison and List (2004) argue that one of the advantages of artefactual field experiments is that participants bring their prior ideas and experiences from everyday life into the experimental sessions which might in turn shape their behaviour. Our experimental sessions were conducted in 40 villages in three districts of Bihar, 20 of which were JEEViKA villages and 20 of which were not.

A total of 955 villagers from different sections of the village society participated in the experimental sessions. We discuss results from two experiments – a trust game, and a risk game that was embedded in the post-experiment survey.⁶ In addition to the experiments, we collected extensive individual and community-level survey data to understand experiences with JEEViKA and other development programs. The rest of this section briefly describes the details of the experimental design.

3.1 Trust task

The first task in the artefactual field experiment is based on the trust (or investment) game (Berg et al., 1995). We implement a one-shot version of the game to avoid reputation and learning effects and to avoid subject fatigue. The Trust task is a two-player game in which players are randomly assigned one of two roles: a *Trustor* or a *Trustee*. Each participant is given an initial endowment of E . Each Trustor is asked to decide to transfer any part of this endowment, S to an anonymous Trustee ($S \in [0, E]$). The experimenter triples this S and gives it to the matched Trustee, who in turn is asked to choose whether to transfer any money out of $E + 3S$ back to the Trustor. So the payoff for the Trustor is $E - S + R$ where R is the amount returned by the Trustee; the corresponding payoff for the Trustee is $E + 3S - R$. The resolution of this game using backward induction is simple. In a one-shot version of the game, the Trustee should not return any money knowing that the game ends immediately thereafter. The Trustor, anticipating the Trustee's decision, should send no money to the Trustee in the first place. However, actual behavior is often quite different from the one predicted by theory. In this task, any transfer made by the Trustor to the anonymous Trustee can be interpreted as a measure of trust and any amount returned by the Trustee is a measure of trustworthiness.

⁶ We also conducted a modified public goods game, the details of this are in Gangadharan et al. (2015). This paper focuses on the effects of exposure to the JEEViKA program on trust and trustworthiness and therefore we use data from the trust experiment only.

The strategy method is used to obtain the trustee decisions. To do this, the Trustee is asked to specify an amount to return $R(S)$ for every possible amount of S chosen by the Trustor. We restrict S to specific integer amounts. Specifically, the endowment E is INR 200, so each trustor could choose to send an amount S from the endowment to his/her anonymous partner where $S \in \{0, 25, 50, 75, 100, 125, 150, 175, 200\}$. The experimenter triples this amount and therefore the trustee receives $\{0, 75, 150, 225, 300, 375, 450, 525, 600\}$. The Trustee therefore provided conditional responses, i.e., how much to return for each of eight possible choices made by the Trustor. For $S = 0$, there is no decision to be made.⁷

In all sessions, participants are given instruction sheets with own gender symbols on the front page making gender prominent. JEEViKA and Non-JEEViKA villages were randomly assigned to one of two treatments either the control (*gender not revealed*) or treatment (*gender revealed*). In the control the gender of the partner was not revealed; in the gender revealed treatment, the gender of the participant's partner is revealed. This was done prior to the participant making his or her decision.⁸

3.2 Risk game

A risk task similar to Gneezy and Potters (1997) was embedded in the survey. In the risk task, each player was given the option of investing any part of an initial endowment of INR 20 in a hypothetical risky project that had a 50% chance of tripling the amount invested; alternatively the amount invested could be lost with a 50% probability. The individual could keep any amount he/she chose not to invest. The amount invested provides a measure of risk preference. A higher amount invested in the riskier option indicates that the participant is risk loving. This risk preference could be used to control for the possible confound caused by risk on the amount sent by the trustor in the Trust task. All subjects

⁷ INR is the currency of India. At the time of conducting the experimental sessions, 1 USD = INR 55.

⁸ Recent studies have demonstrated that priming gender, ethnicity or religion can cause changes in the behaviour of experimental participants (Benjamin et al., 2010; Burns, 2012; Chen et al., 2014).

were paid for this task.

4 Setting and procedure

4.1 Location and village selection

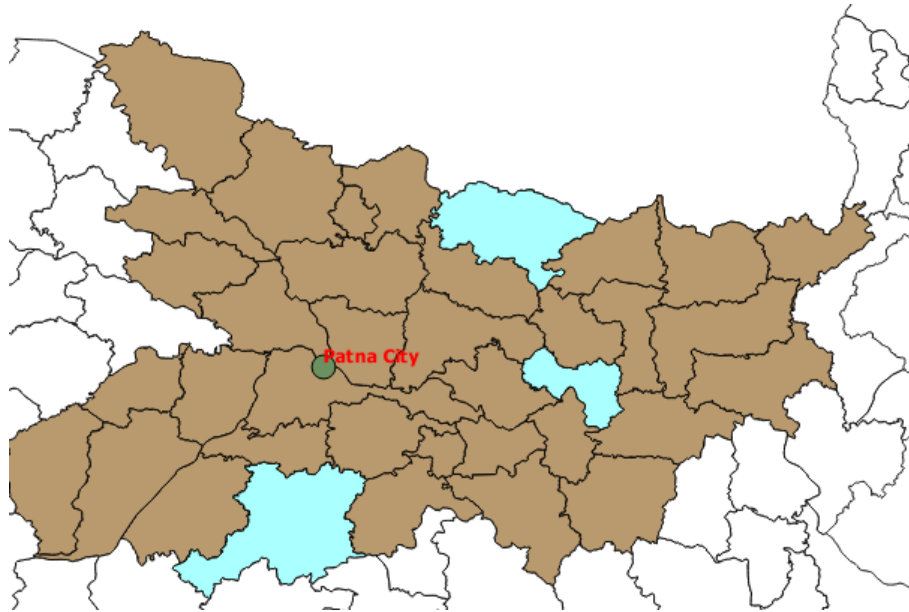
In this section we describe the setting of the experiment, the methods used to select villages for our study and the recruitment of participants from these villages. Finally, we describe the procedures for surveying individuals and the local community.

The artefactual field experiment were conducted in the villages of Bihar, India. Specifically, our data was collected from 40 villages in the districts of Gaya, Madhubani and Khagaria, which are approximately equidistant from the capital city of Patna.⁹ Figure 1 presents more information on the location of the experimental sessions. Almost 10% of India's population resides in Bihar, which is characterized by substantial gender inequality. Bihar is also one of the fastest growing states in India with an average GDP growth of 10% between 2010 and 2014.

Using a list of villages provided by the Bihar Rural Livelihoods Project (BRLP) and corresponding characteristics from the 2011 Census of India, we randomly chose 40 villages in Gaya, Khagaria and Madhubani districts. Only one session was conducted in each village to prevent information spillovers across sessions, which could result in considerable loss of experimental control and precision. Column 1 in Table 1 presents the average village level characteristics for the full sample. The villages, on average, consist of 566 households, with an average of 5 members per household. 33% of the households in these villages belong to Scheduled Castes. The average literacy rate is around 44%, though men

⁹ Indian districts are large, and the total population of these districts is close to 11 million, which make them more populous than countries like Portugal, Hungary, Honduras, Sierra Leone and New Zealand.

Figure 1: Experimental Districts



Note: Brown highlights the state of Bihar. The districts where the surveys and experiments were undertaken are highlighted in light blue. Patna is the capital of Bihar. Source: Authors' Compilation

are substantially more likely to be literate than women. Around 38% of the villagers were working at the time of the survey.

Our analysis does not attempt to make inferences based on the average village in Bihar; instead we compare JEEViKA and non-JEEViKA villages within the selected sample. We use an identical method and criteria to select JEEViKA and non-JEEViKA villages in the experimental sample. We randomly selected 20 villages from 5 blocks in Gaya, Madhubani and Khagaria where the JEEViKA project had been implemented. We call these the JEEViKA villages. Next, these villages were matched with 20 villages in 12 blocks that were similar in terms of observable characteristics from the 2011 census data to the JEEViKA villages selected, except the program was not implemented in these villages. We call these non-JEEViKA villages. Thus, non-JEEViKA villages are not a random subset of the universe of villages where the JEEViKA program was not implemented. Rather, they were chosen from similar blocks in the three districts where the JEEViKA program was implemented. Columns 2–4 of Table 1 show that, in terms of observable characteris-

tics, JEEViKA villages are not statistically different from non-JEEViKA villages. Finally, Columns 5–7 show that in terms of average village level characteristics, those assigned to the *gender revealed* treatment are no different to those assigned to the *gender not revealed* treatment.

4.2 Participant recruiting

To recruit participants for the experiment, a male and a female member of the research team visited each village the day before the session was scheduled in that village. They informed villagers of the event and distributed flyers containing information about participation requirements including eligibility (18 or older and literate), remuneration, time and location of the experimental session. Flyers were also posted at prominent village landmarks such as community centers, bus stops, tea shops, temples and mosques. Participants in the JEEViKA villages were not restricted to those who had directly benefited from the program; although the program has a specific target population, it may also affect the local non-target population within the village.

4.3 Procedure

Each village had approximately 24 participants.¹⁰ Upon arrival, participants were screened for eligibility, then their names were recorded on a participant list. Once seated, they were given stationary and, at random, a number tag representing their ID. The experimenter read aloud instructions to establish common knowledge. To determine whether subjects understood the instructions, each participant answered a set of control questions in private before the experiment commenced. The experimenter cross-checked answers

¹⁰ One village had 20 participants. Additionally, the survey data for one participant could not be used, though experimental data are available for this subject.

and started the experiment once satisfied that all subjects understood the task. No communication was allowed during the session. The instructions were read aloud in Hindi.¹¹ Visual descriptions of the tasks were also displayed while reading out the instructions. The survey questions were administered by research assistants. An analysis of responses indicates that there are no differences depending on the gender of the research assistant administering the questions.

All subjects participated in the trust task, then the public goods task followed by the post-experiment survey. In the survey, each participant answered questions on aspirations for their children, attitudes towards women and towards female leaders, in addition to questions on individual and household level demographic and socio-economic characteristics. The tasks were always run in the same order (i.e., the trust task followed by the public goods task), no feedback was provided to the subjects in between the two tasks and subjects were paid on the basis of the outcomes in one of the two tasks, randomly determined after the post experiment survey had been conducted. The only task that subjects received any feedback for was the one for which they were paid. Paying for one task helps reduce wealth effects. The average payout to participants was INR 420, or approximately two days wage for a semi-skilled laborer in Bihar. Including the post-experiment surveys, each session lasted on average for four hours. Data was entered twice and subsequently checked and reconciled by two different research assistants. The results were compared against hard copies in case of inconsistencies.

4.4 Descriptive statistics

Column 1 in Table 2 presents the means for a number of participant characteristics. The average participant is 27 years old, from a household with 7.8 members and predomi-

¹¹ The instructions were first prepared in English, and then translated into Hindi by a native Hindi speaker. The English and Hindi versions were compared and verified for consistency by a person fluent in both Hindi and English.

nantly Hindu (90%), with a mix of upper caste (26%), Scheduled Caste (24%) and Other Backward Classes (42.5%). More than half the sample have completed high school, with evidence of significant intergenerational mobility in educational attainment.

Columns 2, 3 and 4 present the average characteristics of the sample in the JEEViKA and non-JEEViKA villages and the corresponding differences, respectively. The sample characteristics between the JEEViKA and the non-JEEViKA villages are not systematically different. Specifically, the sample from the non-JEEViKA villages are significantly more likely to be Hindu, belong to Upper Caste and are more likely to have completed primary schooling. Conversely, the sample residing in JEEViKA villages are more likely to belong to Other Backward Castes, completed tertiary education and have fathers who have completed primary schooling.

Columns 5 and 6 present the means of the observable characteristics on the basis of whether the participant was assigned the role of trustor or trustee. The differences presented in column 7 do not show any statistically significant differences between participants assigned roles of trustors versus trustees on observed individual level characteristics.

To examine whether the random assignment of participants to treatments was effectively implemented, Columns 8, 9 and 10 report differences in participant characteristics by treatment. For most characteristics, there are only minor differences across individuals assigned to the two treatments.

5 Results

Table 3 presents descriptive statistics by gender on the key outcome variables. Panel A presents the averages for the trust task. Columns 1 and 2 present the means separately for the male and female participants in all villages and column 3 the gender difference.

Overall, men are significantly more trusting than women: they send a significantly higher amount as trustors (p-value of difference = 0.05). This is driven by behavior in the non-JEEViKA villages. (Columns 7–9) show that men exhibit significantly greater trust in these villages. However, due to a sharp increase in trust by female trustors and a slight decrease in trust by male trustors, we do not detect significant behavioral differences by gender in the JEEViKA villages. We return to this issue later when we discuss the regression results relating to trust behavior.

While amount sent to female trustees is always higher than the amount sent to male trustees (by the average participant), the gender difference is not statistically significant. Similarly, there is no gender difference in trustworthiness.

Panel B presents the descriptive statistics on risk preferences, which is defined as the proportion allocated to the risky asset in the risk task. Men have a significantly greater preference for risk in the overall sample (+0.10, $p < 0.01$), as well as in the JEEViKA (+0.12, $p < 0.01$) and non-JEEViKA villages (+0.08, $p < 0.05$). In our trust regressions, below, we control for the risk preferences of the participants so that regression results are not confounded by differences in risk preferences.

5.1 JEEViKA and attitude differences

JEEViKA and non-JEEViKA villages display little difference in perceptions about the appropriate occupation and education aspirations of male and female children and the appropriateness of women in positions of power (see Table 4). However, respondents in JEEViKA villages are significantly more likely to strongly agree with the following two statements: (1) “villages where women have more power perform better”, and (2) “in this village women have too much political influence”.

Exposure to the JEEViKA program is associated with a significant difference in attitudes

of both men and women. Male respondents in JEEViKA villages have higher aspirations for their daughters than their non-JEEViKA counterparts: they are less likely to want their daughters to be employed in a traditional female occupation (housewife, teacher or preschool teachers) and they are more likely to report that they would prefer their daughters to select the occupation they prefer. Men in JEEViKA villages are also significantly more likely to agree with the statement “villages with women in power perform better”.

Compared to their non-JEEViKA counterparts, women in JEEViKA villages are more likely to aspire for tertiary education for their children (+0.077, $p < 0.10$), perhaps because the value of education is more readily understood as a result of the JEEViKA program. Women also report feeling safer in JEEViKA villages (+0.070, $p < 0.10$), which is important given widespread violence against women in this region. However, women are significantly more likely to report barriers against women in leadership positions (+0.081, $p < 0.10$), perhaps because leadership opportunities created by the JEEViKA program also allow barriers to manifest.

5.2 Trust and trustworthiness

In this section we examine the effects of exposure to the JEEViKA program on participant trust and trustworthiness in more detail. Recall that in the trust task (Section 3.1), the amount sent by the trustor is interpreted as a measure of trust while the amount returned by the trustee is a measure of trustworthiness. First, we examine whether women are more trusting, particularly after experience with the JEEViKA program, using the following regression equation.

$$S_{iv} = \beta_0 + \beta_1 \text{Trustor}^f + \beta_2 \text{JEEViKA}_v + \beta_3 \text{Trustor}^f \times \text{JEEViKA}_v + \gamma \mathbf{X}_{iv} + \varepsilon_{iv} \quad (1)$$

where S_{iv} is the amount sent by trustor i who is a resident of village v in the trust task. $Trustor^f$ is a dummy variable that takes the value of 1 if the trustor is female; $JEEViKA_v$ denotes that the JEEViKA program was implemented in village v . Recall that trustors and trustees both reside in the same village, but matching was anonymous – trustors did not know the identity of the matched trustee and vice versa. Finally, \mathbf{X}_{iv} includes a set of individual controls – age, educational attainment, occupational status, income, religion, caste, household size, father’s school completion and the proportion of the endowment allocated to the risky asset in the risk task described in Section 3.2. The regressions also control for a set of district fixed effects that account for all district level unobserved heterogeneity. Standard errors are clustered at the village level.¹²

Table 5 presents regression results on trust from estimation of equation (1). The regression results presented in Column 1 imply that female trustors exhibit significantly more trust compared to male trustors in JEEViKA villages (+21.97, $p < 0.05$). In non-JEEViKA villages, women are significantly less trusting than men and exposure to the JEEViKA program is associated with a significant increase in trust by women.

Columns 2 and 3 present the trust results separately for the gender revealed and gender not revealed villages. The result that females in JEEViKA villages exhibit significantly higher levels of trust is true only in the gender revealed villages (+33.67, $p < 0.05$).

Table 6 examines gender differences in being trusted by reporting coefficients from estimation of a variant of equation (1).

$$S_{iv} = \beta_0 + \eta_1 Trustee^f + \eta_2 Trustee^m + \eta_3 JEEViKA_v + \gamma \mathbf{X}_{iv} + u_{iv} \quad (2)$$

¹² Note that we cannot include village fixed effects because we are interested in the effect of the $JEEViKA_v$ dummy which is a village level variable. We also cannot include block or sub-district fixed effects as the roll-out of the JEEViKA program was at block level. Therefore, the JEEViKA status of villages in the same block does not vary.

In this equation, $Trustee^f$ and $Trustee^m$ are dummies for the gender of the trustee.¹³ The regression results presented in Column 1 imply that on average, relative to when the gender of the trustee is not revealed, female (but not male) trustees are significantly more trusted (+14.756, $p < 0.05$). The results in Column 2 decompose the effects by the JEEViKA status of the village. As the total effects imply, women are more trusted only in JEEViKA villages (+16.49, $p < 0.10$).

In summary, the findings in Tables 5 and 6 imply that women exposed to the JEEViKA program are both more trusting and more trusted. Next, we examine whether women are more likely to reciprocate this trust (i.e., whether they are more trustworthy), and if exposure to the JEEViKA program affects this by estimating the following regression.

$$R_{iv} = \alpha_0 + \alpha_1 Trustee^f + \alpha_2 JEEViKA_v + \alpha_3 Trustee^f \times JEEViKA_v + \delta \mathbf{Z}_{iv} + \epsilon_{iv} \quad (3)$$

where R_{iv} is the average proportion returned by the trustee.¹⁴ \mathbf{Z}_{iv} includes a set of individual controls such as age, educational attainment, occupational status, income, religion, caste, household size, father's school completion as well as a set of block fixed effects that account for all block (or sub-district) level unobserved heterogeneity. Standard errors are clustered at the village level.¹⁵ Table 7 shows no statistically significant differences in trustworthiness by gender or exposure to the JEEViKA program.

¹³ The reference category is that the gender of the matched trustee is not known to the trustor.

¹⁴ The proportion returned by the trustee is defined by $\frac{R}{E+3S}$, where E is the endowment of the trustee and S is the amount sent by the trustor, which is tripled by the experimenter. Recall that we collect information on R for all possible values of E (i.e., use the strategy method), the average proportion returned is the average over all the decisions made by the trustees.

¹⁵ Our results remain unchanged when pooling the reported R for each trustee over the different values of S and cluster the standard errors at the individual level.

6 Conclusion

A 2009 report by the World Bank, FAO and IFAD offered evidence that community participatory programs can and often bypass women (World Bank, FAO and IFAD, 2009). Women focused community participatory programs such as JEEViKA have significant potential to empower women leading to long term community development. These programs can work by increasing women's skills, bargaining power and ultimately change perceptions about the appropriate role of women in the community (Ahmed et al., 2009). By measuring differences in trust and other attitudes in JEEViKA and non-JEEViKA villages, our research offers an important new dimension on which to evaluate community-based programs. We find evidence of significant differences in the behaviour and attitudes towards women in program villages. Specifically, we find that the program is associated with an improvement in trust, first among women and subsequently reciprocated by men they interact with. Trust in fellow community members is a key driver of community cooperation, without trust community driven programs may be less effective. The program is associated with changes in attitudes of men away from the traditional role and expectation of women. The finding compliment existing survey research on the JEEViKA program that find women's empowerment measured in terms of mobility and decision making improves for those women participating in the program (Datta, 2015). In addition, Sanyal et al. (2015) find that the JEEViKA program changes cultural norms towards women by giving women access to new networks and increasing knowledge.

These findings should be accompanied with a few caveats. Given that the original JEEViKA blocks were not randomly selected, it is possible that despite our method of selection the villages are not matched on unobservable characteristics. For instance, we might have unobserved selection on political variables. Villages selected for JEEViKA could either be safely held by the ruling party or a place where the ruling party had marginal victories (and thus needs to shore up its support). This might bias our results if there is greater

trust in leaders in the sample villages (because everyone agrees that they should vote for the ruling party) or greater distrust in leaders in the sample villages (due to political polarization) than non-JEEViKA villages. Second, we might have unobserved selection on women's empowerment. Villages selected for JEEViKA could either have a relatively high baseline level of women's empowerment (makes program implementation easier), or a relatively low baseline level of women's empowerment (greater urgency for such a program). Finally we could have unobserved selection on bureaucratic quality. Villages selected for JEEViKA might be allocated better, more experienced and more motivated bureaucrats who facilitate and encourage program implementation, and these bureaucrats could also separately impact trust/leadership outcome variables. So bureaucratic quality might be a potentially omitted variable that can simultaneously effect both program quality and the behavioural response. Each of these unobserved differences, resulting from the fact that the JEEViKA villages were not randomly selected, could result in an omitted variable bias which could potentially affect the external validity of our results. Our matching of JEEViKA and non-JEEViKA villages on observables however implies that our analysis accounts for internal validity of the results pertaining to differences between the JEEViKA and non-JEEViKA villages.

Nonetheless, these findings have important policy implications, both for JEEViKA as well as for similar projects. It is argued that increased representation of women in villages can potentially improve both gender equality as well as the quality of governance and community outcomes. Our results show that female empowerment programs have the potential to change attitudes and behaviour such as trust. Further research is needed to understand if this is a common phenomenon, and if so, why and in what situations? More significant is the potential for increases in trust to have large economic and social effects in the JEEViKA villages. These effects may last well after the formal program ends, adding to the long term value accruing from the JEEViKA program. Future research evaluating the effectiveness of community driven development programs could institutionalise

procedures for measuring and evaluating trust and other behavioural traits both at baseline and the endline to identify the behavioural impacts of community driven projects. Finally, the results presented in this paper are in contrast to the experiences of many community programs which have been found to ignore the voice of women (Wong, 2012). In many developing countries, women's voice is marginalised and untargeted community programs that leave decision making to elites within a community will not change this aspect. For participatory community programs to be beneficial for all social groups, policy makers should ensure that community programs explicitly target women, apart from other objectives.

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Table 1: Village characteristics

	JEEViKA vs Non-JEEViKA						
	Pooled Sample (1)	JEEViKA (2)	Non-JEEViKA (3)	Difference (4)	Gender Revealed (5)	Treatment Gender Not Revealed (6)	Difference (7)
Number of households	566.07	670.50	461.65	208.85	580.55	551.6	28.95
Total population	2923.55	3487.75	2359.35	1128.40	3133.9	2713.2	420.7
Male to female ratio	1.05	1.06	1.05	-0.01	1.06	1.04	0.02
Fraction SC	0.33	0.34	0.31	0.03	0.33	0.32	0.01
Fraction ST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fraction literate	0.44	0.42	0.45	-0.02	0.44	0.43	0.00
Fraction male literate	0.52	0.55	0.49	0.06	0.52	0.51	-0.01
Fraction female literate	0.35	0.35	0.35	0.01	0.35	0.35	0.00
Fraction workers	0.38	0.36	0.40	-0.04	0.38	0.38	0.00

Notes: This table shows the *ex ante* balance in the characteristics of villages chosen for experiments. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Source: Authors' computations.

Table 2: Participant characteristics

	Pooled Sample (1)	JEEViKA vs Non-JEEViKA		Role in Trust Task			Treatment		Difference (10)	
		JEEViKA (2)	Non- JEEViKA (3)	Difference (4)	Trustor (5)	Trustee (6)	Difference (7)	Gender Revealed (8)		Gender Not Revealed (9)
Are you currently working	0.39	0.387	0.388	-0.001	0.370	0.405	-0.035	0.41	0.37	0.04
No income in the past 30 days	0.63	0.636	0.625	0.011	0.646	0.616	0.03	0.60	0.66	-0.06*
Age in years	27.02	27.30	26.70	0.60	26.79	27.25	-0.46	27.30	26.74	0.56
Household size	7.77	7.81	7.72	0.09	7.82	1.719	6.101	7.49	8.27	-0.78***
Hindu	0.91	0.844	0.960	-0.116***	0.897	0.916	-0.019	0.89	0.93	-0.03**
Upper Caste	0.26	0.204	0.310	-0.106***	0.251	0.263	-0.012	0.24	0.27	-0.03
Scheduled Caste	0.24	0.248	0.231	0.017	0.234	0.246	-0.012	0.22	0.27	-0.05*
OBC	0.43	0.476	0.373	0.103***	0.439	0.410	0.029	0.45	0.40	0.05
Own schooling										
No schooling	0.05	0.054	0.044	0.010	0.046	0.052	-0.006	0.04	0.06	-0.01
Primary school	0.30	0.248	0.342	-0.094***	0.287	0.304	-0.017	0.31	0.28	0.03
Secondary school	0.23	0.246	0.210	0.036	0.232	0.224	0.008	0.23	0.23	-0.01
Higher secondary school	0.28	0.28	0.275	0.005	0.148	0.151	-0.003	0.25	0.31	-0.06***
Tertiary education	0.15	0.170	0.130	0.040*	0.286	0.268	0.018	0.17	0.13	0.04***
Father's schooling										
No schooling	0.38	0.38	0.38	0.000	0.358	0.405	-0.047	0.36	0.40	-0.04
Primary schooling	0.24	0.270	0.206	0.064**	0.224	0.252	-0.028	0.25	0.22	0.03

Notes: This table shows the *ex post* balance in the characteristics of participants in the experiments. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Source: Authors' computations.

Table 3: Decisions in experimental tasks

	All		JEEViKA		Non-JEEViKA				
	Male	Female	Male	Female	Male	Female			
	(1)	(2)	(3=1-2)	(4)	(5)	(6=4-5)	(7)	(8)	(9=7-8)
Panel A. Trust task									
Amount sent by	106.61	96.04	8.37*	100.21	102.71	-2.50	108.54	89.38	19.17***
Amount sent to	99.36	107.84	-8.47	97.66	110.66	-13.01	101.39	104.92	-3.53
Average proportion returned by	0.49	0.48	0.01	0.50	0.48	0.02	0.48	0.48	0.01
Panel B. Risk task									
Proportion allocated to Risky Asset	0.71	0.60	0.10***	0.74	0.62	0.12***	0.67	0.59	0.08**

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Source: Authors' computations.

Table 4: JEEViKA and attitudes

	Pooled						Diff. (10=8-9)			
	All (1)	JEEViKA (2)	Non- JEEViKA (3)	Diff. (4=2-3)	JEEViKA (5)	Male Non- JEEViKA (6)		Diff. (7=5-6)	JEEViKA (8)	Female Non- JEEViKA (9)
Aspirations for children										
<i>Girls' education</i>										
What Child Wants	0.318 (0.466)	0.326 (0.469)	0.310 (0.463)	0.016	0.328 (0.470)	0.289 (0.454)	0.038	0.325 (0.469)	0.332 (0.472)	-0.007
Tertiary Education	0.357 (0.479)	0.381 (0.486)	0.333 (0.472)	0.048	0.399 (0.491)	0.380 (0.486)	0.019	0.363 (0.482)	0.286 (0.453)	0.077*
<i>Boys' education</i>										
What Child Wants	0.378 (0.485)	0.391 (0.489)	0.365 (0.482)	0.027	0.411 (0.493)	0.331 (0.471)	0.080*	0.371 (0.484)	0.399 (0.491)	-0.028
Tertiary Education	0.449 (0.498)	0.467 (0.499)	0.431 (0.496)	0.036	0.470 (0.500)	0.479 (0.501)	-0.009	0.464 (0.500)	0.382 (0.487)	0.082*
<i>Girls' occupation</i>										
Traditional Female	0.364 (0.482)	0.341 (0.475)	0.388 (0.488)	-0.046	0.282 (0.451)	0.380 (0.486)	-0.099**	0.401 (0.491)	0.395 (0.490)	0.006
What Child Wants	0.244 (0.430)	0.257 (0.437)	0.232 (0.422)	0.025	0.273 (0.446)	0.174 (0.380)	0.100***	0.241 (0.428)	0.291 (0.455)	-0.051
<i>Boys' occupation</i>										
What Child Wants	0.322 (0.467)	0.315 (0.465)	0.328 (0.470)	-0.014	0.295 (0.457)	0.269 (0.444)	0.026	0.335 (0.473)	0.390 (0.489)	-0.055
Attitudes towards Women										
Barriers exist for women in leadership positions										
Feel safe	1.658 (0.475)	1.677 (0.468)	1.638 (0.481)	0.039	1.697 (0.460)	1.698 (0.460)	-0.001	1.657 (0.476)	1.576 (0.495)	0.081*
Women respected more	0.813 (0.390)	0.827 (0.378)	0.798 (0.402)	0.029	0.887 (0.318)	0.897 (0.305)	-0.010	0.768 (0.423)	0.697 (0.460)	0.070*
Villages with women in power perform better	0.436 (0.496)	0.455 (0.498)	0.417 (0.494)	0.038	0.529 (0.500)	0.455 (0.499)	0.075	0.380 (0.486)	0.378 (0.486)	0.002
In this village women have too much political influence	0.451 (0.498)	0.488 (0.500)	0.415 (0.493)	0.074**	0.471 (0.500)	0.384 (0.487)	0.086**	0.506 (0.501)	0.445 (0.498)	0.061
	0.194 (0.396)	0.215 (0.411)	0.173 (0.379)	0.042*	0.193 (0.396)	0.149 (0.357)	0.045	0.237 (0.426)	0.197 (0.399)	0.040

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Source: Authors' computations.

Table 5: Regression results on trust

	All (1)	Gender Revealed (2)	Gender Not Revealed (3)
Trustor Female	-16.983** (7.532)	-16.953 (10.665)	-14.663 (11.976)
JEEViKA Village	-11.233 (8.386)	-17.032 (11.800)	-5.524 (11.740)
Trustor Female × JEEViKA Village	21.970** (10.106)	33.670** (13.330)	7.502 (16.554)
Proportion Invested in Risky Asset	-3.028 (8.915)	-6.433 (13.182)	2.840 (10.315)
Sample Size	477	251	226

Notes: OLS Regression results presented. Dependent variable is the amount sent by the Trustor (Sender) in the Trust task. Standard errors clustered at the village level in parenthesis.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: Authors' computations.

Table 6: Gender differences in trusted

	(1)	(2)
JEEViKA village	-0.970 (6.307)	
Trustee Male	2.730 (6.921)	4.657 (8.996)
Trustee Male × JEEViKA village		-3.698 (10.200)
Trustee Female	14.756* (7.677)	12.846 (9.188)
Trustee Female × JEEViKA village		3.643 (12.138)
Proportion Invested in Risky Asset	-1.346 (8.398)	-1.518 (8.314)
Sample Size	477	477
Total Effect		
Male Trustee in JEEViKA village		0.959 (8.232)
Female Trustee in JEEViKA village		16.489* (10.333)

Notes: OLS Regression results presented. Dependent variable is the amount sent by the Trustor (Sender) in the Trust task. Standard errors clustered at the village level in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Source: Authors' computations.

Table 7: Regression results on trustworthiness

Variables	All (1)	Gender Revealed (2)	Gender Not Revealed (3)
Trustee female	-0.007 (0.026)	-0.014 (0.036)	0.017 (0.039)
JEEViKA Village	0.014 (0.024)	-0.010 (0.031)	0.053 (0.039)
Trustee Female × JEEViKA Village	-0.008 (0.033)	0.025 (0.045)	-0.060 (0.049)
Sample Size	472	246	226

Notes: OLS Regression results presented. Dependent variable is the average amount sent by the Trustee (Receiver) in the Trust task. Standard errors clustered at the village level in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: Authors' computations.