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## Reducing Economic Violence against Women and Improving Family Financial Wellbeing: A Cluster Randomized Controlled Trial in India --Manuscript Draft--

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<b>Response to Reviewers:</b>	We have attached the Response Letter as a separate PDF.

# Reducing Economic Violence against Women and Improving Family Financial Wellbeing: A Cluster Randomized Controlled Trial in India

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## Abstract

Economic abuse—defined as denying access to financial resources, seizing income, or preventing employment—is an overlooked dimension of intimate partner violence (IPV). In India, entrenched gender norms heighten women’s vulnerability to economic IPV. This study evaluates a couples-based intervention that integrates financial literacy with gender-transformative content to reduce economic IPV. A cluster randomized controlled trial will be conducted with 2,250 spouses across three Indian states and 150 communities. We will examine treatment effects on economic and other forms of IPV, financial knowledge, income, savings, female employment, and women’s empowerment six months after the intervention. Mediation analysis will explore key mechanisms, including channels running through women’s economic empowerment, as well as changes in gender norms and in household decision-making dynamics. An accompanying process evaluation will elicit drivers and barriers of treatment effectiveness. This study will generate crucial evidence on how a scalable, culturally sensitive intervention can improve family economic wellbeing.

**Keywords:** Economic abuse; intimate partner violence; financial wellbeing; gender transformation; randomized controlled trial; India

**JEL Codes:** J12, J16, G53, D14, I31

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# 1 Proposed timeline

The timeline of the randomized controlled trial is as follows:

- Baseline data collection: July–September 2025
- Delivery of the intervention: January–October 2026
- Accompanying process evaluation to assess implementation quality: January–October 2026
- Qualitative data collection (in-depth interviews and focus group discussions with intervention participants): October–December 2026
- Endline data collection: February–April 2027

# 2 Introduction

More than one in four women globally have experienced physical and/or sexual intimate partner violence (IPV) in their lifetime (Sardinha et al., 2022). IPV violates women’s human rights and imposes substantial costs on their health, well-being, and economic agency (Devries et al., 2013; Sardinha et al., 2022). IPV is typically classified into physical, sexual, and psychological abuse (WHO, 2010, 2018; World Health Assembly, 2014). However, a growing body of research points to a fourth, often overlooked dimension: economic violence (Dutton & Goodman, 2005; Stark, 2007; Yount et al., 2021). Despite its harmful impacts on women’s agency, labour market participation, and long-term well-being, economic IPV is rarely measured in global prevalence surveys or subsumed under psychological violence or coercive and controlling behavior (Postmus et al., 2020; Stark & Hester, 2019; A. Stylianou, 2018; World Health Organization, 2005). Notably, neither legal frameworks such as the United Nation’s “Declaration on the Elimination of Violence against Women”, nor key global targets outlined in Sustainable Development Goal 5, explicitly recognize economic IPV (United Nations - Sustainable Development Goals, 2022; United Nations, 1993). The WHO’s “Violence Against Women” report from 2018 concludes that a better understanding of economic and financial partner abuse remains a crucial blind spot in current policy and advocacy on gender-based violence (World Health Organization, 2018).

Previous studies, largely conducted in high-income countries, define economic violence as abusive behavior that aims to reduce a partner’s ability to acquire, use, and maintain economic resources (Postmus et al., 2020). Economic violence is thus aimed at diminishing a woman’s financial security and self-sufficiency,

eroding her financial decision-making power, and demonstrating male superiority and dominance in the economic sphere (Christy et al., 2022; Jury et al., 2017; Kanougiya et al., 2021). Scholars have largely identified four subtypes of economic violence (Chatterji et al. 2025; Steinert et al., 2023). First, economic control, which may involve denying a partner the right to take part in household financial decision-making and restricting a partner’s access to and ownership of financial resources (Fawole, 2008; Ohlan, 2021; Sharp-Jeffs, 2015); second, economic exploitation, which consists of hiding or stealing a partner’s income or personal possessions, forcing a partner to move out of a shared home, or accumulating debt in the partner’s name (Anitha, 2019; Eriksson & Ulmestig, 2021; Kanougiya et al., 2021; Stylianou et al., 2013); third, employment sabotage, which can involve preventing a partner from acquiring an income of their own or denying access to education or vocational training (Adams et al, 2004; Eriksson & Ulmestig, 2021; Postmus et al., 2020; Stylianou et al., 2013; Stylianou, 2018); and, fourth, a partner’s refusal to contribute financial resources toward household necessities, rent or mortgages (Chowbey, 2017; Eriksson & Ulmestig, 2021; Postmus et al., 2020, 2021; Stylianou, 2018). Culturally specific forms of violence in South Asian contexts, such as India, can also involve dowry-related abuse linked to wedding arrangements (Chatterji et al., 2025). Bloch and Rao (2002), in their analysis of three Indian villages, highlight instances of wife abuse aimed at extracting transfers from the bride’s natal family after marriage. They also point to the most extreme manifestation of economic abuse: dowry murders where wives are penalized for providing what is perceived as insufficient transfers to their in-laws.

Economic violence can have a range of detrimental cascading impacts. First, experiences of economic abuse can severely impair survivors’ mental health. Several studies have identified associations between economic violence and low self-esteem, increased rates of depression and anxiety, and suicidality (Hamdan- Mansour et al., 2011; Kanougiya et al., 2021; Kelly & Johnson, 2008; Stylianou, 2018). Second, economic violence can entrap survivors in a cycle of poverty (Fawole, 2008). Previous research has identified missed days at work, compromised educational attainment, loss of employment, and loss of accommodation and homelessness as some of the more immediate consequences of economic abuse (Chatterji et al., 2025; Fawole, 2008; Postmus et al., 2020; Stylianou, 2018). Quantifying these impacts, a difference-in-differences analysis of comprehensive Finnish administrative data shows that women cohabiting with abusive partners experience substantial economic losses: their annual earnings decline by roughly 12%, and their employment rates fall by nearly 7 percentage points relative to matched control women living with non-abusive partners (Adams et al. 2024). Longer-term consequences include sustained material hardship, indebtedness, and the lack of financial resources necessary to fulfil even the most basic material needs (Kanougiya et al., 2021; Ohlan, 2021; Stylianou, 2018; Voth Schrag, 2015). Third, economic abuse can perpetuate and reinforce other forms

of IPV. This is summarized in marital dependency theory, which suggests that women with less financial resources of their own – and thus limited bargaining power to negotiate change – are more vulnerable to experiencing IPV (Aizer, 2010; Bhattacharyya et al., 2011a; Cools & Kotsadam, 2017; Eggers Del Campo & Steinert, 2020; Farmer & Tiefenthaler, 1997). Specifically, economic abuse can directly increase women’s dependency on male partners, thus reducing their outside options and making it more difficult to leave an abusive relationship (Adams et al., 2024). Economic violence and its associated economic pressures can thus trap women in abusive partnerships over a long period of time (Fawole, 2008; Sanders, 2015; Sanders & Schnabel, 2006; Vyas & Watts, 2009; Warren et al., 2019).

Despite the harmful and far-reaching consequences of economic violence against women, important research gaps remain. First, the existing body of literature on economic IPV against women is primarily based on data collected in high-income countries, mainly Northern America and Australia (Postmus et al., 2020). The generalizability of this evidence to low- and middle-income country (LMIC) contexts with higher levels of poverty and possibly lower levels of female empowerment remains questionable. Second, estimates of the prevalence of economic abuse in the general population, and particularly in LMIC contexts, are still largely missing (Antai et al., 2014; Ohlan, 2021; Postmus et al., 2020). Third, consistent evidence on how to effectively prevent economic IPV against women is still lacking. Existing programs target survivors of IPV in high-income countries, and are thus built around response rather than prevention strategies (Hahn & Postmus, 2014; Hetling et al., 2016; Hetling & Postmus, 2014; Silva-Martínez et al., 2016; Warren et al., 2019). In a recent systematic review and meta-analysis, we synthesize evidence from 49 randomized controlled trials (RCTs) across 31 countries that reported effects of economic empowerment, health, and gender-transformative programs on forms of economic abuse against women among their outcome measures (Böhret et al., 2025). Yet, only five of the 49 studies explicitly measured economic violence as an outcome and none of the included interventions were designed with an explicit focus on the prevention of economic IPV, thus highlighting crucial gaps in programming and policy to prevent economic abuse against women.

Our study builds on these gaps by developing and evaluating the impact of a gender transformative couples’ intervention targeted at husbands and wives in three states of India to shift gender norms and reduce economic and other forms of violence against women. We contribute to the existing economic literature on intimate partner violence in several important ways. First, we develop a theory of change that incorporates key mediating factors - including female employment and economic empowerment, gender norms, and women’s decision-making power - to test multiple causal pathways through which the intervention may reduce economic and other forms of IPV. This framework enables us to generate new causal evidence on

the mechanisms underlying declines in IPV, thereby contributing important insights to a literature that still remains ambiguous as it documents both beneficial (Sanin, 2025; Kotsadam & Villanger, 2022; Chin, 2012) and harmful associations (Tur-Prats, 2021; Bhalotra et al., 2021; Heise & Kotsadam, 2015) between women’s economic empowerment and IPV risk. Our study contributes nuanced and novel evidence to this literature by incorporating a comprehensive set of indicators of women’s economic empowerment that moves beyond employment and income, encompassing women’s access to savings, financial literacy, financial self-efficacy, and their involvement in household financial decision-making. Further, our study builds on two streams of economic research examining the relationship between gender norms and IPV. A first stream documents that more traditional and patriarchal gender norms—and a higher justification of spousal abuse—are associated with a higher prevalence of IPV (Mookerjee et al., 2021; Alesina et al., 2020; González et al., 2020; Pulerwitz et al., 2015; Heise & Kotsadam, 2015; Gupta et al., 2013). A second stream introduces the concept of male backlash, whereby women’s empowerment (i.e., through greater employment, income, or decision-making power) threatens norms surrounding masculine dominance (Bergvall, 2024; Guarnieri & Rainer, 2021; Cools & Kotsadam, 2017; Heath & Jayachandran, 2016). Tur-Prats (2021) explains this mechanism by drawing on Akerlof and Kranton’s (2000) identity model, which posits that an individual’s identity is shaped by assigned social roles determined by prevailing norms, and that violations of these roles generate identity-related utility losses. Men may attempt to offset such losses by deriving compensatory utility from violence. Such identity-related losses are likely to be particularly pronounced when men believe that gender norms in their community remain traditional and conservative. To the best of our knowledge, this is the first economic study<sup>1</sup> to causally evaluate an intervention that directly targets gender norms—both internalized norms and perceived community norms—with the aim of shifting them toward more progressive and gender-equitable views, particularly in terms women’s participation in the labour force and their active involvement in household financial decisions-making. . In consequence, this will allow us to explicitly test whether changes in internalized and perceived gender norms mediate potential post-treatment reductions in IPV.

Second, we collect fine-grained information on economic, psychological, sexual, and physical IPV, triangulating reports from both husbands and wives (Haushofer et al., 2020) and employing indirect measurement techniques, including list experiments and an implicit association test (for the use of list experiments on IPV, see also: Cullen, 2023; Bulte & Lensink, 2019). Building on Adams and colleagues (2024) and Erten and Keskin (2016), our study is among the first to include economic abuse as a distinct and crucial form

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<sup>1</sup>In the global and public health literature, a small number of randomized controlled trials have examined the effects of gender-transformative, couples-based interventions on rates of IPV. However, these studies generally do not attempt to formally identify or disentangle the underlying mechanisms driving observed impacts and none was implemented in a South Asian setting where female employment rates and women’s economic empowerment are traditionally very low (see: John et al., 2022; Dunkle et al., 2020; Gibbs et al., 2020; Gupta et al., 2013).

of IPV. Moreover, by sampling from the general population across three Indian states, rather than focusing exclusively on survivors of violence (e.g., Hartley et al., 2021; Postmus et al., 2012) or relying on administrative police records (Adams et al., 2024), we capture a comprehensive picture of IPV within households, including less severe forms that typically remain unreported to formal authorities. Importantly, the availability of disaggregated data across different IPV types allows us to examine how specific mechanisms relate to distinct forms of abuse and to assess potential substitution between different forms of violence following the intervention. For example, our data enable us to test whether women’s economic empowerment and increased labor force participation differentially affect different types of IPV: On the one hand, such changes may reduce physical IPV by strengthening women’s bargaining power (Kotsadam & Villanger, 2022; Chin 2012; Farmer & Tiefenthaler, 1997) and inducing welfare losses for husbands when wives’ productivity drops due to physical incapacitation (Sanin, 2025). On the other hand, they may simultaneously heighten women’s exposure to economic abuse if abusive partners attempt to appropriate women’s (higher) incomes (Bellés-Obrero et al., 2024; Erten & Keskin, 2018, Bloch & Rao, 2002). In doing so, we contribute new evidence to a small but growing literature documenting differential effects of empowerment interventions across IPV types. For example, Haushofer and colleagues (2019) show that unconditional cash transfers in Kenya reduced both sexual and physical IPV when directed to women, whereas transfers to men reduced only physical IPV. Similarly, Erten and Keskin (2016) find that a compulsory schooling reform in Turkey increased female employment without affecting physical IPV, but substantially increased self-reported psychological violence and financial control behaviors. Our study will offer nuanced insights on the possible pathways underlying such differential impacts.

Third, we capitalize on the causal mediation analysis framework developed by Imai et al. (2010, 2011) to test each hypothesized mechanism and validate our theory of change. This approach goes beyond examining treatment effects on potential mediators by jointly estimating program impacts on both mechanism and outcome variables and formally evaluating the link between them. This enables us not only to identify which mechanisms exhibit statistically significant mediation effects, but also to quantify the share of the total treatment effect mediated by each mechanism, thus increasing our understanding of the relative importance of each distinct channel. Possible insights into whether mechanisms pertaining to gender norms or mechanisms pertaining to women’s economic gains are more relevant for changes in IPV are also crucial for the design of future programs and interventions, which may seek to build on the most influential channels.

Finally, by conducting our study in an LMIC setting characterized by strong patriarchal norms, a high rate of arranged marriages, and social constraints on divorce (Bloch & Rao, 2002), we offer insights into the

dynamics of economic IPV across diverse communities and assess the potential of a low-cost intervention to enhance financial wellbeing and reduce economic IPV in marginalized populations.

## 3 Research design

### 3.1 Intervention

#### 3.1.1 Intervention curriculum and approach

The intervention, titled “*Let us Grow Together: Economic Wellbeing for Families*”<sup>2</sup>, is grounded in evidence supporting the effectiveness of financial literacy programs (Gibbs, Corboz, et al., 2020; Halim et al., 2019; Ismayilova et al., 2018; OlaOlorun & John, 2021) and gender transformative programs (Dunkle et al., 2020; Gupta et al., 2013; Halim et al., 2019; Harvey et al., 2018; Ismayilova et al., 2018; OlaOlorun & John, 2021).<sup>3</sup>

The intervention consists of six community group sessions targeted at 15 husband-wife pairs. Rather than addressing individuals separately, the program is designed for both husbands and wives, treating them as a family unit to foster collaboration, encourage joint decision-making, and promote more gender-equitable household dynamics. Complementing the focus on spouses, the curriculum also includes gender-segregated components to provide participants with a safe space for personal reflection and critical discussions on sensitive topics such as violence, gender norms, and financial stress.<sup>4</sup>

The intervention curriculum was developed using an innovative participatory approach to ensure social acceptability of the program. The initial draft was informed by a comprehensive review of existing curricula focused on financial literacy and/or gender transformation.<sup>5</sup> To refine the curriculum, we then conducted a participatory co-creation workshop with Indian experts in the fields of gender-based violence, financial literacy, women’s empowerment, community theatre and arts-based programming, and male engagement,

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<sup>2</sup>The intervention name has been translated to culturally appropriate equivalents in Hindi, Marathi, and Telugu.

<sup>3</sup>The broad focus of our intervention was based on insights from a global systematic review and meta-analysis that we conducted to quantitatively synthesize program effects on economic control and abuse against women (Boehret, et al., 2025). While our review showed that cash-, food- and in-kind transfers (Aker et al., 2011; Bonilla et al., 2017), microfinance interventions (Angelucci et al., 2015; Crépon et al., 2011), and psychotherapy (Baranov et al., 2020) were promising approaches for promoting women’s involvement in financial decision-making, these programs rely on substantial financial resources (e.g., cash transfers) or access to trained professionals (e.g., psychotherapy). Such requirements can pose significant challenges to implementation in low-resource settings. Consequently, our intervention In line with this, our meta-analysis also showed that interventions including financial training and gender-transformative approaches were associated with significant reductions in economic violence and economic control faced by women (Boehret, et al., 2025). These elements are comparatively more cost-effective and thus have greater potential for delivery and scale-up in resource-scarce settings.

<sup>4</sup>This decision was made based on insights gained during a qualitative feasibility study conducted in June-August 2022 in the three target states. During focus group discussions, some female participants expressed a strong preference for holding in-person sessions separately for men and women to foster a more comfortable environment for sensitive conversations (e.g.: “If husbands will come along with their wives, women can’t speak. If at all they speak in the meeting, their husbands will beat them in the evening.” [woman, Maharashtra]).

<sup>5</sup>Examples included the Stepping Stones and Creating Futures intervention implemented in South Africa or the Indashyikirwa couples program implemented in Rwanda.

alongside representatives from the target population.<sup>6</sup> Their insights guided key revisions to session modules, overall tone, and delivery of core content. Initially, the program curriculum was divided into three gender-transformative modules and three financial literacy modules. However, stakeholders strongly recommended a more integrated approach. In response, we discarded the initial bifurcation and redesigned the curriculum to embed financial training components alongside subtle gender-transformative content and activities throughout each of the six sessions. In addition, stakeholders strongly recommended against using stand-alone modules explicitly addressing the types, causes, and consequences of intimate partner violence. Instead, they advised integrating these aspects into case studies that could serve as entry points for critical discussions on unhealthy relationship dynamics and household decision-making. Following this guidance, we developed additional case studies and role plays, and incorporated dedicated modules on improved spousal communication. Lastly, we followed stakeholders' advice to avoid overly detailed or rigid facilitator instructions. This approach will allow local gender trainers the flexibility to adapt specific content to reflect cultural and contextual specificities (e.g., modifying the names and professions of characters in case studies), or simplifying material through visual aids to accommodate lower literacy and numeracy levels of some participants/groups. Lastly, stakeholders recommended drawing on adult learning theories, suggesting that exercises should be more intuitive and participatory, emphasizing self-directed learning, the integration of life experience, relevance to everyday contexts, and opportunities to apply new knowledge in daily activities.

Each of the six sessions is designed to last between 2.5 and 3 hours. Drawing on the design of previous financial literacy programs—including those tailored for IPV survivors—the intervention aims to enhance couples' financial knowledge and self-efficacy, foster healthy household financial discussions, and strengthen family financial resilience (Hahn & Postmus, 2014; Hetling et al., 2016; Hetling & Postmus, 2014; Silva-Martínez et al., 2016). Core modules cover:

1. drafting a monthly household budget,
2. tracking of monthly expenses,
3. differentiating between essential and optional expenses,
4. understanding the importance of emergency savings,
5. learning about interest rates in the context of both debt and savings,
6. evaluating different saving and investment strategies, and

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<sup>6</sup>Specifically, two spouses from lower-middle socioeconomic status attended the workshop, with one coming from an urban slum around Noida and one from an urban slum around Lucknow. One of the wives was a shop owner, which she ran along with her husband, the other wife was a homemaker.

7. devising a family financial goal and savings plan.

Beyond financial literacy, the curriculum incorporates gender-transformative content to challenge traditional gender norms that position men as financial providers and women as caregivers and homemakers. It promotes non-violent communication for de-escalating conflicts, encourages women’s engagement in financial matters, and supports female employment. Here, core modules cover:

1. examining the distribution of paid and unpaid labour between spouses,
2. deconstructing societal expectations of the “ideal man” and “ideal woman”,
3. introducing conflict resolution skills and non-violent communication skills such as active listening techniques and expressing emotions,
4. raising awareness about economic control and abuse.

The intervention incorporates additional design features proven to enhance the effectiveness of financial literacy programs in low-resource settings. First, to accommodate potentially low literacy and numeracy levels, financial training modules use simple, easy-to-remember rules of thumb and heuristics (Cole et al., 2021; Drexler et al., 2014). Second the intervention prioritizes an “active learning” approach over traditional lecturing, fostering engagement through illustrated case studies, role plays, group exercises, and visual and tactile elements to reduce cognitive load (Kaiser & Menkhoff, 2022; Paas et al., 2003; Steinert, Cluver, et al., 2018a). Third, the intervention promotes active practice and reinforcement of new skills and behaviors through integrated homework exercises, which participants receive at the end of each session and later reflect on—sharing experiences and challenges—at the start of the next session (Steinert, Cluver, et al., 2018b). Additionally, in line with gender-transformative program design (Backman-Levy & Greene, 2024; Kågesten & Chandra-Mouli, 2020; Ruane-McAteer et al., 2020), the intervention actively involves husbands as change-makers rather than positioning them as obstacles to women’s financial autonomy. It emphasizes the benefits of teamwork, challenges the male breadwinner norm, and promotes an equal partnership model where both spouses contribute their unique strengths.

Lastly, the intervention will be designed to be low-cost and thus possibly scalable, ensuring its relevance for broader programming and policymaking across India and potentially in other LMIC settings.<sup>7</sup> This is achieved through a “train-the-trainer” approach, which leverages existing community resources and leaders (Mormina & Pinder, 2018; Weingarten et al., 2018). By fostering local ownership, this approach enhances

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<sup>7</sup>The scalability of the intervention as well as possible adjustments required for delivery in other settings will be assessed as part of the process evaluation.

the program’s ability to adapt to local circumstances, ensuring high acceptability and cultural appropriateness within the target community (Mormina & Pinder, 2018; Yarber et al., 2015). Additionally, the intervention incorporates a digital component in the form of SMS reminders, reinforcing key lessons from the program curriculum. This aligns with a growing body of literature highlighting the effectiveness of technological interventions—an area that has gained particular momentum during the COVID-19 pandemic—in the prevention of and response to IPV (Anderson et al., 2021; El Morr & Layal, 2020; Linde et al., 2020). Specifically, spouses will receive two SMS reminders following each community session. The SMS reminders will be sent out five and ten days after each session. These messages will reiterate key takeaways, provide concise rules of thumb, and remind participants of small joint activities (e.g., creating a monthly savings plan) to complete at home, promoting sustained engagement and practical application of the program’s principles.

### **3.1.2 Intervention delivery and community partnerships**

To ensure the program’s responsiveness to local needs, encourage local ownership, and promote long-term sustainability, we have established close partnerships with non-governmental organisations (NGOs) in each target state. Specifically, we collaborate with the YouthAid Foundation (<https://youthaidfoundation.org/>) in Maharashtra, with BARC Trust (<https://barctrust.org/about-us>) in Rajasthan, and with Swanthana (<https://swanthanass.org>) in Andhra Pradesh. Our NGO partners will support the project by conducting community sensitization sessions prior to the intervention roll-out, thereby enhancing program acceptability and helping to mitigate potential backlash or mistrust in the target communities. They will also be primarily responsible for recruiting local male and female gender trainers who possess a strong understanding of field realities, fluency in the state language and local dialects, and awareness of specific dynamics related to caste, socioeconomic background, and prevailing gender norms. These attributes will enable the trainers to build deep and meaningful connections with the target populations. In addition, each NGO will facilitate the implementation of a five-day Training-of-Trainers (ToT) program. During these sessions, master trainers who have extensive experience delivering gender-sensitive program content and were closely involved in our stakeholder workshop or intervention pilot, will train five teams of male and female facilitators in each state. During the ToT, master trainers and gender trainers will also ensure that the intentionally flexible elements of the curriculum are adapted to the local context and adjusted to best reflect the realities, perspectives, and needs of the target communities.

## 3.2 Theory of change and key mechanisms

The program’s primary objectives are to reduce economic IPV, alongside other forms of IPV, and to enhance participants’ financial wellbeing. Building on prior research that highlights the central role of economic factors in determining IPV dynamics (Eggers del Campo & Steinert. 2022; Heath et al., 2020; Hidrobo, Peterman, & Heise, 2016; Bhattacharyya et al., 2011a; Aizer, 2010; Bloch& Rao, 2002), we structure our trial outcomes into intermediate and distal outcomes. **Intermediate outcomes** include: (i) participants’ financial wellbeing, (ii) women’s engagement in income-generating activities, (iii) female empowerment, and (iv) time spent with one’s spouse. **Distal outcomes** encompass our primary endpoint, economic IPV, as well as other forms of IPV, specifically physical, sexual, and emotional violence, and partners’ controlling behaviors. We will estimate treatment effects for each intermediate outcome and additionally assess their role as potential mechanisms for reductions in IPV.

In addition, we specify a set of first-order mediators that are directly linked to either of the two intervention pillars. For the financial literacy pillar, these mediators include (i) improvements in financial self-efficacy, (ii) reductions in financial information asymmetries between spouses, and (iii) increases in joint financial decision-making. For the gender-transformative pillar, the mediators comprise (i) shifts in internalized gender norms and (ii) in perceived community norms toward more progressive views (particularly norms pertaining to female employment outside of the home and women’s engagement in household finances), and (iii) greater female participation in household decision-making. We will examine whether these mediators explain treatment impacts on both intermediate and distal outcomes. Figure S1 illustrates our theory of change, showing the organization of included measures into first-order mediators, intermediate outcomes, and distal outcomes. Below, we outline the specific mechanisms we will test.

### 3.2.1 Theory of change for intermediate outcomes

#### **Mechanism I: Increased financial self-efficacy promotes financial wellbeing**

Intervention components focused on financial literacy skills training will be aimed at promoting participants’ financial competency and financial self-efficacy. Self-efficacy is a central construct in social cognitive theory and is widely regarded as a critical determinant of behavioral change (Fishbein & Ajzen, 1975; Bandura, 1986). Accordingly, financial self-efficacy can define the extent to which a person can follow through with a savings or financial goal, execute perseverance, and adhere to financial plans (Esopo et al., 2018). These factors can help improve participants’ financial planning, thus increasing savings, income, and decreasing

financial distress. (Kaiser et al., 2022; Steinert et al., 2018a; Kaiser & Menkhoff, 2017).

### **Mechanism II: Improved spousal cooperation promotes financial wellbeing**

Our program design further builds on a strand of literature that has discarded the unitary household model, which assumes that (economic) preferences of wife and husband are well aligned, and instead reveals empirical evidence for non-cooperative behavior among spouses (Ashraf, 2009; Fiala et al., 2017; Verschoor et al., 2017). One of the underlying reasons for the lack of cooperation includes information asymmetries regarding available household resources. This may, for example, be driven by practices of hiding money from a spouse (Steinert, Vasumati Satish, et al., 2022a). Non-cooperative behavior can lead to what scholars refer to as household efficiency losses, expressed by little investment in household-level public goods (such as children’s health and education), thus compromising family economic welfare (Castilla, 2019). Our intervention seeks to reduce non-cooperative behavior by encouraging joint financial decision-making and transparent communication about financial resources. This can lead to increased female involvement in financial planning and decision-making, women’s improved access to own financial resources, and greater household financial wellbeing in general. Corroborating this, a field experiment conducted with spouses in the Philippines showed that husbands allocated significantly more money to their wives’ bank accounts if they were asked to communicate with their spouse before making a savings decision (Ashraf, 2009).

### **Mechanism III: More progressive social norms promote female employment and empowerment**

The gender-transformative pillar of our intervention seeks to promote progressive social norms at both the individual and community level. Its curriculum builds on prior evidence underscoring the importance of engaging male partners as complementary “agents of change” to enhance the effectiveness of IPV prevention programs (OlaOlorun & John, 2021). Specifically, the gender-transformative content of our intervention targets spouses’ perceptions of role distributions within the domestic and economic spheres. By challenging internalized gender norms and identities, the intervention aims to foster greater acceptance of women’s employment and participation in economic decision-making (Bertrand et al., 2015).

Beyond these direct effects, peer dynamics may further amplify impacts. If individuals observe that other program participants attending the same sessions update their gender-related beliefs and reject traditional notions of masculinity, such peer effects may help dissolve “pluralistic ignorance.” Pluralistic ignorance describes a situation in which individuals privately reject a norm but mistakenly believe that their peers uphold it, leading them to conform in order to avoid social sanctions (Bursztyn et al., 2020; Cantoni et al., 2019). Consistent with this mechanism, Field et al. (2021) show that a multi-faceted economic empowerment pro-

gram for women in rural India not only increased female labor supply but also raised husbands’ acceptance of women’s employment. The authors argue that men revised their beliefs once they realized that wives’ labor market participation carried less social stigma than expected, prompting them to update assumptions about prevailing community norms. Taken together, we expect our intervention to increase women’s empowerment and employment by shifting both internalized and perceived gender norms toward more equitable ideals.

### **3.2.2 Theory of change for distal outcomes: intimate partner violence**

#### ***Beneficial effects***

##### **Mechanism I: Increased female economic empowerment leads to reductions in IPV**

Our program seeks to enhance women’s agency, promote female employment, and advance women’s economic empowerment. A substantial body of research has documented a negative association between women’s economic empowerment and their experiences of IPV, whether through increases in female employment (Kotsadam & Villanger, 2022; Chin, 2012), cash transfers (Heath et al., 2020; Roy et al., 2019; Haushofer et al., 2019; Hidrobo et al., 2016), or access to microcredit (Pronyk et al., 2006). Specifically, a recent meta-analysis synthesizing causal evidence on the effects of economic empowerment programs found that, on average, women’s reports of IPV decreased across the 19 randomized controlled trials included in the review (Eggers del Campo & Steinert, 2022). This pattern is consistent with marital dependency theory, which posits that greater economic autonomy strengthens women’s bargaining power and expands their “outside options,” thereby reducing their vulnerability to IPV (Adams et al., 2024; Bhattacharyya et al., 2011b; Cools & Kotsadam, 2017; Farmer & Tiefenthaler, 1997). Integrating this mechanism into the household bargaining model, women’s income generation and employment prospects raise their “threat point,” leading men to refrain from violence to avoid the risk of marital dissolution (Bhalotra et al., 2021; Farmer & Tiefenthaler, 1997; Tauchen et al., 1991) or the emergence of a noncooperative equilibrium (Roy et al., 2019). Building on this theoretical foundation and prior empirical evidence, we hypothesize that reductions in IPV are likely to be driven by increases in women’s employment, income, and savings.<sup>8</sup>

##### **Mechanism II: Reduced financial distress leads to reductions in IPV**

Theories of violence have identified “expressive violence” as one potential motive of why men may choose to resort to violence (Tauchen et al., 1991; Farmer & Tiefenthaler, 1997; Eswaran & Malhotra, 2011). This perspective assumes that men may derive non-monetary utility from violence by relieving frustration and

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<sup>8</sup>Although our study design and intervention curriculum were developed with this hypothesis in mind, we remain mindful of evidence to the contrary and will therefore also investigate potential mechanisms underlying harmful effects (see below).

stress and by asserting dominance. Economic pressures, in particular, can therefore increase violence risk: men facing financial insecurity and economic scarcity may resort to violence as an outlet for stress (Arenas-Arroyo et al., 2021). Consistent with this view, Bhalotra et al. (2021), using representative data from 31 developing countries, show that higher male unemployment rates are associated with a significant increase in physical violence against women. Vice versa, in line with this logic, reductions in financial strain have been found to substantially lower the likelihood of conflict and of men engaging in expressive violence (Buller et al., 2018; Angelucci et al., 2015). For example, Heath and colleagues (2020), in a randomized evaluation of Mali’s national cash transfer program, document substantial reductions in IPV, with the primary channel operating through declines in men’s stress and anxiety. Building on this evidence, we hypothesize that our program will reduce financial stress among husbands - both by increasing women’s income generation and reducing reliance on men as the sole breadwinner, and by strengthening household financial planning and budgeting. Together, these mechanisms are expected to contribute to a decline in IPV.

### **Mechanism III: Women’s greater decision-making power leads to reductions in IPV**

Our intervention curriculum is designed to directly promote women’s participation in household financial decision-making. It includes activities where spouses collaboratively create a monthly budget, set joint savings goals, and discuss strategies to avoid risky borrowing. We assume that such practices, coupled with women’s broader economic empowerment that the intervention tries to foster, enhance their bargaining power and strengthen their position within the household. Marital dependency theory suggests that women with greater bargaining power are better positioned to negotiate non-violent conflict resolution, thereby reducing their risk of IPV exposure (Bhattacharyya et al., 2011a, Farmer & Tiefenthaler, 1997; Tauchen et al., 1991). Corroborating this, Sanin (2025), in a study exploiting the government-driven expansion of coffee mills in Rwanda to examine the causal impact of female employment on domestic violence, found that women engaged in wage employment scored higher on a decision-making index. This increased decision-making power was one mechanism contributing to declines in reported domestic violence and hospitalization rates due to domestic abuse.

### **Mechanism IV: More equitable gender norms lead to reductions in IPV**

Previous research has documented strong associations between gender norms and the prevalence of IPV (Mookerjee et al., 2021; Alesina et al., 2020; Gonzalez et al., 2020; Pulerwitz et al., 2015; Heise & Kotsadam, 2015; Gupta et al., 2013). For instance, Alesina et al. (2020) show that ancestral norms restricting women’s economic roles predict both current acceptance of and exposure to violence. Building on this insight, the gender-transformative components of our intervention are designed to address the root causes of gender

inequality by deconstructing harmful norms, particularly those prescribing rigid divisions of economic and domestic roles between husbands and wives (Bursztyn et al., 2020; Casey et al., 2018; Ellsberg et al., 2015; Kågesten & Chandra-Mouli, 2020). First, this can be achieved by involving male gender trainers in the delivery of the intervention who can act as role models and lead male program participants to update their a priori gender-related beliefs (Chatterji et al., n.d.; Halim et al., 2019). This hypothesized mechanism is based on previous evidence showing that exposure to role models can change people’s perceptions through a “vicarious learning” process (Bernard et al., 2015; Riley, 2022). Second, the program sessions explicitly address the concept of economic IPV and present lived experiences of different forms of economic and other forms of abuse through a series of case studies and role plays. This may help spouses recognize underdiagnosed forms of violence such as economic abuse, become less accepting of IPV in general, and negotiate change (Boyer et al., 2022; Michau et al., 2015). In addition, discussions highlighting men’s economic abuse—as illustrated in case studies—may shift men’s views of the harmful impacts of IPV on women and children, fostering the internalization of alternative masculine ideals that support healthier family dynamics. Lastly, participation in the sessions and exposure to more gender-equitable behavior by the male gender trainer and, potentially, by other male participants, may help men update previous misperceptions about gender and masculinity norms in their community, thus dissolving a possible state of pluralistic ignorance (Bursztyn et al., 2020; Cantoni et al., 2019). As gaps between internalized and perceived gender norms narrow and norms shift in a more progressive direction, deviations from the prescribed roles associated with one’s social identity entail smaller identity-related utility losses (Tur-Prats, 2021; Akerlof & Kranton, 2000). Consequently, men derive lower utility from using violence as a means of reasserting a threatened masculine identity.

Taken together, these mechanisms are expected to foster more equitable gender attitudes and reduce both women’s and men’s acceptance of violence, ultimately lowering the risk of IPV.

### **Mechanism V: Reductions in partner exposure lead to reductions in IPV**

The gender-transformative component of our program is designed to enhance women’s agency, particularly by increasing their mobility and facilitating a shift in time use from exclusively domestic responsibilities toward income-generating activities outside the home. As a result, the intervention may reduce the amount of time spouses spend together at home. According to criminological theories of exposure reduction between partners (Chin, 2012; Dugan et al., 1999), this could lower the risk of IPV.<sup>9</sup>

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<sup>9</sup>Note that, conversely, the program may also increase spousal time together, as couples are encouraged not only to attend sessions jointly but also to complete homework exercises together. We will therefore examine whether increases in joint time are associated with higher levels of IPV at endline. However, we view this scenario as unlikely: the extent to which couples engage in program-related activities at home is a choice made by the spouses themselves and is therefore likely endogenous to more positive relationships and greater willingness to cooperate, and thus factors likely correlated with lower IPV risk.

### **Mechanism VI: Men’s protection of female income leads to reductions in physical IPV**

A further mechanism we examine builds on recent evidence from a natural experiment in Rwanda, which found that new employment opportunities for women led to significant reductions in IPV (Sanin, 2025). The author primarily attributes this effect to husbands refraining from violence that might physically or emotionally incapacitate their wives, reduce their labor force participation, and thereby result in economic losses for the husbands himself (Adams et al., 2024). Sanin (2025) supports this interpretation by showing that hospitalization rates for severe forms of partner violence declined significantly during harvest months, when women’s prospective earnings were highest, while self-reported emotional violence— a type of abuse that does not impair women’s capacity for manual labor—remained unchanged. In line with this reasoning, we will test whether increases in women’s employment following our intervention are specifically associated with reductions in physical IPV, but not with significant changes in emotional or less severe forms of IPV.

### ***Ruling out potential perverse effects***

### **Mechanism I: Male backlash to women’s economic empowerment increases IPV rates**

Contrary to the predictions outlined above, a substantial body of empirical work has documented that women’s risk of IPV may actually *increase* with their economic empowerment, for example following positive changes in employment and income (Bergvall, 2024; Bhalotra et al., 2021; Kotsadam et al., 2017; Luke & Munchi, 2011) or their financial inclusion (Shreemoyee et al., 2025). This phenomenon has been described as “male backlash” and reflects a dynamic in which men perceive women’s economic empowerment as a threat to their status and respond with violence to reassert dominance and control (Guarnieri & Rainer, 2021; Cools & Kotsadam, 2017; Heath & Jayachandran, 2016). Prior evidence further suggests that this risk is most pronounced in settings characterized by low female employment rates (Tur-Prats, 2021; Heise & Kotsadam, 2015), high social acceptance of violence (Kotsadam et al., 2017; Heise & Kotsadam, 2015), and limited access to divorce (Bhalotra et al., 2021). Given that our study setting, India, is a context where traditional gender norms remain deeply entrenched, women’s economic empowerment may here be perceived as a significant transgression of prevailing norms. To protect our study participants against this risk, we have carefully integrated gender-transformative components into our curriculum, shown to mitigate the risk of male backlash (Eggers del Campo & Steinert, 2022). Nevertheless, it remains crucial that we empirically test whether increases in women’s employment and increases in women’s income and savings (also relative to men’s) translate into higher reported rates of IPV.

## **Mechanism II: Women’s economic empowerment leads to an increase in extractive IPV**

A second potential mechanism through which women’s economic empowerment may increase IPV rates draws on theories of men’s instrumental use of violence. These theories suggest that men employ violence as a means of extracting economic resources from their wives (Bellés-Obrero et al., 2025; Halim et al., 2019; Bulte & Lensink, 2019; Erten & Keskin, 2018; Eswaran & Malhotra, 2011), or— in contexts such as India—from their wives’ natal families through post-dowry demands (Bloch & Rao, 2002). We will explicitly test for this adverse mechanism by examining whether increases in reported IPV rates occur among women who experience positive treatment effects on labor force participation, income, or savings. If this mechanism was indeed at work, we would expect the most pronounced increases in our measure of economic IPV, which specifically captures the seizing of women’s earnings and assets, the accumulation of debt in their name, as well as dowry-related harassment.

### **3.3 Identification strategy**

The impact of the couples-based intervention will be evaluated by means of a cluster randomized controlled trial (RCT). After completion of the baseline data collection, clusters will be randomly allocated to treatment or control arm by a 1:1 ratio, stratified by state, rural/urban location, and household wealth quartiles using data on participants’ asset ownership and living standards collected during baseline that we will aggregate to the cluster level. Within each strata, clusters will be randomly assigned to the treatment and control arm based on simple random sampling. To ensure allocation concealment, the randomization will be performed by an appointed trial statistician using the “sample” command in R. Full participant blinding will not be feasible, as individuals will inherently be aware of whether they are receiving the intervention. However, because the program will be framed broadly around financial wellbeing and literacy, participants will remain unaware of the study’s primary outcome focused on economic IPV. This indirect framing is designed to mitigate ethical risks in terms of possible community backlash and resistance from study participants but also to alleviate potential reporting biases related to the study’s primary outcome measure. Moreover, by triangulating both implicit and explicit measures of economic IPV experiences and perpetration (see below), we aim to reduce susceptibility to social desirability and performance biases in outcome reporting. Finally, we will strive to blind enumerators during endline data collection by withholding information about the treatment status of the clusters to which respondents belong.

While an RCT design has been chosen to maximize internal validity and thus establish a causal estimate

of the intervention effect (Gertler et al., 2016; White, 2011), RCTs have been repeatedly criticized for their “black box” nature and for neglecting important questions of why and how and for whom an intervention works (Camfield & Duvendack, 2014; Deaton, 2010; Ravallion, 2009). Against this backdrop, this study will capitalize on a sequential mixed-methods design, integrating both quantitative and qualitative components. The former component will include (i) estimation of the main treatment effects of the intervention, (ii) mediation analysis to examine pathways of change, and (iii) assessment of treatment effect heterogeneity. Complementing this, the qualitative component will consist of a process evaluation, which will draw on focus group discussions and in-depth interviews with program participants to explore potential barriers, facilitators, and underlying mechanisms shaping the intervention’s impact.

### 3.4 Outcomes and hypotheses

#### 3.4.1 Distal outcomes outcome

##### Primary Outcome

The primary outcome variable will consist of self-reported victimization (for women) or perpetration (for men) of economic IPV. *We hypothesize that the couples-based intervention will reduce the incidence and severity of economic IPV.*

To measure economic IPV, we will use a culturally adapted and extended version of the Scale of Economic Abuse (Postmus et al., 2016), informed by qualitative findings from preliminary focus group discussions that we have already conducted (Steinert et al., 2023). The item battery will capture four key dimensions of economic IPV, namely (i) economic control (6 items), (ii) economic exploitation (10 items), (iii) employment sabotage (5 items), and (iv) refusal to contribute economically (2 items). The reference period for the measures will be the past six months to align the measure with the time to follow-up from the intervention’s implementation. For husbands, we additionally include a list of four attitudinal items capturing their views on women’s financial competency and employment potential for which they rate their agreement on a 5-point Likert scale (e.g., “My wife does not have the knowledge or skills necessary to handle money”, “I cannot trust my wife to make smart financial decisions”). A detailed list of individual items for each included measure is shown in Table S1 in the supplements.

Further, to mitigate the risk of non-disclosure due to perceived stigmatisation and social desirability, economic IPV will be elicited using a double list experiment designed to increase anonymity and disclosure (Bertelli et al., 2024, Ebert & Steinert, 2021; Glynn, 2013). Here, respondents will be randomly assigned

to one of two lists of statements. One list will consist of four innocuous statements (reference group) and the other list will include these same four statements and an additional sensitive item on economic IPV, namely *“I am not allowed to decide how money is spent in our home.”/“My wife is not allowed to decide how money is spent in our home”* (experimental group). Respondents will then specify how many of the presented statements apply to them (e.g., “3 out of 5”) without having to indicate which statements they are referring to. The prevalence of economic IPV will then be determined by subtracting the average number documented in the experimental group from the average number in the reference group.

In addition, we will make use of the implicit association test (IAT) technique to measure potential subconscious attitudes towards economic IPV, using an adapted version of the Gender Violence IAT (Ferrer-Perez et al., 2020; Sanchez-Prada et al., 2021). Following previous research, the IAT will consist of a series of stimuli in the form of words, which respondents are asked to sort into two categories by touching a left or right button on the tablet. Specifically, the IAT will be composed of different blocks in which respondents need to sort male and female names into the categories (a) woman and (b) man (target concept) and words such as “employment”, “business”, “childcare”, “cleaning” into the categories (c) work/finance and (d) home/care (attribute concept). In a subsequent block, words corresponding to our attribute concept (work vs. home) will be sorted to the target concept “woman” vs. “man” in a stereotypical manner, i.e. words belonging to the attribute work will be assigned to “man” and words belonging to the attribute home will be assigned to “woman”. In a last block, words corresponding to the attribute concept will be placed into the categories that are not stereotypically associated (i.e., “business” and “woman”). The key assumption of the IAT approach is thereby that respondents’ reaction time is faster if a perceived association between concepts is stronger. The final IAT score will be defined as the difference between the mean response times for incongruent category pairs (e.g., “woman” and “work”) and congruent category pairs (e.g., “woman” and “home”). Considering that the IAT takes approximately 15-20 minutes to complete, we will only include the IAT at baseline.

## Secondary Outcomes

Further, we will evaluate treatment effects on **emotional, physical and sexual IPV and partners’ coercive behaviors**. *We hypothesize that the intervention will decrease women’s IPV victimisation risk.* This outcome will be measured based solely on wives’ reports by combining items from the World Health Organisation’s multi-country study on domestic violence against women (World Health Organization, 2005) and the Indian Family Violence and Control Scale (Kalokhe et al., 2016). The measure will capture four

sub-forms of IPV, namely (i) physical IPV (4 items), (ii) sexual IPV (2 items), (iii) emotional IPV (3 items), and (iv) coercive behaviors (3 items). Like economic IPV, the reference period for the measures will be the past six months.

### 3.4.2 Intermediate outcomes

A first group of secondary outcomes will seek to capture the possible impacts of the intervention on aspects of spouses’ economic wellbeing. Specifically, we will include:

**Financial literacy and knowledge.** *We expect that the couples-based intervention will increase participants’ financial literacy and knowledge, and that this will reduce IPV.* We will measure financial literacy and knowledge based on a five-item scale in which participants rate their financial knowledge and competencies on a 5-point Likert scale (e.g. “I know how I can deposit and withdraw cash from a bank account”) (Nandru et al., 2021), and two additional factual questions drawn from a previous study conducted in India to assess respondents’ financial literacy (Agarwal et al., 2015).

**Savings balance.** *We hypothesize that financial literacy components of the intervention will increase participants’ savings, and that the linked economic empowerment and wellbeing will decrease IPV risk.* We will capture participants’ self-reported savings based on a survey module used in a previous RCT in Pune, Maharashtra (Steinert, et al., 2022a), which will capture the total amount of savings kept at home, in a bank, post office, national savings centre or mobile phone account, in a savings group, money kept with relatives or friends, and the estimated amount of in-kind savings in jewellery/gold/silver.

**Past-month income.** *We assume that the couples-based intervention, which includes modules focused on income generating activities, will increase participants’ past-month income, and that the linked economic empowerment and wellbeing will decrease IPV risk.* We will capture participants’ self-reported earnings in the past month, including payments made in-kind to account for sectors in which wages are more typically paid in-kind (Mukherjee, 2011).

**Financial distress.** *We hypothesize that the couples-based intervention will decrease participants’ financial distress, and that this will reduce the risk of IPV as a form of men’s stress relief.* We will measure participants’ self-reported financial distress based on a 9-item scale adapted from a previous RCT in Tanzania (Abramsky et al., 2019), where participants indicate how often in the past six months they, for example, “had trouble buying food or other necessities for their family” or were “very worried/stressed about their

general financial situation”.

Further, we will assess **women’s employment status**. *We hypothesize that the couples-based intervention, which includes activities challenging the male breadwinner norm, will increase female employment rates and that this will improve women’s power position in the household and protect them against IPV.* Female employment is a binary indicator, coded as 1 if the woman reports engaging in income generating activities, including formal and informal work.

An additional outcome is **female empowerment and agency**. *We hypothesize that the couples-based intervention will boost female empowerment, which will increase their bargaining power and protect them against IPV.* Female empowerment will capture multiple dimensions of women’s empowerment, including: (i) freedom of movement, evaluated using a five-item scale developed by Richardson et al. (2019) to assess women’s agency in India (e.g., the ability to visit the market or one’s natal family unaccompanied) (Richardson et al., 2019), (ii) self-efficacy, measured using a four-item adaptation of Rotter’s locus of control scale (Rotter, 1966), (iii) community participation, assessed through items from the India Human Development Survey, which capture women’s membership in various groups (e.g., self-help groups, savings groups) and their attendance at village panchayat committee meetings (Gram et al., 2019), and (iv) self-rated empowerment, measured using a 10-step ladder scale previously employed with rural women in Nepal, where respondents position themselves relative to the perceived status of women in their community (Gram et al., 2019).

Lastly, we will assess the program’s impact on the amount of **time spouses spent together**. *We hypothesize that the intervention will decrease couples’ exposure time by increasing women’s mobility and engagement in income generation activities outside of the home, which will also decrease IPV risk.*<sup>10</sup> This will be captured by a time use measure prompting participants to indicate activities completed during the past 24 hours, and to indicate which of the activities took place at home and outside and which activities took place in the presence of the partner.

### 3.4.3 First-order mediating variables

We will additionally include measures of possible mediating variables to test the program’s theory of change (see Figure S1). A first mediator will be **husbands’ and wives’ internalized gender norms**. For this, we will use six items drawn from previous studies measuring gender attitudes among study participants

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<sup>10</sup>Yet, conversely, it is also possible that the intervention increases time spent together by promoting activities to complete jointly at home. We will therefore assess both the direct impacts of the program on spousal time together as well as examine how it is possibly mediated by female employment.

in India (e.g., agreement with statements such as “A woman’s most important role is to take care of her home, feeding kids and cook for her family”) (Dhar et al., 2022; Jain et al., 2022; Kostick et al., 2011). In addition, drawing on a previous study on spouses’ preferences about female labour in rural India (Bernhardt et al., 2018), we will include a vignette-based measure of participants’ attitudes towards female employment, and one direct question on participants’ acceptance of female employment. Apart from this, husbands will respond to a six-item battery drawn from the Male Role Norms Inventory and the Multicultural Masculinity Ideology Scale to assess their internalized **masculinity norms** (Levant et al., 2010; Doss & Hopkins, 1998).

Second, we will consider respondents’ **perceptions of community gender norms** as a mediator. For this, we will draw on the same items used for internalized gender norms as described above (Bernhardt et al., 2018; Dhar et al., 2022; Jain et al., 2022; Kostick et al., 2011). We will then ask wives and husbands to indicate for each of these items how they expect their community members would respond to the respective question. In the questionnaire for husbands, we will additionally include two items asking specifically about their mother’s and father’s attitudes towards female employment.

Third, we will capture **women’s involvement in household decision-making**, relying on both husbands’ and wives’ self-reports. Specifically, we will ask participants to assess how they take decisions in seven domains (e.g., decisions about healthcare or medication for themselves, decisions about children’s education/marriage, decisions about making major household purchases) (Seymour & Peterman, 2018). In addition, we will include two items capturing participants’ satisfaction with the extent to which they are involved in their partners’ decisions and in financial decisions of the household.

Fourth, **financial information asymmetries between spouses** will be captured by (i) asking respondents whether they have hidden income or other assets from their spouse (Ambler et al., 2022; Van Campenhout et al., 2021), (ii) asking respondents whether they know their partners’ salary, and (iii) assessing concordance in spousal reports of income.

Lastly, we will measure participants’ **financial self-efficacy and confidence**, using a three-item measure developed and validated in two previous RCTs with low-income populations in South Africa and India (Steinert, Cluver, et al., 2018a; Steinert, Vasumati Satish, et al., 2022b).

### 3.5 Sample and statistical power

A cluster RCT (using villages and administrative wards as clusters) is deemed preferable to individual randomization because it will reduce the risk of spillover to the control arm (Campbell et al., 2004). The unit of randomization will thus be villages (in rural areas) and administrative wards (in urban areas). We have conducted power calculations using Optimal Design Software (Campbell et al., 2004), inferring the assumed effect size from two previous RCTs conducted in South Africa and Rwanda that assessed women’s financial decision-making power in interventions similar to the one proposed here (Gibbs, Washington, et al., 2020; OlaOlorun & John, 2021). We used a lower-bound minimum detectable effect size of 0.25 and a relatively high intra-cluster correlation (ICC) of 0.2, showing that a sample size of 130 clusters with 15 spouses per cluster would be necessary to ensure 80% power at a significance level of  $\alpha = 0.05\%$ . The true intra-cluster correlation in the trial’s target community will be determined after completion of the baseline survey, which will allow for possible adjustments should it exceed the assumed ICC of 0.2.

### 3.6 Variations from the intended sample size

We will oversample by 15% to account for the risk of loss to follow-up, thus yielding a final cluster size of 150 communities (75 per trial arm) and a total sample size of 2,250 husband-wife pairs (1,125 per trial arm).

## 4 Data

### 4.1 Data collection and processing

#### 4.1.1 Data collection procedures

Quantitative data will be collected at baseline (provisionally July-September 2025) and endline (provisionally February-March 2027). The intervention is scheduled to be implemented between January and August 2026. Endline data collection will thus occur approximately six months post-intervention. Once recruited and consented into the study, participants will be interviewed by gender-matched enumerators fluent in the local language. Surveys will be translated from English to Marathi, Telugu, and Hindi and translations will be checked internally and further verified through a survey pilot. Husbands and wives of the same household will be interviewed individually in private settings. All surveys will be administered on mobile tablets and completed questionnaires will be directly submitted to a password-protected online server via the software Survey CTO. We opted for computer-assisted data collection to a) improve data quality by programming built-in skip-patterns and consistency checks, and b) reduce respondent fatigue through programming visually appealing questionnaires including vignettes and pictures. For sensitive survey modules on IPV, we

will rely on audio- and computer-assisted self-interview (ACASI) techniques, a state-of-the art approach for eliciting potentially stigmatized behaviors in low-literacy population (Steinert et al., 2024, Steinert et al., 2018). That is, participants will be able to read, or, in case of limited literacy, listen to the questions via headphones and complete the sensitive sections of the survey without the direct assistance of an enumerator.

Individual interviews will last between 60 and 90 minutes. In addition to the key measures presented in section 3 above, the questionnaire will capture: (i) household characteristics, including detailed information on the number of children living in the household, co-residence with parents (in-law), and living standards, (ii) individual-level factors, including age, education, caste, employment status, and religious affiliation, and (iii) relationship-level factors, including age, education, and income asymmetries between husband and wife.

#### **4.1.2 Study setting**

The study will be implemented in India, which ranks 108 out of 193 countries on the United Nations Development program’s (UNDP) Gender Inequality Index, highlighted by pronounced gender discrimination and persistent patriarchal norms that shape the social fabric of the country. The low status ascribed to women and girls in India is underlined by poor performance on several SDG 5 indicators, including (i) one in three women experiencing physical or sexual violence in their lifetimes, (ii) approximately one in four girls being married before reaching their 18th birthday, (iii) an almost 20-percentage-point gap between male and female literacy rates, (iv) 75% of women being faced with no access to higher education, (v) only 27% of women being in some form of employment, despite declining fertility rates and rapid economic growth, and (vi) a child sex ratio of 919 girls for 1000 boys, suggesting that girls are missing due to strong parental son preference, sex-selective abortions, and neglect and undernutrition during childhood (Global Annual Results Report 2020, n.d.; Sen, 2002; UNICEF, 2019; United Nations Sustainable Development Goals, n.d.). Specifically, we will choose study locations in three states of India, namely Maharashtra, Andhra Pradesh, and Rajasthan. The states have been selected in close consultation with local partners and based on previously established research infrastructure and partnerships with local research organisations and NGOs.

#### **4.1.3 Sample and participant recruitment**

Target communities will be selected during a multi-stage random sampling process. First, we will select five districts from each state, namely Maharashtra, Andhra Pradesh, and Rajasthan. These districts will be assigned a composite score using indicators related to women’s employment, socioeconomic status, and gender-related attitudes drawing on data from National Family Health Survey 2020-21 (NFHS-5). These composite scores will be divided into quintiles to randomly select one district from within each of these

quintiles, resulting in a total of 15 districts across the three states. Subsequently, two blocks per district will be randomly sampled. This will be followed by the selection of five rural villages or urban wards per block using random sampling, culminating in a final sample of 150 villages or urban wards (here referred to as clusters) across the three target states.

In each state, we will collaborate with non-governmental organisations (NGOs) who have a strong presence in the respective target districts and whose overall mission aligns with the focus and goals of our study. These NGOs will appoint community catalysts in each district who will in each of the selected communities seek approval for the study from community leaders (e.g. a village Pradhan) in the research sites to ensure that community members are aware and accepting of the research study. Potentially eligible participants (husbands and wives jointly) will be invited to attend a community group session in which details about the study set-up are presented and potential participants are given the opportunity to ask questions. During data collection, community catalysts will support enumerators with participant recruitment and consent procedures. Additionally, a key role of the community catalysts will be to build rapport with study participants throughout the trial phase, with the aim of minimising loss to follow-up rates. In treatment clusters, community catalysts will further be responsible for identifying and preparing venues for the intervention, as well as coordinating participant invitations to the program sessions. In control clusters, community catalysts will inform participants that their area has not been selected for the intervention implementation and focus on building rapport with study participants throughout the trial phase, with the aim of minimising loss to follow-up rates.

In each cluster, 15 wife-husband pairs will be recruited via door-to-door household visits resulting in a target sample size of 2,250 spouses. Door-to-door visits will be guided by a random walk approach in each cluster. Data collectors will start from a central location in the community (i.e., a school or community hall). From there, every third household will be visited and screened for eligibility. Spouses will be eligible for enrolment in the RCT if they fulfill the following inclusion criteria:

- being legally married,
- cohabiting with each other,
- being permanent residents of the selected communities (temporary migrants will be excluded),
- both wife and husband having completed at least the 4th grade as a minimum educational qualifica-

tion<sup>11</sup> for sufficient literacy to meaningfully participate in the community sessions of the intervention (both husband and wife),

- wives should be aged between 18-49 years, husbands should be aged 18 years or older (no maximum age),
- both wife and husband giving informed consent to participating in the study.

## 4.2 Process evaluation

### 4.2.1 Implementation quality

The study will include a process evaluation aimed at gaining additional insights into the functioning of the “Let us Grow Together: Economic Wellbeing for Families” intervention, the quality of its implementation, and participants’ engagement with the intervention. To this end, we will collect additional implementation data, including:

1. Participants’ attendance records for all sessions (450 sessions in total), including information on whether husband and wife attended the sessions jointly or only individually (and if so, whether the husband or the wife attended)
2. Assessment of availability of sufficient trainers during training sessions (450 sessions in total)
3. Assessment of availability of adequate technical supports and equipment for the training sessions as per project plan (450 sessions in total)
4. Assessment of timely conduction of all training sessions as per project plan across all treatment clusters (450 sessions in total)
5. Rating of participant engagement in at least one randomly selected training session in all 75 treatment communities (75 sessions in total)
6. Rating of facilitator performance in at least one randomly selected training session in all 75 treatment communities (75 sessions in total)

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<sup>11</sup>The minimum education criterion of having completed at least the 4th standard was included to ensure that participants can meaningfully engage with the intervention, particularly the financial literacy sessions, which involve some basic numeracy skills. While the curriculum is designed to be highly interactive and visual—using role-plays, group exercises, and pictorial aids—a basic level of literacy and numeracy is necessary to understand and participate effectively in the sessions. We recognize that this criterion may result in the exclusion of some individuals who are among the most socio-economically vulnerable. However, the intent is not to exclude based on vulnerability, but rather to ensure the intervention’s integrity and participant safety—so that individuals are not placed in situations where they may feel uncomfortable, stigmatized, confused, left out, or unable to follow the content, which could affect both ethical standards and data quality.

7. Sent and read receipts for SMS reminders for each couple allocated to the intervention (12 SMS per couple in total)

We will draw on the above data to assess how the quality of implementation as well as participant attendance dynamics affect treatment effects.

#### **4.2.2 Participant perceptions**

In addition to this quantitative implementation data, we will collect in-depth qualitative data to further elicit participants' perceptions of and experiences with the program and to better understand potential mechanisms of and barriers to change. Specifically, we will conduct a total of nine qualitative focus group discussions and 15 in-depth interviews with participants from treatment communities. The qualitative data collection will occur within a month from the intervention's completion, likely between October and December 2026.

Participants for the FGDs will be recruited via purposive sampling to include treatment clusters with high-, medium-, and lower-quality implementation, proxied by attendance records of sessions as well as ratings of participant engagement and facilitator performance performed during the process evaluation (see above). Of these, four FGDs will be conducted with women only, four with men only, and one with mothers-in-law living in the same household as trial participants. For the in-depth interviews, the research team will sample five husbands and wives from each state, including both participants who have reported decreases in economic IPV and participants who have indicated no change or possibly even an increase in the quantitative endline surveys. FGDs and in-depth interviews will be recorded, transcribed verbatim and then translated into English.

The discussion and interview guides will prompt participants to reflect on various aspects of their experience, including: (i) their engagement in the sessions, such as activities they enjoyed or found less appealing, the overall atmosphere, and their interactions with both fellow participants and facilitators; (ii) key learnings, skills, and insights gained from the program; (iii) any possible changes they have noticed following their participation; (iv) any potential challenges encountered when applying program learnings in their daily lives and home environment; and (v) suggestions for modifications or improvements to enhance the program's effectiveness.

The transcripts from FGDs and in-depth interviews will be coded using thematic analysis in the software

ATLAS.ti. Coding will be based on a pre-defined list of codes mirroring our theory of change in terms of key mediating variables that we quantitatively test. This list of codes will be further adapted in an iterative process by inductively creating new codes that relate either to mechanisms or barriers of change. The analysis will be carried out independently by two or more research team members and any potential coding conflicts will be resolved by a third research team member.

## 4.3 Pilot data

### 4.3.1 Qualitative feasibility and relevance assessment

Between August and December 2022, a qualitative assessment was undertaken to evaluate the feasibility and relevance of the study, involving twelve focus group discussions (FGDs) across the three target states: Andhra Pradesh, Maharashtra, and Rajasthan. The primary aim of the FGDs was to explore the prevalence and nature of economic abuse experienced by women from diverse social, cultural, and caste backgrounds in India. To gain a more comprehensive understanding of household dynamics, additional FGDs were conducted with husbands and mothers-in-law. The qualitative data gathered reveal that economic IPV is a pervasive issue in India, although many women did not explicitly identify or label these experiences as a form of partner violence.<sup>12</sup> The FGDs revealed that women across all three states were experiencing four distinct forms of economic abuse. First, **economic control** emerged as the most prevalent theme, amplified by women’s exclusion from financial decision-making in the household (*“Even if she [daughter in – law] earns, my son decides how to spend the money.”* [53-year-old mother-in-law, Maharashtra]). Second, discussions alluded to **employment sabotage**, which husbands and also in-laws justified by concerns that women would neglect their duties at home (*“If we go out for work [...] my in-laws would say to me: “Who will make the food? Do you want us to sleep on an empty stomach?”* [25-year-old woman, Rajasthan]). A third category was women’s **economic exploitation**, which included (i) taking their salaries, (ii) taking debt in their name or (iii) selling their assets or wedding endowments against her will (*“I was at my maternal house, and behind my back, my husband sold around two kilos of silver.”* [40-year-old woman, Rajasthan]). A last form of economic abuse was the **refusal to financially contribute** to necessary household expenses even if husbands had money available. This hindered investments in children’s education or coping with health or other emergencies (*“There was no money for food but he used to spend every day on alcohol”* [24-year-old woman, Rajasthan]).

The feasibility assessment also aimed to explore participants’ willingness to engage in a potential financial

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<sup>12</sup>The findings from this qualitative study are published in Steinert et al. (2023)

literacy and gender transformation intervention, as well as to gather input on desirable features such a program should include. Overall, participants appeared very interesting in attending a financial literacy training (*"Yes, we want a training. We want to learn how to save money. How to invest and where to invest so that we can get good returns."* [46-year-old man, Rajasthan]). Participants also voiced that the trainings should be delivered by "outsiders" rather than someone within their village: *"Women don't learn when they find some known woman of their village [teach them]... They start talking to each other or do not take things seriously"* [42-year-old woman, Maharashtra]. Two key insights regarding program design emerged from these discussions. First, some female participants expressed a strong preference for conducting in-person sessions with men and women separately to create a "safe space" for more sensitive discussions (*"If husbands will come along with their wives, women can't speak. If at all they speak in the meeting, their husbands will beat them in the evening."* [38-year-old woman, Maharashtra]). As a result, we chose to deliver the more sensitive components of the curriculum—such as those addressing monetary conflicts at home or societal norms around masculinity—in gender-segregated activities. Second, the majority of interviewed women indicated that they did not have access to a mobile phone of their own and that devices (which usually do not have smartphone features) are commonly owned by husbands (*"Me and my husband are both using the same phone."* [29-year-old woman, Rajasthan]). In consequence, we decided that SMS reminders will be addressed at both spouses and endline surveys will include specific questions on whether husbands showed their wives the respective messages.

#### 4.3.2 Pilot of the intervention curriculum

The intervention curriculum was piloted with couples across all three target states to assess its suitability in each context.<sup>13</sup> Overall, the program was well received in all three settings. Participation, including engagement of male participants, a marked challenge in previous projects (see Casey et al. 2013), remained high throughout the six sessions. Only a few participants missed individual sessions for the following reasons: (i) death of a family member, (ii) agricultural work responsibilities due to harvest season, and (iii) unavailability due to preparations for a Hindu festival in Rajasthan. The latter two reasons will be accounted for more explicitly when scheduling sessions for the project's full implementation. Participants in all three settings voiced that they perceived the curriculum as unique, viewed their participation as highly valuable,

<sup>13</sup>The pilots took place in Jaipur, Rajasthan; Vishakhapatnam, Andhra Pradesh; and Pune, Maharashtra. In Jaipur, most couples came from higher castes, while only two couples were from other backward classes (OBC) communities. Male participants were farmers, daily wage labourers, and company workers and female participants were primary school teachers, agricultural labourers and largely homemakers. In Vishakhapatnam, participants came largely from OBC, scheduled castes (SC) and scheduled tribes (ST) communities. Male participants were engaged as electrical workers, salesmen, and daily wage labourers in construction and female participants worked as tailors and daily wage labourers while the majority were homemakers. In Pune, participants came largely from OBC, SC and ST communities. Male participants were rickshaw drivers, small company employees, and salesmen and female participants worked in stitching, food catering, had home-based businesses or were homemakers.

and confirmed that the intervention was not a duplication of existing programs they know of and brought new concepts and approaches to the community.

The financial literacy activities were very well received, with participants remaining focused, engaged, and describing the sessions as both helpful and informative. In group discussions following certain activities and the completion of worksheets, participants emphasized that the sessions enhanced their understanding of key financial concepts. Many noted a new appreciation for the importance of creating a household budget, taking into account both income and regular expenses, as well as planning for unexpected expenses (e.g., from emergencies). Specifically, participants reported that the exercise in which they completed an expense sheet enabled them to gain a clearer understanding of their household expenditures. Notably, many women indicated that the exercise provided them, for the first time, with detailed insights into their husbands' earnings. This process facilitated joint reflection among couples, leading to the identification of specific spending patterns—such as frequent online payments—that contributed to elevated expenses and could be targeted for reduction in the future. Participants also shared that explanations around interest rates and debt deepened their comprehension of how to calculate monthly and annual interest rates on loan offers and helped them recognize "hidden costs" they had previously overlooked. Similarly, activities related to specific saving tools and family saving plans were seen as especially impactful. Participants remarked that they had gained a better understanding of how even small savings can accumulate over time and contribute to greater financial stability. In some cases, male participants reported that they had not previously recognized their wives' financial knowledge. Thus, sessions contributed to a shift in men's perspective, enabling them to view their spouses more positively, fostering greater openness toward shared decision-making.

The gender-transformative program content was generally well received, with only a few instances of mild resistance from male participants to specific activities. For example, one of the most impactful exercises was the "balloon activity," in which male and female participants were each given balloons representing typical household tasks performed by husbands and wives. The exercise visually highlighted the unequal distribution of care work, as female participants ended up carrying significantly more balloons. Some men initially felt uncomfortable having fewer balloons—perceiving the activity as a competition. However, facilitators guided the discussion to emphasize the intended message: illustrating the disproportionate burden of unpaid care work that women often shoulder. This moment became a catalyst for meaningful conversations about gender roles and inequality across all three intervention settings. Additionally, activities and exercises on non-violent communication skills, such as active listening, were highly valued by participants. They not only grasped the concepts very well but also engaged with them meaningfully through role plays and discussions.

Participants described how the exercises created a powerful contrast to their everyday communication patterns. Women, in particular, shared that their husbands rarely listened with such attentiveness, making the experience both novel and impactful. Specifically, they explained that through the active listening exercises, their husbands began including them more in financial discussions. For many men, this represented a shift in traditional gender norms, as they had before been unaccustomed to viewing their wives as equal partners in financial decision-making. For women, it served as a moment of increased self-esteem—recognising their right and their capacity to participate meaningfully in decisions affecting their lives and families. Lastly, in gender-segregated modules, it was observed that men reflected openly on challenges they perceive with fulfilling certain masculinity ideals, acknowledging pressures they face from parents as well as peers.

Overall, there were encouraging signs of potential program impact, particularly evident during the final session, where participants reflected on their key learnings and experiences from the intervention. Notably, some male participants who had previously restricted their wives from working outside the home began to reconsider these limitations and expressed a willingness to change. Women also reported feeling more confident in discussing financial matters and expressing their personal financial and economic aspirations with their husbands. In addition, several participants shared that they had already applied what they learned at home and in their daily lives by creating monthly household budgets and agreeing on savings goals and strategies as a family.

Based on session observations and extensive feedback received from both participants and facilitators, further refinements were made to enhance the effectiveness and cultural appropriateness of the curriculum. Key adjustments included (i) simplifying program activities through the use of visual aids and clearer language to reflect field realities and accommodate high levels of marginalisation and low levels of literacy and numeracy; (ii) refining session flow to ensure smoother transitions between financial literacy content and communication/gender-related material; (iii) incorporating flexibility to embed locally relevant examples, tools, probing questions, and songs ensuring cultural relevance and sensitivity; (iv) aligning session content with intersectional realities on the ground, particularly regarding caste, class, and gender; (v) transforming case stories into theatre-based scenarios to make sessions more engaging and relatable; (vi) enhancing facilitator sensitisation to effectively manage potentially problematic input from participants (e.g., statements highlighting traditional gender norms or risky saving/investment strategies) and address resistance to certain curriculum elements (e.g., discussions about the unequal distribution of unpaid work), and (vii) culturally adapting communication principles involving the use of 'I statements,' particularly in the cultural setting of Rajasthan, where the use of the word 'I' is often viewed as problematic, as people typically prefer the more

collectivist 'we.'

## 5 Analysis

### 5.1 Randomization verification

To establish experimental integrity, we will compare the treatment group to the control group on a range of sociodemographic characteristics as well as the key outcome variables measured at baseline. Specifically, the following variables will be assessed for balance:

- Sociodemographic characteristics:
  - Wives' and husbands' age (including age gaps of more than ten years between husbands and wives)
  - Wives' and husbands' educational level (including educational gaps between husbands and wives)
  - Wives' and husbands' caste
  - Wives' and husbands' religious affiliation
  - Household size
  - Co-residence with parents/ parents-in-law
  - Household wealth (based on asset ownership and living standards)
- IPV:
  - Economic IPV (husband and wife report)
  - Sexual IPV (wife report)
  - Physical IPV (wife report)
  - Emotional IPV and coercive behaviors (wife report)
- Economic wellbeing:
  - Financial literacy and knowledge (husband and wife report)
  - Savings (husband and wife report)
  - Past-month income (husband and wife report)
  - Financial distress (husband and wife report)
  - Women's empowerment (wife report)

- Women’s employment status (wife report)

Baseline balance across both study arms will be assessed based on a joint orthogonality F-test.

## 5.2 Estimating the intervention’s impact

To evaluate the impact of the intervention, we will first estimate the intent-to-treat (ITT) effect using an ANCOVA regression with the treatment arm as the key predictor. Specifically, we will estimate the ITT effect based on the following regression specification:

$$Y_{ict} = \alpha + \beta_1 T_c + \beta_2 Y_{ic(t-1)} + \beta_3 S'_c + \beta_4 X'_{ic} + \varepsilon_{ict} \quad (1)$$

where  $T_c$  is an indicator variable for the treatment arm, which equals 1 if community  $c$  was assigned to receive the “Let us Grow Together: Economic Wellbeing for Families”, and 0 otherwise.  $Y_{ic(t-1)}$  denotes the lagged outcome variable at baseline,  $S'_c$  is a vector of stratification variables used for randomization, and  $X'_{ic}$  is a vector of baseline covariates. The term  $\varepsilon_{ict}$  represents the error term for individual  $i$  and community cluster  $c$ , and  $\alpha$  is the intercept. Our coefficient of interest is  $\beta_1$ , which indicates the impact of having participated in the intervention. We will cluster the standard errors at the community level, as this is the unit of randomization.

For each outcome, we will estimate three different specifications of the above regression: (1) a first specification using only the treatment assignment and stratifying variables as predictors, (2) a second specification including the lagged outcome  $Y_{ic(t-1)}$  as additional control, and (3) a third specification including additional baseline controls  $X'_{ic}$  (participant age, caste, educational level, household size, and household wealth at baseline). By conditioning on the baseline level of outcomes and additional controls in the ANCOVA specifications (2) and (3), statistical power and precision of estimates can be increased (Bruhn & McKenzie, 2009)

In a second step, we will estimate the impact of the intervention only for those participants with high compliance. We will estimate the average treatment-on-the-treated (TOT) program effect by using an instrumental variable approach. Specifically, we will instrument attendance of at least five out of six sessions with being assigned to the treatment. The TOT estimate is hereby given as:

$$C_{ic} = \alpha + \phi_1 T_c + \phi_2 Y_{ic(t-1)} + \phi_3 S'_c + \phi_4 X'_{ic} + \varepsilon_{ic} \quad (2)$$

$$Y_{ict} = \alpha + \beta_1 C_{ic} + \beta_2 Y_{ic(t-1)} + \beta_3 S'_c + \beta_4 X'_{ic} + \varepsilon_{ict} \quad (3)$$

where  $C_{ic}$  is an indicator for whether individual  $i$  in community  $c$  has attended at least five out of six sessions, thus showing high compliance.

### 5.3 Multiple outcome and multiple hypothesis testing

Across primary and secondary outcomes, we will apply a false discovery rate adjustment to p-values to account for multiple hypothesis testing (Benjamini et al., 2006). We will employ the Benjamini-Hochberg method as it is considered as less conservative than the Bonferroni adjustment, particularly when working with a range of outcomes that are likely correlated. For each tested primary and secondary outcome, we will report both unadjusted p-values as well as q-values corrected for multiple testing.

### 5.4 Heterogeneous effects

We will examine whether the impact of the program varies with the following characteristics collected at baseline:

- Target state
- Urban/rural residency
- Co-habitation with parents-in-law
- Household wealth (based on asset ownership and living standards at baseline)
- Caste (scheduled and backwards caste versus higher caste)
- Husbands' and wives' age
- Husbands' and wives' education level
- Women's employment status and employment type at baseline

Heterogeneity in treatment effects will be assessed using the following specification:

$$Y_{ict} = \alpha + \beta_1 T_c + \delta (\text{Trait}'_{ic} \times T_c) + \beta_2 Y_{ic(t-1)} + \beta_3 S'_c + \beta_4 X'_{ic} + \epsilon_{ict} \quad (4)$$

where  $\text{Trait}'_{ic}$  is a vector of the baseline characteristics for which we assume heterogeneity in treatment effects (see above). The average treatment effect for the subgroup of people holding a respective trait will

then be given by the sum of the coefficients  $\beta_1 + \delta$  for that trait. We do not have prior hypotheses possible for heterogeneity and are agnostic in terms of which subgroups will experience greater or smaller treatment effects.

In addition, we will utilize a machine learning approach to further investigate potential heterogeneity in treatment effects. Specifically, we will apply a non-parametric causal forest algorithm to assess whether treatment effects within any subgroups differ significantly from the average treatment effect. In a second step, we will explore the nature of this heterogeneity by ranking moderating variables according to their relative importance (Athey et al., 2019; Athey & Wager, 2019; Wager & Athey, 2018). This approach offers key advantages over conventional subgroup analyses: it is data-driven and does not require a priori hypotheses about effect modifiers, it reduces the risk of overfitting and inflated Type I error rates, and it improves statistical power.

Throughout the study period, we will closely monitor the occurrence of heat waves and floods in our study locations, as these may lead to significant income losses and other detrimental outcomes. For example, heat waves with temperatures approaching 50°C, often linked to severe drought and water shortages, are becoming increasingly prevalent in parts of Rajasthan<sup>14</sup> and Maharashtra.<sup>15</sup> At the same time, several study areas—particularly in Maharashtra—are also highly susceptible to flooding during the monsoon season.<sup>16</sup> Recent research documents significant links between climate shocks and heightened rates of domestic violence (Rahmann & d’Exelle, 2025; Mannell et al., 2024). For instance, evidence from India indicates that drought exposure during the growing season increases the incidence of less severe IPV by 12%, extreme rainfall raises the incidence of severe IPV by 31%, and heat stress elevates both less and more severe forms of IPV (Saha, 2025). If households in our trial are exposed to similar shocks during the study period, such events could contaminate estimated program impacts, particularly if treatment and control clusters were to experience differential exposure levels.

Building on this background, we will adopt the approach proposed by Bandiera et al. (2018), who conducted a randomized controlled trial on a girls’ empowerment program that coincided with the outbreak of the Ebola epidemic. In our case, we will assess whether potential climate-induced increases in economic, physical, sexual, or psychological abuse can be effectively mitigated by the couples-based intervention in treatment

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<sup>14</sup>See, for example: <https://www.newindianexpress.com/web-only/2024/May/30/rajasthan-heatwave-rising-temperatures-deaths-water-shortage-and-political-turmoil>.

<sup>15</sup>See, for example: <https://www.pridepurpleproperties.com/blog/heatwave-drought-water-crisis-in-maharashtra-unpacking-the-urban-environmental-challenge/>.

<sup>16</sup>See, for example: <https://edition.cnn.com/2025/05/27/india/india-mumbai-flooding-chaos-intl-hnk>

clusters. To measure exposure to climate shocks, we will use open-access gridded daily rainfall data (Pai et al., 2014), which we will merge with our geo-coded RCT dataset. This approach will allow us to identify the degree to which participating couples were exposed to drought- or flood-related shocks. Specifically, we will compute a monthly Standardized Precipitation Index (SPI; Lloyd-Hughes & Saunders, 2002) and classify climate shocks by dichotomizing the index, which will take a value of 1 if precipitation lies more than two standard deviations from the long-term mean, and 0 otherwise. This measure will enable us to distinguish clusters with “high-intensity” versus “low-intensity” exposure to climate shocks. We will then implement a  $2 \times 2$  factorial design in which one dimension reflects high versus low climate shock exposure, while the other reflects random assignment to the couples-based intervention. Using the ANCOVA specification presented below, we will examine how the RCT outcomes are impacted by the intensity of the climate shock and whether the intervention can effectively mitigate these impacts:

$$Y_{ict} = \alpha + \beta_1 T_c + \beta_2 C_c + \gamma(C_c \times T_c) + \beta_3 Y_{ic(t-1)} + \beta_4 S'_c + \beta_5 X'_{ic} + \epsilon_{ict} \quad (5)$$

where  $T_c$  is a dummy equal to 1 if the respective cluster was assigned to the treatment and  $C_c$  is a dummy equal to 1 if a cluster was exposed to a high-intensity climate shock. The parameters of interest are  $\beta_2$ , capturing the effect of residing in a high-intensity climate shock cluster relative to a low-intensity cluster; the sum of  $\beta_2$  and  $\gamma$ , which gives the treatment effect of the couples-based program in high-intensity climate shock clusters;  $\beta_1$ , which captures the treatment effect in low-intensity climate shock clusters; and  $\gamma$ , which indicates whether the intervention has a differential impact in high- and low-intensity climate shock clusters.

## 5.5 Mediation analysis

To assess the validity of our theory of change, we will utilize the causal mediation analysis approach proposed by Imai et al. (2010, 2011). This will allow us to disentangle the average treatment effect of the intervention into (i) the indirect effects running through several observed mechanisms (see sections 3.2.1 and 3.2.2 above), i.e. mediating variables, and (ii) the direct effect running through other (unobserved) channels. Based on this, we will then be able to determine the proportion of the total effect mediated, which will provide crucial insights into the most important drivers of potential change.

In addition, we will complement conventional mediation analysis with a causal discovery approach grounded in causal machine learning. Causal discovery seeks to uncover the underlying causal relationships among multiple variables in a data-driven manner, typically represented as graphical model (Glymour et al., 2019; Huber, 2024; Shen et al., 2020).

## 5.6 Addressing potential outliers

Collected data will be checked for plausibility and consistency on a weekly basis in order to capture and rectify any potential data entry errors. This procedure will help reduce the number of implausible outliers. For the outcomes of total savings and past-month income, we will include three types of robustness checks. First, variables will be windzorised at the top/ bottom 1 percent. Second, inverse hyperbolic sine transformations will be applied to the respective outcome variables (Burbridge et al., 1988). Third, quantile regressions will be estimated. If the pattern of results remains similar to the main outcome analyses, we can rule out that treatment effects are driven by only few influential observations.

## 5.7 Handling missing data

In this study, data can be missing for the following three reasons:

- Missing data can occur if participants were interviewed at baseline but lost to follow-up surveying at endline. We will employ community catalysis in all study clusters who will support participant recruitment and focus on building rapport with study participants throughout the trial phase, with the aim of minimising loss to follow-up rates, particularly among control group participants.
- Item non-response can occur if enumerators mistakenly skip a question or if respondents refuse to provide an answer to a particular question. This risk will likely be put to a minimum due to built-in completeness and consistency checks in the programd questionnaires.
- Data could be lost due to technical issues if surveys completed on mobile tablets are not submitted to the online server and then deleted from the tablet or if a tablet is lost or damaged. In our previous studies conducted in similar set-ups in India, this number never exceeded more than 0.5% of all conducted interviews.

We will further test for potential threat from differential attrition between study arms using three approaches. First, we will test whether attrition rates different between treatment and control participants based on the following regression:

$$A_{ic} = \alpha + \gamma_1 T_c + \varepsilon_{ic} \quad (6)$$

where  $\gamma_1$  captures whether treatment assignment is associated with attrition. Second, we will assess whether attrition differs based on observable baseline characteristics using the following specification:

$$A_{ic} = \alpha + \gamma_1 T_c + \gamma_2 S'_c + \gamma_3 X'_{ic} + \varepsilon_{ic} \quad (7)$$

where  $S'_c$  is a vector of stratification variables and  $X'_{ic}$  is a vector of individual baseline covariates.

Lastly, we will include interaction terms between the treatment indicators and baseline controls to test for potential differential attrition across subgroups. This is given by:

$$A_{ic} = \alpha + \gamma_1 T_c + \gamma_2 S'_c + \gamma_3 X'_{ic} + \gamma_4 (T_c \times S'_{ic}) + \gamma_5 (T_c \times X'_{ic}) + \varepsilon_{ic} \quad (8)$$

where  $\gamma_4$  and  $\gamma_5$  capture whether the effect of treatment assignment on attrition varies by stratification

variables and baseline characteristics, respectively.

If we find any indication of differential attrition, we will employ Lee bounds to our estimations of treatment effects.

## 6 Interpreting Results

This research study addresses a conventionally neglected but crucial dimension of IPV: economic abuse against women. There is currently a paucity of research on economic IPV conducted in LMICs and several major legal documents and global prevalence surveys fail to recognize economic abuse as a form of IPV (Postmus et al., 2020; Stark & Hester, 2019; Stylianou, 2018; World Health Organization, 2005). Against this backdrop, this study will bring economic abuse to the forefront of IPV research and generate crucial knowledge on the possible prevention of economic IPV. By compiling novel evidence from India, findings from this study will benefit a large number of women and families in India and beyond: With 1.4 billion inhabitants, India is not only the world’s second most populous country but also has the largest diaspora globally, with almost three million Indian immigrants living in the EU and the UK alone (United Nations, 2017).

The proposed study has several limitations. First, a key limitation of this study is its inability to capture the long-term impacts of the couples-based intervention, as endline data will only be collected at a single time point—six months post-intervention. While some research indicates that program effects tend to fade out over time, other studies suggest that certain treatment effects can strengthen in the long run (Bouguen et al., 2019; Ibararán et al., 2015; Schaner, 2018; Steinert, Zenker, et al., 2018). This is particularly relevant when assessing potential changes in social norms, which are often deeply entrenched and resistant to rapid shifts, implying that a shorter timeframe may underestimate the true potential of the intervention. Second, while our intervention was intentionally designed to be relatively low-cost and scalable, evidence suggests that more intensive programs—spanning 40 to 50 hours of training content and delivered over 13 to 20 sessions—may yield stronger effects, even though the relationship between program length and effectiveness was not always consistent (Jewkes et al., 2021). To help mitigate this, we have incorporated structured home exercises and SMS reminders to enhance the intensity of the intervention by promoting continued engagement with core program content and reinforcing key learnings and skills. Third, although our RCT spans three Indian states, the generalisability of the findings to the broader Indian context—or to other South Asian settings—remains uncertain, given the significant cultural and socio-demographic diversity that likely

shapes how participants engage with and respond to the program curriculum. Against this backdrop, our heterogeneity analyses can offer crucial insights into which participant groups benefit more or less from the couples-based intervention, helping to inform targeting strategies for a potential scale-up of the intervention to other geographic regions. Lastly, we acknowledge that our study design does not allow us to causally identify the added benefit of enrolling both spouses compared to enrolling husbands or wives individually. Nevertheless, our targeting strategy is grounded in prior evidence indicating that synchronized engagement of both the potential victim and perpetrator is a promising approach (Boehret et al., n.a.; Ellsberg et al. 2015). Such joint participation can better address relationship dynamics and mitigate norms-based barriers to behavioral change, thereby enhancing the likelihood of sustained program impact.

The proposed study will establish a rigorous evidence base for a culturally sensitive, sustainable, and scalable intervention aimed at reducing economic IPV against women and strengthening their involvement in the economic sphere more generally. The proposed project thus has the potential to transform women-focused work, advocacy, and policymaking in India, South Asia, and beyond, and improve both the health and economic wellbeing of women and their families.

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## 8 Administrative information

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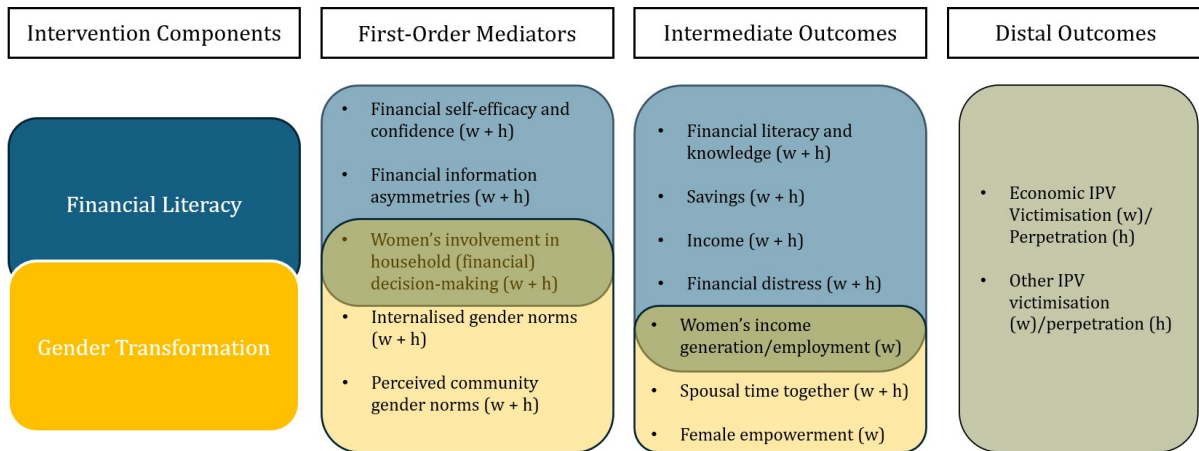
**Institutional Review Board (ethics approval):** This study has received ethical approval from both the ethics committee of the Technical University Munich (TUM) (approval number: 2023-569-S) and the ethics committee of the Population Council of India (PCI) (approval number: PCIRB\$2025 – 26\$007).

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# Appendix

Figure S1: Theory of Change: Trial Mediators and Outcomes



*Mechanisms and outcomes linked to the financial literacy pillar of the couples-based program shown in blue, mechanisms and outcomes linked to the gender transformative pillar shown in yellow. Variables linked to both pillars in green. w denotes that the measure is included in the wife survey, h denotes that the measure is included in the husband survey.*