Reducing Intimate Partner Violence: A Randomized Evaluation of a Multifaceted Female Empowerment Program in Urban Liberia*

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Abstract

Intimate partner violence (IPV) is a global public health challenge associated with adverse health effects and economic costs to both survivors and society, but there is limited evidence on how it can be effectively prevented or reduced. Designing and evaluating interventions targeted at IPV is challenging because the underlying factors of IPV are so intertwined that it can be explained only by a variety of sociocultural factors in addition to personal and interpersonal elements. This paper evaluates a randomized controlled trial of a multifaceted female empowerment program in Monrovia, Liberia, where the baseline IPV prevalence is particularly high. The program intervention includes intensive psychosocial therapy and vocational skills training throughout a full year. About 12 months after program completion, we find the program significantly reduced the proportion of women who experienced emotional, physical, and sexual IPV by 10-26 percentage points (from control bases of 24-62 percent). While there are multiple pathways through which IPV could be impacted, one channel is that the business training was highly effective: labor supply increased by 37 percent and expenditure by 49 percent. While one focus of the program is psychological empowerment, we find positive but statistically insignificant effects on distress and happiness indices. We also find improvements in social norms around IPV: perceived justifiability of IPV reduced by 0.3 standard deviations.

JEL Codes: J12, J16, O12

Keywords: intimate partner violence, female empowerment, norms, randomized controlled trial, Liberia

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1 Introduction

Intimate partner violence (IPV) is a serious public health problem which affects hundreds of millions of women globally. Worldwide, one in three women has experienced some form of physical or sexual IPV in their lifetime (WHO 2021; K. M. Devries et al. 2013). IPV is associated with many negative physical (Smith et al. 2017) and mental (Bacchus et al. 2018) health outcomes.[1] Moreover, IPV inflicts considerable economic costs on both survivors and society (Peterson et al. 2018).

There have been many policy discussions around how to effectively prevent or respond to IPV, and public health professionals recommend that a problem like IPV be targeted in multiple directions at the same time (Ranganathan et al. 2021). This is because IPV is a complex problem potentially caused by a variety of psychological, social, and economic factors. The public health literature on IPV has been centered around the "ecological" framework (Heise 1998), where violence is conceptualized by an interaction of individual, interpersonal, and sociocultural factors. There is no single cause of violence, thus both IPV prevention and response requires an intervention to address multiple underlying drivers.[2]

To study the effectivness of a holistic approach to reducing IPV, we partner with the Liberian Red Cross to conduct a randomized controlled trial of a multifaceted female empowerment program in Monrovia, Liberia. The baseline prevalence of IPV is very high in Liberia. In the most recent Liberia Demographic and Health Survey (DHS) 2019-2020, 35 percent of ever-partnered women of age 15-49 reported to have experienced physical or sexual IPV in the past months. This is particularly high even compared to other African countries, a geographic region which itself is notorious for high prevalence of IPV (about 26% on average from countries where DHS data is available). There could be many explanations why IPV is highly prevalent in today's Liberia, including poverty (being one of the 10 poorest

[1] According to the U.S. Centers for Disease Control and Prevention (CDC), about 35% of female IPV survivors experience some form of physical injury related to IPV (Smith et al. 2017). In our study sample, about 25% of physical/sexual IPV survivors report a physical injury as a direct effect of the male partner's action of IPV.

[2] A "prevention" intervention is both to prevent violence for individuals who experienced violence earlier and to reduce the reoccurence of violence for those who already have. Note the difference from a "response" intervention, which targets at reducing revictimization of a survivor or recidivism of a perpetrator (Mary Ellsberg et al. 2015).

countries in the world). Yet one possible factor is the civil war that took place in 1989-2003, during which violence against civilian women and girls was weaponized (Omanyondo 2005). Research suggests that one of the hidden costs of such brutal civil war may be a persisting, permissive environment of violence in everyday lives (Steenkamp 2005).

Since 2009, the Liberia National Red Cross Society (LNRCS) has run a female empowerment program targeted at marginalized women in slum communities of Monrovia, where most of the internally displaced population fled for safety during the civil war. The program goal is to empower women economically and psychosocially so that they can self-sustain their lives and protect themselves from abuse. The program has two major components. The first is aimed at psychosocial empowerment, and includes daily group counseling sessions and cognitive behavior therapy focused on relationships with their spouses and other family member or community members. The second is to improve economic livelihoods through vocational skills and business training centered around helping beneficiaries set up and manage a small business. The program is also very intensive: participants need to attend meetings 4-5 hours a day for every weekday during the 12-month period. The total number of hours in the program is about 1,200, far more than most other programs.

The sampling frame is the pool of women who voluntarily applied to the program but selected by LNRCS through its need-based screening process. That is, our sample can be characterized by women who are disadvantaged enough for LNRCS to consider them as eligible for the program but at the same time are willing to improve their lives and have high enough agency to apply to such a program.

Access to the program was randomized, and treatment was stratified by two baseline characteristics: (a) having experienced physical or sexual IPV past year; and (b) having been affected by the civil war or having family members who have.[3] After conducting a baseline survey and randomizing the sample into treatment and control, we provided LNRCS with the treatment group list of 198 women. However, some couldn't be reached or couldn't participate in the program for other reasons, and 154 women ultimately enrolled.[4] Thus, for analysis, we report both intent-to-treat and treatment-on-treated estimates.

[3]Instances include: relocation, becoming disabled/amputated, family members being killed/dead.

[4]Two women who had been assigned to the control group got enrolled in the program by mistake. Yet this is accounted for in the treatment-on-treated estimation.

Our study has been significantly affected by COVID-19 disruptions. The original study design was to pool three cohorts, for each of which 400 women are included and half are randomized into treatment while the other half into control. The first cohort of the study was enrolled in April 2019 and the program implementation ended in March 2020, right before the government lockdowns in Liberia. However, in compliance with government restrictions on in-person activities, our partner LNRCS suspended enrollment for the second cohort. While the government restrictions have been lifted since late 2020, due to financial difficulties, as of this writing, LNRCS hasn't yet been able to resume the program, and thus this paper includes only one cohort of the sample.

The study was designed with IPV as the primary outcome. To measure IPV, we administered the WHO's Violence Against Women module, which is a standardized questionnaire that has been extensively used and vetted by large-scale, multi-country surveys like the DHS. The module consists of 20 questions, each describing a specific IPV incidence (e.g., "Did your man ever slap you or throw something at you that could hurt you in the past 12 months?").[5] To construct our primary outcomes, responses to each yes/no question are indexed into four categories: controlling behavior, emotional IPV, physical IPV, and sexual IPV. In addition, for each IPV question, conditional on an affirmative response, a followup question is asked about how frequent such episode happened: (a) one or two times; (b) three to five times; or (c) more than five times. For each IPV category, we construct a summary index incorporating responses to these frequency questions per Anderson (2008).

We have three main findings. First, we find that the intervention has sizable effects on IPV. Twelve months after program completion, it significantly reduces past-year emotional IPV by 23 percentage points (from a control base of 62 percent) and physical IPV by 26 percentage points (from 45 percent in the control). The effects on sexual IPV is 10 percentage points reduction, but it's marginally insignificant. The effect sizes we find are very large compared to previous findings. For example, the cash transfer literature find effect sizes of 5-11 percentage point reductions in physical IPV (Buller et al. 2018). We also find that the program reduced justifiability of physical or sexual IPV by 0.3 standard deviations. This provides suggestive evidence for the change in social norms as one of the explanations for

[5]See Appendix B for full description of the IPV questionnaire.

IPV.

Second, we find significant improvements in economic livelihoods. Monthly expenditure increased by about $12 US from a control base of $25 (or about 49 percent). While we find no significant increase in our measure of monthly income, our survey module on expenditure is more comprehensive and contains a more exhaustive list of items, so that it could be a better measure of economic welfare. We also find the program increased labor supply on self employment by about 22 hours a month from a control base of 38 hours (or about 57 percent). This is not surprising given that the focus of the business training component of the program is on self-owned business. We find modest evidence for crowding out of labor hours from other sources, and the total labor supply hours increases by 19 hours a month (insignificant) from 51 hours in control.

Third, we find positive but statistically insignificant improvements in psychological distress and happiness. To measure distress, we use the Hopkins Symptom Checklist 10-questionnaire (HSCL-10) and construct a 1-4 scale. We find the program reduced the HSCL-10 distress index by 0.02 points (insignificant) on a control base of 2.01. For happiness we construct a summary index from responses to the Happiness and Well-being questions in the World Values Survey, and we find an effect of 0.07 standard deviation (insignificant). Considering one of the major components of the program intervention is psychosocial support, these results are surprising. However, this is consistent with previous studies that find dissipated effects of psychotherapy on psychological wellbeing after one year or later (Blattman et al. 2017; Haushofer et al. 2020).

One potential caveat of this study is that the effects on IPV might be biased by experimenter demand effects. In our study as well as many others, IPV outcomes rely on survey data, and by its sensitive and often socially undesirable nature, they are subject to systematic measurement error (likely underreported). Moreover, in an impact evaluation, if the intervention itself is centered around IPV, like our project, the measurement error could be correlated with the treatment status and lead to biases in the causal estimates. Yet the direction of the bias is not obvious. On one hand, the treatment group could feel pressure to report "desirable" outcomes (experimenter demand effects), thus become less likely to report an IPV instance, which would overestimate the treatment effect. On the other, if the

treatment group becomes more sensitized of their IPV experiences, IPV is more likely to be reported in the treatment group, which would underestimate the treatment effect.

In order to address this problem, we conducted a measurement experiment for IPV, where respondents were randomized into either a self interviewing (SI) module or the conventional face-to-face interviewing (FTFI). For the SI module, we designed and implemented an Audio Computer Assisted Self Interviewing (ACASI) module, where respondents self-administer the survey by listening to pre-recorded question on earphones and selecting responses on a touchscreen-enabled tablet.[6]

Nevertheless, we find that about 14% of women make mistakes using the SI module even for simple questions like "Did it rain in your community in the past year?" Such evidence for miscomprehension is consistent with what we find in a sister project (Park et al. 2021) in rural Malawi and Liberia, yet it is somehow surprising given that the sample in this study is younger, more educated, and more digitally literate. We find weak evidence for differential reporting for IPV questions, but we cannot rule out that the estimated effect sizes are due to mere miscomprehension of the SI survey modality. Finally, when we interact SI with the program effects, we find that program effects attenuates massively when IPV is measured under SI compared to FTFI. For example, under FTFI, the program effects on physical IPV is 28 percentage points, whereas it is 3 percentage points (insignificant) under SI. This result itself matches our prior that the SI tool would minimize social desirability bias in the treatment group, so the treatment effect would be smaller in SI than in FTFI. However, from the fact that we find differential reporting between SI and FTFI in the innocuous placebo questions, we cannot rule out that the attenuation is due to the measurement error from the SI tool.

This paper mainly contributes to the growing literature on measuring program effects on IPV. This study is one of the first to measure the effects of a multifaceted female empowerment program on IPV using RCT.[7] Previous evidence for similar programs show modest

[6]The SI module and experimental design are almost identical to our sister project in rural Liberia and Malawi (Park et al. 2021).

[7]Another extensive literature in this space is about cash transfers, which have recently increased in popularity for poverty alleviation programs. The empirical evidence shows that transfers targeted to female lead to reduction in IPV (Bobonis et al. 2013; Haushofer and Shapiro 2016; Hidrobo et al. 2016; Haushofer et al. 2019),[8] whereas longer-term follow-up studies suggest that the effects on IPV as well as other outcomes dissipate after the transfer program ends (Haushofer and Shapiro 2018; Roy et al. 2018).

effects (Blattman et al. 2016; Green et al. 2015; Bandiera et al. 2020).[9] Our intervention is differentiated in two aspects. First, the major component of our intervention is the psychosocial support sessions provided not only to the female participants but also to their partners and children. Reducing IPV specifically is one of the four goals of the whole program, and the psychosocial training comes before any other program components. In addition to sensitizing participants about IPV and other couple/family values, the participants receive professional counselling by an expert hired by Red Cross—one-to-one counseling, group counseling sessions with focus groups, couple therapy and mediation sessions. To the best of our knowledge, the effect of such a program has not been experimentally tested before, especially in the context of a country like Liberia or examining IPV as a primary outcome.[10] This component is also consistent with the public health literature suggesting that IPV is associated with long-term mental health problems (Black and Breiding 2008; Humphreys et al. 2012; Wuest et al. 2010 and recommending that screened IPV survivors receive counseling (Ghandour et al. 2015). Second, our intervention is differentiated in its intensity: participants are required to physically attend the program center for 5 days a week for 4-5 hours a day for a full year (i.e., roughly 1,200 hours in total). This is extremely high compared to previously evaluated programs.[11]

Second, this paper also contributes to the literature on using self interviewing tools to measure sensitive outcomes or socially undesirable behavior. ACASI is one of the self-interviewing tools used in order to minimize such elements as shame, embarrassment or other factors that could make a respondent underreport sensitive outcomes in a conventional survey

[9] Blattman et al. (2016) find no significant effect on domestic violence of a business training program coupled with a cash grant of 150 USD towards war-affected women in Northern Uganda. Green et al. (2015) extend the experiment to involve male partners but still find no significant effect on IPV. Yet Bandiera et al. (2020) find that a multifaceted vocational and life skills training program to adolescent girls decreased sex against their will, which is one form of sexual IPV.

[10] This component of our intervention could be comparable to the "life skills training" of the BRAC's ELA program evaluated by Bandiera et al. (2020), which aims at training the participants to have more bargaining power in their relationship with men. However, our intervention involves more intense professional counseling and treats the partners and children as well.

[11] For instance, in the WINGS program evaluated by Blattman et al. (2016) and Green et al. (2015), the study sample received 4 days of training, 4-5 follow-up visits, and 3 days of self-group training (i.e., up to 96 hours total). Our intervention is unusually intensive even compared to the numerous business training programs or "graduation" programs that have been extensively tested in development economics. For example, the ILO's SIYB program (de Mel et al. 2014) included training for 7 or 9 days for 7 hours a day (i.e., 49 or 63 hours total).

administered by a human enumerator. Previous findings on IPV reporting are mixed.[12] For example, in an African context which is comparable to our study, Cullen (2020) find the reported IPV rates are not significantly different between ACASI and FTFI in rural Nigeria and Rwanda. In a sister project in rural Liberia and Malawi, Park et al. (2021) show ACASI increases IPV reporting, but very similar to the findings of this paper, they also document that many do not fully comprehend the tool, evidenced by about one-third of the sample failing to correctly answer simple, innocuous questions. While the ACASI tool used and the experimental design are almost identical to this paper, the sample characteristics differ not only in that the baseline IPV rates are much higher in our sample but also in that the women are younger and more likely to have experience with a touch-screen device (like a smartphone). Nonetheless, we also find that the ACASI tool was not fully understood by respondents. Falb et al. (2017) also show that only 75-90% of adolescent girls understand the ACASI tool in the DRC and refugee camps along the Sudan-Ethiopia border. Our paper not only adds empirical evidence from a differentiated context where the baseline IPV rate is very high and the digital literacy rate is relative high, but also we examine how IPV measurement interacts with an intervention targeted at IPV.

The paper proceeds as follows. Section 2 describes the context and experiment and data collection. Section 3 presents our main results. Section 4 shows results from the IPV measurement experiment. Section 5 concludes.

2 Setting, Study Design, and Data

2.1 Context and Setting

This study was conducted in the capital city of Monrovia in Liberia, where IPV is highly prevalent. In the Liberia Demographic and Health Survey (DHS) 2019-2020, 35% of ever-partnered women of age 15-49 reported to have experienced physical or sexual IPV in the past 12 months, whereas the corresponding averages for Asian, Latin American and other African

[12]For example, Hussain et al. (2015) find ACASI increases IPV reporting in China, Japan, and the US; Rathod et al. (2011) find ACASI decreases IPV reporting in rural India; Fincher et al. (2015) also find lower reporting among low-income African Americans in the US; Kim et al. (2008) find no effects among parents in pediatric clinics in the US. See Tourangeau and Yan (2007) for review.

countries where DHS data is available are respectively 16%, 12%, and 26%. The study population targeted by the Red Cross reports much higher levels of IPV: in our baseline, we find that 51% of women report physical or sexual IPV in the past year.

There are numerous explanations for the high IPV prevalence in today's Liberia, including poverty.[13] Yet another contributing factor likely are the civil wars that took place in Liberia between 1989-1996 and 1999-2003 and killed around 250,000 people, amounting to approximately 10% of the population of the country then, and displaced more than another million. During the war, violence against civilians, especially women and girls, was systematically mobilized as a "weapon of war" to terrify and subdue communities. A WHO report documents that 2 in 3 Liberian women experienced sexual violence during the civil war (Omanyondo 2005).[14] Research suggests that these attitudes towards violence, once entrenched, may persist (Steenkamp 2005).[15]

2.2 Women Training and Integration (WIN) Program

The core intervention of this paper is a multifaceted female empowerment program called the Women Training and Integration (WIN) Program, which has been administered by the Liberian Red Cross since 2009. The program targets vulnerable women in slum communities of Monrovia,[16] and its main objective is to improve the participants' livelihoods in multiple dimensions.[17] The WIN program is very intensive and requires a 12-month commitment from participants, who need to be present at the WIN program center for 4-5 hours a day

[13] Liberia is one of the 10 poorest countries in the world (CIA World Factbook) with weak institutions, and many lack access to formal education and sustainable economic activities. For example, per one of the UN's Millennium Development Goals, the net primary education enrollment in Liberia was 37% in 2016, while the average of Sub-Saharan African countries was 78% (UNESCO Institute for Statistics).

[14] Also see Domingo et al. (2013), Jones et al. (2014), and Women (2013).

[15] Steenkamp (2005) suggests that a prolonged exposure to violence can give rise to a "culture of violence," which can be defined as "the system of norms, values, or attitudes which allow, make possible or even stimulate the use of violence to resolve any conflict or relation with another person" (Moser and Winton 2002).

[16] Table A2 lists the selection criteria for the WIN program. To qualify, an applicant must belong to a minimum of three groups. LNRCS has a thorough process of selecting beneficiaries. They review the application packets carefully, pay visits to the communities, and interview friends or neighbors to verify the reported information in the applications.

[17] Specifically, the program aims at the following: 1. To economically empower women so that they can self-sustain themselves and their families; 2. To psychologically empower women so that they can better protect themselves from abuse; 3. To help establish and maintain positive relations with their families and communities; 4. To improve knowledge about and thus access to health care and psychological services.

(either in a morning or afternoon session) for 5 days a week during the 12-month period.

The program has two major components. The first is psychosocial therapy, which includes one-to-one and group counseling sessions, thematic group discussions, cognitive behavioral therapy sessions, stress management, family/couple therapy, mediation, and conflict resolution. These aim to heal war-related trauma, reduce traumatic stress disorder, mediate family conflict situations, support coping mechanisms, build self-confidence, and promote social interaction and peaceful coexistence within their familes as well as communities.

The second is the vocational skills and business training. LNRCS offers three options for vocational skills: baking/catering, hairdressing/cosmetology, and tailoring. A participant can choose only one skill, and for those who do not have any preference, LNRCS assigns them one based on capacity constraints. The business training module provides training on handling day-to-day aspects of business, such as client interactions, sales-purchase bookkeeping, and inventory management. At the end of the program, the beneficiaries also receive business startup kits and cash grants to assist setting up their own businesses. However, due to financial constraints and COVID-related disruptions, LNRCS was not able to provide the business capital grants and cash grants for the cohort included in this paper.

The WIN program also includes several other components. The program provides routine health care check-ups and HIV/AIDS awareness and testing sessions in LNRCS's in-house clinic. Child care services are also provided when the beneficiary is at the program center. The adult literacy module targets unschooled participants and trains them in basic arithmetic, and English reading and writing skills. The curriculum is aligned with the Ministry of Education's Alternative Learning Curriculum.

2.2.1 Experimental Design

The sampling frame is the pool of individuals who applied to the WIN program and screened by LNRCS to be eligible. Several months before program start for every cohort, LNRCS advertises the program in target communities to encourage eligible women to apply. In February 2019 (for the first cohort of this study), LNRCS received about 600-700 applications in total, and after background checks and verification of the applicants' information, it shared with us a list of 450 eligible applicants divided into the "main" list of 400 and a "backup"

list of 50 ranked in the order of eligibility status determined by LNRCS. In conducting the baseline survey, for those we couldn't reach after numerous attempts, we drew from the backup list in order. At the end, we completed the baseline survey for 395 respondents,[18] and randomly assigned 198 to treatment and 197 to control.

The full design was to conduct the experiment over three cohorts, each including 400 women randomly halfed into either treatment or control. Such pooled design was due to LNRCS's operational constraints which allow serving up to 200 beneficiaries at a time.

Unfortunately, COVID and funding problems impeded this plan, and ultimately only one cohort was enrolled. Treatment is stratified at two background characteristics collected in the baseline survey: (a) whether having experienced physical or sexual IPV in the past 12 months, and (b) having been affected by the civil war or having family members who have.[19]

Out of 198 who were invited to participate in the WIN program, only 152 ended up joining the program. Moreover, due to an administrative error, 2 people from the control group were invited and joined the program. We show both intent-to-treat (ITT) and treatment-on-treated (TOT) estimates.

2.3 Data Collection

We conducted the baseline survey in April 2019, and the endline in April 2021, which was about 12 months after program completion. Our primary outcome is IPV but the survey also included questions on labor supply, income, expenditure, psychological well-being, social norms around IPV, transfers, and savings.

We used the WHO's Violence Against Women module[20] to measure IPV outcomes. The module consists of a group of questions each describing an IPV-related episode, providing the respondents with multiple opportunities to report violence. These binary questions are later grouped into: controlling behavior, emotional, physical or sexual IPV. For all questions, we restrict the recall period to the past 12 months prior to the survey date. Appendix B provides a more comprehensive description of the questionnaire.

[18] We had completed full interviews with 400 women, but LNRCS later decided to drop anyone under 17 from the sample due to potential conflict with school enrollment.
[19] Instances include: relocation, becoming disabled/amputated, family members being killed/dead.
[20] https://www.who.int/gender/violence/who_multicountry_study/Annex3-Annex4.pdf.

2.4 IPV Measurement and Safety Protocols

We instituted WHO's ethics protocol for IPV research (WHO 2016). Study protocols have been reviewed and approved by the institutional review boards (IRBs) of the University of California, Santa Cruz and the University of Liberia, which is the relevant entity in Liberia. Second, we used the WHO's Violence Against Women module, which has been employed in multiple contexts and become a "gold standard" for IPV measurement. Third, we hired only female enumerators and provided special training both to safely conduct the interviews and to be prepared emotionally for the work. Fourth, as for the full survey itself, the survey was conducted privately without presence of anyone else than the enumerator and the respondent. Particularly for the IPV module, enumerators were trained to change questions to non-sensitive subjects in the event the survey is interrupted or eavesdropped by a third party. Fifth, while at the beginning of the whole survey respondents went through an informed consent procedure including information for the IPV, we reiterated informed consent right before the IPV module. Sixth, we prepared an information sheet that lists the services available for women experiencing IPV, including contact information for organizations where they can get help. This list was provided to every respondent who went through the IPV questionnaire, regardless of whether they reported any IPV experience.

2.5 Baseline Summary Statistics

Table 1 presents baseline summary statistics. The average age of women in the control group is about 29 years. They completed 7 years of education, on average, and about two-third of our sample have completed only primary school, while only 25% women have completed secondary school.

For the IPV questions, we restrict the sample to those who are currently partnered or have had an intimate partner 12 months prior to the survey, and the mean for this indicator at baseline was 92%.[21]

In Panel B we find that our sample had minimal access to her own income source or labor force participation. Only 11% report to have any job, and 25% are self-employed. The

[21] We later show in Table A3 how this indicator is balanced between treatment and control at endline.

average income is a mere $8 dollars per month, with many zeros in the extensive margin. The mean for spouse's income is twice as large ($19). While our measures of income might not be exhaustive itself, the mean differences suggest that the women in our sample were not financially independent at baseline.

The baseline prevalence of IPV is very high. About 59% women reported having experienced emotional IPV, while the figure for the more severe form of IPV (physical or sexual) is slightly smaller (51%). This rate is very high compared to the national average reported in the Liberia DHS surveys, where the corresponding figures are 35% and 35% respectively in the 2019-2020 report. However, while our study uses the identical questionnaire to the DHS's Domestic Violence Module, the numbers are not perfectly comparable, since at our baseline IPV was measured solely in SI, and DHS data are measured via traditional FTFI. In light of the findings in Section 4 and from our sister project in rural Liberia and Malawi (Park et al. 2021), the reported differences could be due to differing measurement modality, either through enhanced confidentiality or increased measurement error. Yet, the control group's IPV rates at our endline measured in FTFI only are still high–62% for emotional IPV, 45% for physical IPV, and 23% for sexual IPV.

Table 1: Baseline Summary Statistics and Randomization Check

	(1) Control Mean [SD]	(2) Treatment - Control
Panel A: Demographics		
Age	28.98	1.36*
	[7.29]	(0.73)
Years of education	7.27	0.45
	[4.11]	(0.40)
=1 if completed primary school	0.66	0.06
		(0.05)
=1 if completed secondary school	0.25	0.01
		(0.04)
=1 if currently partnered or had partner past year	0.92	-0.00
		(0.03)
Panel B: Self income and labor supply		
=1 if has own income source	0.34	0.06
		(0.05)
=1 if operated own business	0.25	0.04
		(0.04)
=1 if had any other temporary/permanent job	0.11	0.01
		(0.03)
Total income (USD)	8.38	3.36
	[27.57]	(3.09)
Panel C: Household economic well being		
Spouse's income (USD)	19.06	2.11
	[39.56]	(4.05)
Per capita expenditure (monthly, USD)	26.76	1.65
	[25.54]	(2.63)
Net value of physical assets (USD)	316.32	80.88
	[1,282.83]	(133.55)
Panel D: Intimate partner violence		
=1 if experienced the following (past 12 months):		
Controlling behavior	0.83	0.03
		(0.04)
Emotional IPV	0.59	0.00
		(0.05)
Physical IPV	0.50	-0.01
		(0.05)
Sexual IPV	0.16	0.03
		(0.04)
Physical or sexual IPV	0.51	-0.01
		(0.05)
Emotional, Physical or Sexual IPV	0.67	-0.02
		(0.05)

Note: Observations = 395.

2.6 Attrition Balance

In Table A3, we check balance for two compliance measures: column (1) shows whether we were able to reach the respondent and complete the endline survey itself, and column (2) refers to whether she was eligible for the IPV section at endline. Given our IPV questions have a recall period of 12 months, we administered the IPV module only to those who are currently partnered or have been so in the past 12 months. Since the IPV analysis is indeed constrained to only those who went through the IPV questionnaire at all, it is necessary to check for any differential attrition in partner status. In addition, given that often in developed countries, IPV survivors are encouraged to leave the violent partner, this is also a meaningful outcome that shows how women in our study select in or out of a relationship.

For the endline survey as a whole, we were able to successfully track 359 women (91% of the baseline sample), and the attrition rate is balanced between treatment and control. Among the 359, 314 were eligible for the IPV module, and as in column (2) of Table A3, we find a 2 percentage point difference in this partner status. While this difference is not statistically significant, we also report the Lee (2009) bound estimates for the effects on primary IPV outcomes in Table A5.

3 Results

3.1 Effects on IPV

In this section, we examine the WIN program effects on our primary IPV outcomes. We run the following regression:

$$Y_i = \beta WIN_i + \gamma Y_{0i} + \boldsymbol{X}_{ic}'\boldsymbol{\theta} + \phi_s + \varepsilon_i, \tag{1}$$

where Y_i is the outcome of interest for individual i, WIN_i treatment status instrumented with original assignment, Y_{0i} baseline measurment of the outcome, $\boldsymbol{X}_i'$ a vector of individual characteristics chosen by post-double selection LASSO, and ϕ_s strata fixed effects. The coefficient of interest is β, which is the treatment-on-treated (TOT) estimates for the effects of

the female empowerment program. We also report the reduced-form effects of the randomized treatment assignment. Due to problems we discuss further in Section 4, we exclude the random subsample for whom IPV was measured in self-interviewing modules.

The results for IPV are presented in Table 2. Emotional violence decreased by 23 percentage points and physical violence by 26 points from control bases of 62 percent and 45 percent, respectively.[22] The effect sizes we find are very large in comparison to the previous literature. Lighter-touch though similar interventions have shown to have null to modest effects on IPV (Green et al. 2015; Blattman et al. 2016; Bandiera et al. 2020). The cash transfer literature finds that physical violence reduces by 0-11 percentage points during the period the female receives the transfers (Buller et al. 2018).

Table 2: Program Effects on IPV Indices

	(1) Controlling Behavior	(2) Emotional Violence	(3) Physical Violence	(4) Sexual Violence
Panel A. ITT				
WIN treatment	-0.02	-0.17**	-0.19***	-0.07
	(0.06)	(0.07)	(0.07)	(0.06)
Control mean	0.80	0.62	0.45	0.24
Observations	169	169	169	169
Panel B. TOT				
WIN treatment	-0.03	-0.23**	-0.26***	-0.10
	(0.09)	(0.10)	(0.10)	(0.09)
Control mean	0.80	0.62	0.45	0.24
Observations	169	169	169	169

Note: Recall period is past 12 months prior to the survey. In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include baseline measurement of outcome, strata fixed effects, and control for ACASI vs. FTFI measurement of IPV. Standard errors in parentheses.

[22] In Table A5, we show the Lee (2009) bounds results based on the difference in partner status found in Table A3. For emotional IPV, the lower bound becomes statistically insignificant, but the magnitude remains fairly large with the t-statistic well greater than 1. For physical IPV, the lower bound shows a slightly smaller magnitude but remains to be statistically significant.

We next look into social norms around physical and sexual IPV. Social norms related to the acceptability of IPV has been one of the widely targeted pathways in the public health literature (Ranganathan et al. 2021). In the "social ecology" framework (Heise 1998), the dynamics between a couple are embedded in many other interpersonal relationships and the community, thus social norms around IPV is a crucial driver of IPV.

To measure social norms related to IPV acceptability, we asked relevant survey questions such as: "In your opinion, is a husband justified in hitting or beating his wife if she argues with him?" We had seven such questions and asked again each referring to what the respondent believes about the community: e.g. "In your community, is it usual for husbands to hit or beat the wife if she argues with him?" We summarize the responses to these binary questions into a z-score per Anderson (2008).

Table 3 presents our findings on social norms around IPV. Either the questions referring to the opinion of the respondent herself or to what she thinks of others in her community, we find effect sizes of about 0.3 standard deviations. This suggests that the program did reduce the acceptability of physical or sexual IPV among the program beneficiaries and that this might have been a pathway to the reduction in actual IPV experience.

Also note that the control means for respondents' own perception for each question (Panel A) are remarkably lower than those for others' (Panel B). One explanation is that providing affirmative responses to such questions might involve stigma or embarrassment so that when the question is directed towards others instead of the respondent herself, she might be more likely to truthfully report her belief.

Table 3: Program Effects on Perceived Justifiability of Physical/Sexual IPV

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	=1 if husband is justified to beat/hit wife when she:						=1 if husband is justified to force sex	Z-score
	Argues w/ husband	Goes out w/o telling	Doesn't care children	Burns food	Financial pressure	Refuses sex		
Panel A: One's own perception								
WIN treatment	-0.07*	-0.04	-0.11***	-0.02	-0.03	-0.01	0.02	-0.29**
	(0.04)	(0.03)	(0.04)	(0.02)	(0.02)	(0.02)	(0.03)	(0.13)
Control mean	0.09	0.06	0.13	0.03	0.04	0.03	0.03	-0.00
Observations	314	314	314	314	314	314	314	314
Panel B: Others' perception								
WIN treatment	-0.05	-0.09	-0.15**	-0.13***	-0.04	-0.10**	-0.08*	-0.30**
	(0.07)	(0.07)	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)	(0.13)
Control mean	0.30	0.30	0.28	0.18	0.14	0.17	0.14	0.00
Observations	314	314	314	314	314	314	314	314

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment. and include strata fixed effects. Standard errors in parentheses.

3.2 Effects on Economic Livelihoods

Improving women's economic opportunities have been long argued as a key strategy to reducing IPV. For example, in a household bargaining model from the economics literature, increasing the wife's economic opportunities outside of the household could heighten her "threat point" and thus the husband would less likely to perpetrate violence in order to keep her in the relationship. On the other hand, if the husband's motivations are "intrumental" (e.g. to extract resources from the wife) or "backlash" (e.g. to re-assert dominance), then economically empowering the wife could lead to more IPV.[23]

In Table 4, we look at labor supply outcomes. We find that the program increases labor hours for self employment by 22 hours a month (or 57 percent), while the extensive margin is not statistically distinguishable from zero. Considering the economic empowerment component of the WIN program focuses on vocational skills and business training for small businesses, this finding is not surprising. The null effect of the extensive margin is also

[23]See Buller et al. (2018) for discussion of the pathways and review of related cash transfer studies.

consistent with the fact that, for the cohort we're evaluating, Red Cross was not able to provide business capital grants at the end of the program.

We check whether there was any crowding out from other sources, but we find no significant effects on either casual labor or other income sources. While it's marginally insignificant, we also find a sizeable increase in total labor hours.

In addition to the pathways discussed above, labor supply could have incapitation effects. That is, spending more time on her own business or occupation, which is likely outside of the household or intimate relationship, leads to less time spent with her partner and thus leads to a mechanical reduction in IPV.

Table 4: Program Effects on Labor Supply

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Self employment		Casual labor		Other income		Total	
	=1 if any	hours	=1 if any	hours	=1 if any	hours	=1 if any	hours
Panel A. ITT								
WIN treatment	0.04	16.50*	-0.03	1.33	-0.05	-3.51	-0.03	14.32
	(0.05)	(9.72)	(0.03)	(1.67)	(0.03)	(4.56)	(0.05)	(10.30)
Control mean	0.46	38.38	0.08	1.34	0.12	11.36	0.63	51.08
Observations	359	359	359	359	359	359	359	359
Panel B. TOT								
WIN treatment	0.06	21.88*	-0.04	1.77	-0.06	-4.65	-0.04	19.00
	(0.07)	(12.87)	(0.03)	(2.20)	(0.04)	(6.02)	(0.07)	(13.60)
Control mean	0.46	38.38	0.08	1.34	0.12	11.36	0.63	51.08
Observations	359	359	359	359	359	359	359	359

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include strata fixed effects. Standard errors in parentheses.

In Table 5, we examine how the program affected other economic outcomes. Results show that the program increased expenditure by 49 percent. The effect sizes are surprisingly large. In Table A6, we show effects by expenditure categories, and we see that the effects are mostly driven by expenses on food items and nondurables. While we find no significant

effects on income, our survey questions for income might not be as exhaustive as in the expenditure section to capture many income sources. Thus expenditure is our preferred measure for economic welfare.

Table 5: Program Effects on Economic Outcomes

	(1) Expenditure	(2) Income	(3) Food Security	(4) Net Wealth
Panel A. ITT				
WIN treatment	9.10***	-1.17	0.06	80.25
	(2.79)	(4.11)	(0.11)	(101.98)
Control mean	24.81	21.71	-0.00	453.37
Observations	359	359	359	359
Panel B. TOT				
WIN treatment	12.07***	-1.55	0.08	106.44
	(3.78)	(5.41)	(0.14)	(134.46)
Control mean	24.81	21.71	-0.00	453.37
Observations	359	359	359	359

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include strata fixed effects. Standard errors in parentheses.

3.3 Effects on Psychological Wellbeing

Psychological wellbeing is also a primary outcome of the program, given that counseling is one of the key "response" interventions recommended by public health experts (Ghandour et al. 2015), suggesting that IPV victimization is correlated with mental health disorders (Karen M. Devries et al. 2013; Fulu et al. 2013; Machisa et al. 2017; Trevillion et al. 2012).

We use two main outcomes. First is the distress index from the 10-question Hopkins Symptom Checklist (HSCL-10). HSCL is generally used in clinical and epidemiological settings to measure psychological distress with a fairly straightforward set of 10 questions, such as "In the past 7 days, how often were you blaming yourself for things?" Respondents choose an option among "Not at all," "A little," "Quite a bit," and "Extremely," and we

add up the responses by the assigned numeric codes. Second, we construct a happiness index using the Happiness and Well-being questions from the World Values Survey. An example question is: "In a 1 to 10 scale, how much freedom of choice and control you feel you have over the way your life turns out?" Responses to such five questions are standardized to a z-score per Anderson (2008).

In Table 6, we find rather modest effects. Both outcomes go in the expected direction, a reduction in distress and an increase in happiness, but the magnitudes are small and not statistically significant. These are indeed surprising, considering the program heavily focuses on psychological therapy sessions. Yet, the endline was 12 months after program completion, and it is possible that the effects quickly dissipated within the year. Blattman et al. (2017) and Haushofer et al. (2020) find similar results where the effect of psychotherapy sessions show significant improvement psychological wellbeing in the short term, but no effect after one year since the last therapy session.

Table 6: Program Effects on Psychosocial Wellbeing

	(1) Distress Index (HSCL-10)[a]	(2) Happiness Index (z-score)[b]
Panel A. ITT		
WIN treatment	-0.01	0.06
	(0.05)	(0.10)
Control mean	2.01	0.00
Observations	359	359
Panel B. TOT		
WIN treatment	-0.02	0.07
	(0.07)	(0.14)
Control mean	2.01	0.00
Observations	359	359

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include strata fixed effects. Standard errors in parentheses.
[a] 10-question Hopkins Symptom Checklist (HSCL-10).
[b] Happiness and Well-being questions from the World Values Survey, standardized per Anderson (2008).

4 Threats to Validity

4.1 Experimenter Demand Effects and IPV Measurement

One potential threat to internal validity of this study is that effects on IPV could be biased by experimenter demand effects. This is because IPV reporting is not only subject to nonclassical measurement error (underreported) but also the measurement error could be correlated with treatment status. Given the treatment involves psychotherapy for relationships with spouses or intimate partners, the respondents in the treatment group might believe that the researchers expect them to have a better marital relationship and experience less IPV, and thus feel pressure to underreport IPV. This would overestimate the treatment effects.

To study this issue more rigorously, we cross-randomized an IPV measurement experi-

ment at endline, where respondents answered IPV questions in either self interviewing (SI) or the conventional face-to-face interviewing (FTFI). In the SI modality, women listen to pre-recorded questions through earphones and make choices on a touchscreen-enabled tablet, whereas under FTFI the enumerator asks each question and the respondent responds verbally.[24] The main difference is that the SI module allows the respondents to report their responses anonymously to the human enumerator, which could minimize experimenter demand effects and mitigate underreporting of IPV.[25]

We first check how well respondents understand the SI tool. Before we randomize respondents into SI and FTFI modules, we presented everyone in SI a set of four non-sensitive questions for which the answer is likely yes. Table B1 shows that a majority (96-98%) correctly answer these questions.[26]

Next, we examine the effects of SI on nonsensitive placebo questions.[27] In Table B2, we find significant effects of SI on responding to these presumably innocuous questions. For example, while everyone in the control group said "yes" to both rain and sleep questions under FTFI, only 82% in the control group and 90% in the treatment group did so under SI. While the difference between WIN treatment and control is not significant, the pooled effects are 14 percentage points and significant. For the other questions too, we see sizeable SI effects, for both treatment and control groups. Among seven questions, five of them indicate statistical significance when effects are pooled. While only one of them (farm work question) show significant differences between treatment and control, lack of statistical significance might be simply due to a small sample size. Indeed the magnitudes are smaller for the

[24] We use one type of SI called audio computer-assisted self interviewing (ACASI). The ACASI module and the experimental design are almost identical to those of our sister project (Park et al. 2021), where we study effects of SI on IPV reporting in rural Liberia and rural Malawi.

[25] Another intent of SI is to protect the respondents from feeling shame or discomfort in reporting experiences like IPV so that SI could mitigate under reporting of IPV. Yet it is also possible on the other hand that the respondent could feel more comfortable sharing unfortunate experiences with a human being. Conducting the IPV module is typically considered a conversation, and often respondents seek counseling from the human enumerator (M. Ellsberg et al. 2001).

[26] This is contrast to what Park et al. (2021) find in rural Liberia and Malawi, where about one-third of the sample fails to answer these questions correctly. One major difference is that the sample in our study is younger and more digitally literate. For example, the average respondent is 29 years old in this study, and 37-38 years old in the rural samples.

[27] We also test whether this effect is differential between the WIN program treatment and control, by running the following regression: $Y_i = \beta SI_i \times WINcontrol_i + \gamma SI_i \times WINtreat_i + \delta WINtreat_i + \varepsilon_i$, where Y_i is a binary indicator for whether individual i responded yes to the given question, and $WINcontrol_i + WINtreatment_i = 1$.

treatment group (except for the rice question).

However, assuming that these questions are truly innocuous and respondents have no reason to differentially report by FTFI and SI, the results altogether suggest that a significant portion of the sample are making mistakes in our SI tool. We also have weak evidence that the treatment group are less likely to make mistakes.

4.2 Effects on IPV reporting

Now we report the SI effects on the IPV questions, and run the following:

$$Y_{iq} = \beta SI_i \times WINcontrol_i + \beta SI_i \times WINtreatment_i + \gamma WINtreatment_i + \psi_q + \varepsilon_{iq}, \quad (2)$$

where ψ_q is the question-level fixed effects. Note that the outcome here is at the individual respondent-question level, referring to the likelihood a respondent says yes (either to the human enumerator or by selecting yes on the tablet) to a single IPV question.

Results are shown in Table B3. We find limited evidence for SI effects when pooled: it is significant only for controlling behavior questions. Yet, we also find significant SI effects for the WIN treatment group. The control group affirmed an IPV instance at 29% on average under FTFI, and similarly at 28% under SI. The treatment group said "yes" to a given IPV question at 19% of the times under FTFI, but 36% under SI.

4.3 Interaction with WIN program effects

In this section, we estimate the program effects separately when IPV is measured in FTFI and SI. We run the following regression specification:

$$Y_i = \beta WIN_i \times FTFI_i + \gamma WIN_i \times SI_i + \delta SI_i + \varepsilon_i, \quad (3)$$

where $FTFI_i = 1 - SI_i$.

In Table B5, interestingly we find that program effects attenuates massively when the IPV outcomes are measured in SI. Program effects on physical IPV is 28 percentage points under FTFI, but this attenuates to 3 percentage points, which is insignificant and closer to

a precise zero. The effects on emotional IPV show a similar pattern: from 25 percentage points to a precise zero.

This result itself is consistent with our prior belief that SI would minimize experimenter demand effects and thus the treatment effects under SI would be smaller. However, given our results earlier indicating that a significant part of our sample doesn't fully understand the SI tool, we cannot rule out that the differential treatment effects we find here is due to increased measurement error.

4.4 Sensitazation of IPV and Heightened Standards for Psychological wellbing

The correlation between measurement error and treatment status can be positive on the other hand. That is, while the treatment group becomes more sensitized of their IPV experience and more likely to truthfully report IPV, the control group might not be sensitized enough and underreport IPV experience. This would underestimate treatment effects on IPV.

Similarly, the psychosocial therapy might

4.5 Incapitation Effect

Another concern is that IPV experience might be reduced in the treatment group mechanically because they spend more time in the program. This could be especially concerning since the treatment group had to attend the program center 4-5 hours a day for 5 days a week. This amounts to at least 20-25 hours a week physically away from the spouse. While controlling behavior and emotional IPV can be perpetrated remotely (e.g. over the phone), physical and sexual IPV do require physical contact.

5 Conclusion

Our randomized evaluation of a multifaceted female empowerment program finds that it considerably reduces emotional and physical IPV experienced by women, restricting the analysis to IPV outcomes measured in a conventional setting. We also find sizeable effects on

labor supply and expenditure. After 12 months since the program, we find small insignificant effects on psychological wellbeing.

These findings suggest that a holistic approach to IPV prevention is effective. This is consistent with the public health literature on IPV emphasizing that the multi-level factors of IPV are important in designing interventions. One caveat of this study is that we cannot quantify the marginal benefit of a single program component. We leave this to future research.

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Appendix A

Figure A1: Study Timeline and COVID-19 Disruptions

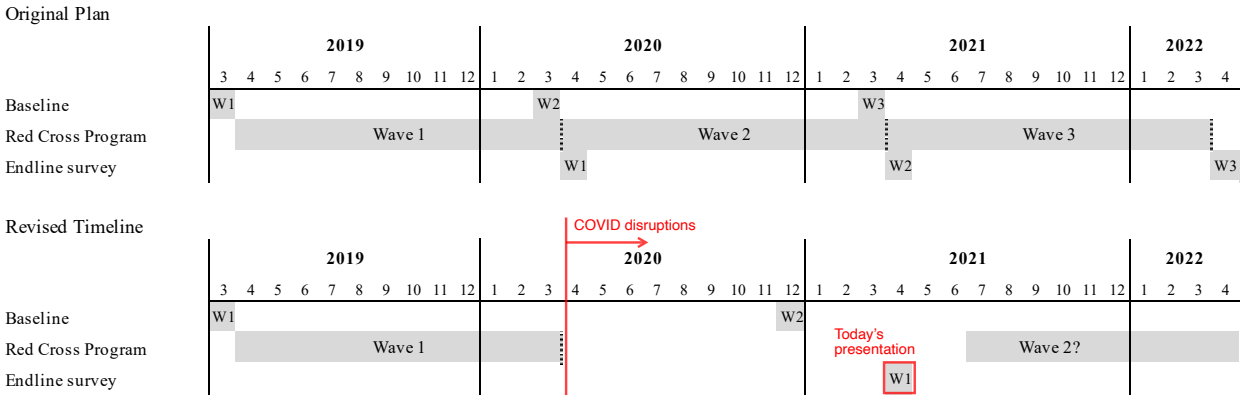

Figure A2: Self Interviewing (SI) Survey Module

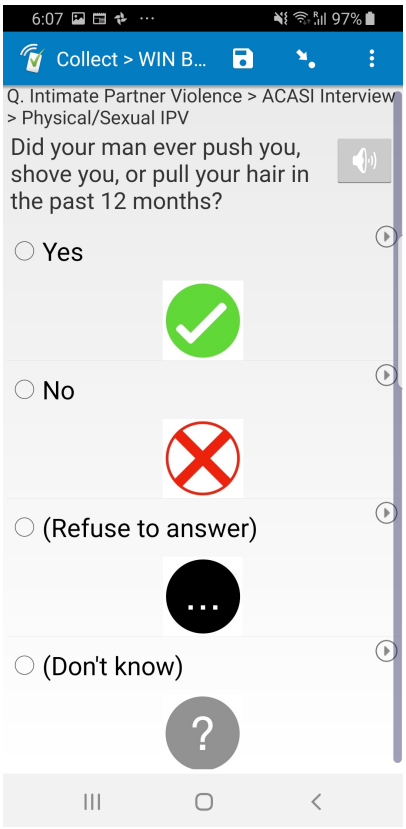

Table A1: WIN Program Components

Program Component	Description
Psychological support	One-to-one and group counselling, stress management, family/couple therapy
Literacy classes	Reading and writing curriculum by Ministry of Education
Child care	During program participation
Medical checkups	Free primary medical check-ups at Red Cross clinic
Vocational skills training	Baking, cosmetology, and tailoring
Entrepreneurship training	Financial literacy, business planning/management, etc.
Business start-up capital	250 USD worth of capital along with 30 USD cash grant

Table A2: Selection Criteria of WIN Program

1. Ex-combatant	5. Single mother/self-supported
2. Previous commercial sex worker	6. Illiterate
3. Victims of rape/domestic violence	7. Economically vulnerable
4. Witness of extreme violence	8. Drug user

Table A3: Attrition Balance

	(1) =1 if completed endline survey	(2) =1 if completed IPV survey at endline[a]
WIN treatment	0.00	-0.02
	(0.03)	(0.04)
Control mean	0.91	0.81
Overall mean	0.91	0.79
Observations	395	395

Note: Regressions include strata fixed effects. Standard errors in parentheses.
[a] IPV questionnaire is administered to only those who are currently married or has an intimate partner, or have been so in the 12 months prior to the survey.

Table A4: Program Effects on Frequency-integrated IPV Indices

	(1)	(2)	(3)	(4)
	Frequency-integrated Indices[a]			
	Emotional IPV	Physical IPV	Sexual IPV	Any IPV
Panel A. ITT				
WIN treatment	-0.15	-0.30***	-0.18	-0.35***
	(0.14)	(0.11)	(0.12)	(0.11)
Control mean	0.00	-0.00	-0.00	0.00
Observations	169	169	169	169
Panel B. TOT				
WIN treatment	-0.20	-0.42**	-0.25	-0.48***
	(0.19)	(0.16)	(0.17)	(0.16)
Control mean	0.00	-0.00	-0.00	0.00
Observations	169	169	169	169

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include baseline measurement of outcome, strata fixed effects, and control for ACASI vs. FTFI measurement of IPV. Standard errors in parentheses.

Table A5: Program Effects on IPV Indices - Lee Bounds

	(1)	(2)	(3)	(4)	(5)	(6)
	Emotional IPV			Physical IPV		
	Baseline	Lower Bound	Upper Bound	Baseline	Lower Bound	Upper Bound
WIN treatment	-0.20**	-0.15	-0.26***	-0.22**	-0.16*	-0.25***
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Control mean	0.62	0.59	0.68	0.45	0.41	0.49
Observations	169	162	162	169	162	162
	Sexual IPV			Any IPV		
	Baseline	Lower Bound	Upper Bound	Baseline	Lower Bound	Upper Bound
WIN treatment	-0.10	0.00	-0.11	-0.18**	-0.14	-0.23**
	(0.08)	(0.08)	(0.09)	(0.09)	(0.10)	(0.09)
Control mean	0.24	0.17	0.26	0.66	0.63	0.72
Observations	169	162	162	169	162	162

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include baseline measurement of outcome, strata fixed effects, and control for ACASI vs. FTFI measurement of IPV. Standard errors in parentheses.

Table A6: Program Effects on Expenditure Items

	(1) Food	(2) Nondurables	(3) Clothes	(4) Education	(5) Health	(6) Religious contributions	(7) Family events	(8) Nonmedical emergency
Panel A. ITT								
WIN treatment	3.74**	4.67	1.17	0.69	0.42	0.33	-0.54	0.10
	(1.65)	(2.99)	(1.87)	(2.20)	(1.43)	(0.64)	(1.52)	(0.13)
Control mean	10.05	27.06	6.54	15.15	6.07	2.99	5.07	0.11
Observations	359	359	359	359	359	359	359	359
Panel B. TOT								
WIN treatment	4.96**	6.19	1.55	0.92	0.56	0.44	-0.72	0.14
	(2.21)	(4.00)	(2.47)	(2.90)	(1.88)	(0.85)	(2.01)	(0.16)
Control mean	10.05	27.06	6.54	15.15	6.07	2.99	5.07	0.11
Observations	359	359	359	359	359	359	359	359

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include baseline measurement of outcome, and strata fixed effects. Standard errors in parentheses.

Table A7: Program Effects on Income

	(1)	(2)	(3)	(4)
	Respondent			Spouse's income
	Self employment	Casual labor	Other job	
Panel A. ITT				
WIN treatment	3.63	-1.25	-3.55	-0.99
	(3.63)	(0.80)	(2.23)	(5.79)
Control mean	12.40	1.91	7.40	33.44
Observations	359	359	359	359
Panel B. TOT				
WIN treatment	4.82	-1.66	-4.71	-1.32
	(4.79)	(1.06)	(2.95)	(7.63)
Control mean	12.40	1.91	7.40	33.44
Observations	359	359	359	359

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include baseline measurement of outcome, and strata fixed effects. Standard errors in parentheses.

Table A8: Program Effects on Assets

	(1) Business capital	(2) Durables	(3) Livestock	(4) Savings	(5) Debt
Panel A. ITT					
WIN treatment	5.90	63.95	0.31	13.87	3.79
	(16.14)	(90.02)	(9.16)	(17.01)	(3.44)
Control mean	44.19	361.22	23.00	30.46	5.49
Observations	359	359	359	359	359
Panel B. TOT					
WIN treatment	7.83	84.82	0.42	18.40	5.02
	(21.24)	(118.73)	(12.07)	(22.38)	(4.53)
Control mean	44.19	361.22	23.00	30.46	5.49
Observations	359	359	359	359	359

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include baseline measurement of outcome, and strata fixed effects. Standard errors in parentheses.

Table A9: Program Effects on Interpersonal Transfers

	(1)	(2)	(3)	(4)
	Transfers sent		Transfers received	
	Spouse	Non-spouse	Spouse	Non-spouse
Panel A. ITT				
WIN treatment	-0.22	-1.53	2.59	1.68
	(0.48)	(1.48)	(4.52)	(2.89)
Control mean	1.40	6.41	37.40	8.15
Observations	278	359	278	359
Panel B. TOT				
WIN treatment	-0.28	-2.03	3.33	2.23
	(0.61)	(1.95)	(5.77)	(3.80)
Control mean	1.40	6.41	37.40	8.15
Observations	278	359	278	359

Note: In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include baseline measurement of outcome, and strata fixed effects. Standard errors in parentheses.

Appendix B: Possible Threats to Validity

Table B1: SI Screening

	(1) Mean (=1 if yes)
Are you a woman?	0.98
Do you live in [the county/district where the survey is being conducted]?	0.97
In the past week, did you sleep, during day or night?	0.97
In the past year, did it rain in your village one time or more?	0.96
=1 if yes to all questions	0.90
=1 if yes to woman and rain questions	0.98
Observations	303

Note: These four questions were asked in SI to everyone included in SI measurement experiment.

Table B2: SI Effects on Placebo Questions, by WIN treatment status

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Questions for which answer should be yes:				Questions for which answer could be yes/no:				
			Index						
	Rain	Sleep	%(yes)	=1 if yes to all	Farm work	Market	Int'l travel	Rice	Meat
SI × WIN control (β)	-0.07**	-0.14***	-0.11***	-0.18***	0.11**	0.08	-0.04	-0.10***	-0.16*
	(0.03)	(0.04)	(0.03)	(0.05)	(0.05)	(0.05)	(0.03)	(0.04)	(0.08)
SI × WIN treatment (γ)	-0.04	-0.09**	-0.07**	-0.10**	-0.02	0.07	0.01	-0.13***	-0.13
	(0.03)	(0.04)	(0.03)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.08)
WIN	-0.01	-0.03	-0.02	-0.05*	0.03	0.02	-0.02	-0.03	0.01
	(0.02)	(0.02)	(0.01)	(0.03)	(0.04)	(0.06)	(0.04)	(0.02)	(0.08)
FTFI × WIN control mean	1.00	1.00	1.00	1.00	0.04	0.84	0.06	1.00	0.56
p-value ($\beta = \gamma$)	0.609	0.361	0.356	0.241	0.053	0.890	0.334	0.617	0.737
Observations	298	298	298	298	298	298	298	298	298
Post-estimation calculation									
Pooled SI effects	-0.06	-0.11	-0.09	-0.14	0.05	0.07	-0.01	-0.11	-0.14
p-value	0.010	0.000	0.000	0.000	0.139	0.049	0.659	0.000	0.016

Note: Regressions include individual controls (including all variables in Table B6). "Screen Pass" is defined by selecting "yes" to all questions in Table B1. Standard errors in parentheses.

Table B3: SI Effects on IPV Questions, by WIN treatment status

	(1)	(2)	(3)	(4)	(5)
	=1 if responded yes to individual question in the following category:				All questions pooled
	Controlling Behavior	Emotional IPV	Physical IPV	Sexual IPV	
SI × WIN control (β)	0.01	-0.03	-0.06	0.06	-0.01
	(0.04)	(0.06)	(0.04)	(0.05)	(0.04)
SI × WIN treatment (γ)	0.11***	0.04	0.06	0.05	0.07**
	(0.04)	(0.06)	(0.04)	(0.05)	(0.04)
WIN	-0.11***	-0.08	-0.12***	-0.05	-0.10**
	(0.04)	(0.06)	(0.04)	(0.05)	(0.04)
FTFI × WIN control mean	0.37	0.38	0.22	0.16	0.29
p-value ($\beta = \gamma$)	0.097	0.409	0.057	0.947	0.142
Number of individuals	298	298	297	298	298
Observations	2,056	1,184	1,776	889	5,905
Post-estimation calculation					
Pooled SI effects	0.06	0.01	0.00	0.06	0.03
p-value	0.046	0.845	0.963	0.112	0.255

Note: Observations at respondent-question level. See Table B4 for index-level results. Regressions include question-level fixed effects. Standard errors clustered at individual level in parentheses.

Table B4: SI Effects on IPV Indices, by WIN treatment status

	(1)	(2)	(3)	(4)	(5)
	=1 if responded yes to *any* question in the following category:				Any IPV
	Controlling Behavior	Emotional IPV	Physical IPV	Sexual IPV	
SI × WIN control (β)	0.09	-0.04	-0.14*	0.09	-0.02
	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)
SI × WIN treatment (γ)	0.18***	0.09	0.01	0.12*	0.10
	(0.06)	(0.08)	(0.07)	(0.07)	(0.08)
WIN	-0.02	-0.16**	-0.21***	-0.08	-0.15*
	(0.07)	(0.08)	(0.08)	(0.07)	(0.08)
FTFI × WIN control mean	0.77	0.63	0.47	0.24	0.67
p-value ($\beta = \gamma$)	0.290	0.271	0.164	0.762	0.301
Observations	298	298	298	298	298
Post-estimation calculation					
Pooled SI effects	0.14	0.03	-0.07	0.11	0.04
p-value	0.002	0.629	0.207	0.037	0.478

Note: See Table B3 for question-level results.

Table B5: Program Effects and SI Effects on IPV Indices - TOT - Screen Pass only

	(1)	(2)	(3)	(4)	(5)
	=1 if experienced any instance of the following category:				
	Controlling Behavior	Emotional IPV	Physical IPV	Sexual IPV	Any IPV
Panel A. ITT					
WIN × FTFI (γ)	-0.01	-0.15**	-0.20***	-0.07	-0.14*
	(0.07)	(0.08)	(0.08)	(0.07)	(0.07)
WIN × SI (β)	0.07	-0.03	-0.06	-0.04	-0.04
	(0.05)	(0.08)	(0.07)	(0.08)	(0.08)
Non-WIN × FTFI mean	0.77	0.63	0.47	0.24	0.67
Non-WIN × SI mean	0.84	0.54	0.29	0.31	0.60
p-value ($\beta = \gamma$)	0.315	0.280	0.177	0.755	0.339
Observations	298	298	298	298	298
Post-estimation calculation					
Pooled program effects	0.03	-0.10	-0.13	-0.06	-0.09
p-value	0.508	0.083	0.014	0.248	0.108
Panel B. TOT					
WIN × FTFI (γ)	0.00	-0.25**	-0.28***	-0.10	-0.22**
	(0.09)	(0.10)	(0.10)	(0.09)	(0.10)
WIN × SI (β)	0.12*	0.01	-0.03	-0.04	0.00
	(0.06)	(0.10)	(0.09)	(0.09)	(0.10)
Non-WIN × FTFI mean	0.77	0.63	0.47	0.24	0.67
Non-WIN × SI mean	0.84	0.54	0.29	0.31	0.60
p-value ($\beta = \gamma$)	0.296	0.074	0.060	0.584	0.111
Observations	298	298	298	298	298
Post-estimation calculation					
Pooled program effects	0.06	-0.13	-0.16	-0.07	-0.11
p-value	0.293	0.079	0.020	0.254	0.108

Note: Sample includes only those who passed screening, i.e. those who selected "yes" to all questions in Table B1. In Panel B, regressions are TOT estimates, where the treatment indicator is instrumented with the original assignment to treatment, and include baseline measurement of outcome, and strata fixed effects. Standard errors in parentheses.

Table B6: SI Randomization Check

	(1) Control Mean [SD]	(2) Treatment - Control
Panel A. Demographics		
=1 if currently married or has partner	0.88	0.02
		(0.04)
Age	30.44	1.74**
	[6.79]	(0.83)
Number of household members	5.06	0.72**
	[2.71]	(0.35)
Panel B. Education and digital literacy		
Years of education	8.28	-0.52
	[4.14]	(0.47)
=1 if able to write/read in English	0.84	0.03
		(0.04)
=1 if has access to mobile phone	0.89	-0.00
		(0.04)
Panel C. Household wealth		
Food security index (z-score)	0.00	-0.05
	[1.00]	(0.12)
Total expenditure (monthly)	124.08	3.06
	[83.00]	(10.21)
Net value of durables, livestock, and financial asset	421.43	121.86
	[828.44]	(108.39)
Non-agricultural income (monthly)	21.45	3.96
	[38.75]	(4.77)
Panel D. Empowerment-related outcomes		
=1 if has her own income source	0.60	0.04
		(0.06)
Number of children	2.35	0.47**
	[1.68]	(0.20)
Observations	303	

Table B7: Post-SI Survey of Technical Difficulties Self-reported by Respondents

	(1) Mean (=1 if yes)
Was the audio loud enough to hear?	0.99
Was the audio speaking speed okay?	0.98
Was it easy for you to remember the meaning of pictures?	0.97
Was it easy for you to choose answers on the screen?	0.97
Was it easy for you to move between questions on the screen?	0.97
Observations	145

Note: Questions were asked only to those in the SI treatment group (i.e., the FTFI group did not get these questions).

Appendix C: Survey instrument

Controlling behavior

1. Did your man ever try to keep you from seeing your friends in the past 12 months?
2. Did your man ever try to stop you from meeting or speaking to your family of birth in the past 12 months?
3. Did your man ever need to know where you are all the time in the past 12 months?
4. Did your man ever stop talking to you or treat you with no interest in the past 12 months?
5. Did your man ever get angry if you speak with another man in the past 12 months?
6. Did your man often think that you are unfaithful in the past 12 months?
7. In the past 12 months, did your man ever expect you to ask for his approval before you go to a health clinic or hospital?

Emotional IPV[28]

1. Did your man ever insult you or make you feel bad about yourself in the past 12 months?
2. Did your man ever make you feel small in front of other people in the past 12 months?
3. Did your man ever mean to scare you (for example, by the way he looked at you, by yelling and bursting things) in the past 12 months?
4. Did your man ever threaten to hurt you or someone you care about in the past 12 months?

Physical IPV[28]

1. Did your man ever slap you or throw something at you that could hurt you in the past 12 months?
2. Did your man ever push you, shove you, or pull your hair in the past 12 months?
3. Did your man ever hit you with his hand or with something else that could hurt you in the past 12 months?
4. Did your man ever kick you, drag you or beat you up in the past 12 months?
5. Did your man ever mean to choke or burn you in the past 12 months?

[28] For each IPV question, if the answer is "yes", a follow-up question about frequency appears, asking whether it happened (i) one or two times, (ii) three to five times, or (iii) more than five times.

6. Did your man ever threaten to use or actually use a gun, knife or other weapon against you in the past 12 months?

Sexual IPV[28]

1. Did your man ever physically force you to do man and woman business when you did not want to in the past 12 months?
2. Did you ever do man and woman business when you did not want to because you were afraid of what your man might do in the past 12 months?
3. In the past 12 months, while doing man and woman business, did your man ever force you to do something that made you feel small or bad about yourself?

Non-sensitive placebo questions

1. Did it rain in your village one time or more in the past year?
2. Did you do any farm work in the past year?
3. Did you sleep in the past week, during day or night?
4. Did you go to the market in the past week?
5. Did you travel outside of Liberia in the past week?
6. Will you, or anyone in your household, eat any rice next week, one time or more?
7. Will you, or anyone in your household, eat any type of meat next week, one time or more?