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## Women's participation in microfinance: Effects on Women's agency, exposure to partner violence, and mental health

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### Abstract

**Objectives:** The health and social effects of women's microfinance participation remain debated.

**Methods:** Using propensity-score methods, we assessed effects of microfinance participation on novel measures of agency; intimate partner violence (IPV) exposure; and depressive symptoms in 930 wives in Matlab, Bangladesh interviewed 11/2018–01/2019.

**Results:** Participants, versus non-participants, were married younger (16.7 vs. 17.4 years), more often Muslim (90.7% vs. 86.2%), less schooled (5.4 vs. 6.8 grades), and more often had husbands (27.0% vs. 19.6%) and mothers (63.2% vs. 50.5%) without schooling. Participants and non-participants had similar unadjusted mean scores for prior-week depressive symptoms, prior-year IPV, and intrinsic attitudinal agency (gender-equitable attitudes; non-justification of wife beating). Participants had higher unadjusted mean scores for intrinsic voice/mobility; instrumental agency (using financial services, voice with husband, voice/mobility outside home); and collective agency.

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Declaration of competing interest

The authors have no competing interests to declare.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2021.113686>.

Data statement

Data are available upon reasonable request to the corresponding author.

Average adjusted treatment effects were non-significant for depressive symptoms, IPV, and attitudinal intrinsic agency, and significantly favorable for other agency outcomes.

**Conclusions:** Microfinance participation had no adverse health effects and favorable empowerment effects in Bangladeshi wives. Policy Implications. Microfinance can empower women without adverse health effects. Social-norms programming with men and women may be needed to change gendered expectations about the distribution of unpaid labor and the rights of women.

### Keywords

Average treatment effect; Bangladesh; Depressive symptoms; Economic coercion; Intimate partner violence; Microfinance; Propensity score methods; Savings groups; Women's agency; Women's empowerment

## 1. Background

*Microfinance services* include micro-credit, micro-savings, micro-insurance, and money transfers to the poor. These services aim to enable micro-entrepreneurs to build businesses, increase incomes, accrue assets, and improve financial well-being (Brau and Woller, 2004; Van Rooyen, Stewart and De Wet, 2012). The strategic targeting of microfinance to women has intended to enhance loan repayment as well as non-financial outcomes, such as household food security and children's nutrition, survival, and schooling (Orton et al., 2016; Van Rooyen et al., 2012).

The effects of microfinance on women's lives are debated (Van Rooyen et al., 2012; Welsh, 2019). Fig. 1 summarizes major, competing theories of change regarding these effects. Neoliberalists have argued that women's membership in microfinance may increase their financial skills and access to financial markets (pathway 1) (Buvini and Furst-Nichols, 2016). Social capital theorists, including some feminists, have argued that membership in microfinance exposes women to non-kin-based networks, which enhances their social capital (pathway 2) (Putnam, 1993; Sanyal, 2009). Social capital may include increased access to information, reciprocity, social identity with women, and the potential for collective action. Women's increased financial skills, access to financial markets, and social capital may reduce family control and violence against women because women participants have become more valued at home. Women's increased financial skills, access to financial markets, and social capital also may enhance multiple dimensions of their agency. These dimensions may include *intrinsic agency* or self-confidence and awareness of rights, *instrumental agency* or capacity to make and act on decisions, and *collective agency* or capacity to form and act on group goals. Women's reduced exposure to violence and enhanced agency may coincide with improved mental well-being (Richardson et al., 2019).

Other feminists have argued that women's participation in microfinance may have competing, adverse effects (Fig. 1). First, the networks created in microfinance groups may not enhance women's social capital but instead may coerce women to secure profits and to ensure loan repayment (pathway 2) (Bourdieu, 1977; Rankin, 2002). As a result, women may experience declines in their agency and mental well-being. Second, women's

participation in microfinance may threaten men's customary status and economic entitlements at home (pathway 3), precipitating economic control and violence as forms of backlash (Goetz and Gupta, 1996). Women who experience increased economic control and partner violence may experience declines in their agency and mental well-being (Antai et al., 2014), and these effects may reciprocally increase women's risks of coercion and violence (Kim and Lee, 2013). In practice, women's participation in microfinance may trigger all of these complex pathways, ultimately improving some aspects of women's lives while diminishing others (Beck, 2017). Given the potential complexity of these pathways, assessing the total (unmediated) effects of women's participation in microfinance on social and health-related outcomes remains a critical empirical question.

Empirical research has found little difference between microfinance participants' and non-participants' *intrinsic agency*, such as self-confidence and unfavorable views about violence against women (Brody et al., 2015). Participation in microfinance has positively affected women's *instrumental agency* in financial and other family decisions, freedom of movement, and contraceptive use (Brau and Woller, 2004; Brody et al., 2015). Participation in microfinance has enhanced women's *collective agency* in terms of participation in community meetings and elections (Brody et al., 2015). Fewer evaluations of microfinance programs have assessed the effects on women's mental health or exposure to intimate partner violence (IPV); of these and evaluations of cash-transfers programs, the findings are mixed (Buller et al., 2018; Matjasko, D'Inverno, Marshall and Kearns, 2020; O'Malley and Burke, 2017; Orton et al., 2016). Qualitative studies have suggested increases in all aspects of women's agency but also in domestic disputes and stigma (Brody et al., 2015). Quantitative studies of the competing effects of microfinance on women's lives are limited (O'Malley and Burke, 2017; Orton et al., 2016; Van Rooyen et al., 2012).

This analysis filled a gap in understanding the effects of microfinance on multiple facets of women's lives—using novel measures of women's agency and exposure to violence as well as understudied aspects of women's mental health. The parent study, *Intimate Partner Coercion and Implications for Women's Health and Well-Being*, aimed to develop and validate a new measure of women's exposure to economic coercion. Other outcome data were collected in the parent study to assess the total (unmediated) effects of microfinance participation on the outcomes depicted in Fig. 1. Leveraging these primary data from 930 married women living with their husbands in Matlab, Bangladesh, we used propensity score methods to assess the total effects of women's participation in microfinance on newly developed and validated measures of women's intrinsic, instrumental, and collective agency; exposure to commonly measured forms of physical, sexual, or psychological IPV and new measures of economic IPV; and reported depressive symptoms. Findings offer guidance about how microfinance may change women's lives in a historically gender-inequitable, rapidly evolving context.

## 2. Method

### 2.1. Setting and sample

The study site was rural Matlab thana, Bangladesh, 55 km southeast of Dhaka. Matlab houses about 500,000 residents across 22 unions. The Matlab Health and Demographic

Surveillance System (HDSS), maintained by the International Centre for Diarrheal Diseases Research, Bangladesh (icddr,b), covers 229,936 residents in 142 villages. Muslims are 88% of the population. Most households have diverse sources of income, including remittances (33%), business (24%), service (21%), and other sources. About half of households own no agricultural land. School attendance is higher for girls than boys ages 6–15 years, and women’s labor force participation rate was 57% in 2013 (International Center for Diarrheal Disease Research, Bangladesh (icddr), 2016). Wives remain socioeconomically dependent on marriage, having a mean age at first marriage of 19.1 years and a 53% lifetime risk of physical or sexual IPV (Garcia-Moreno et al., 2006; International Center for Diarrheal Disease Research, Bangladesh (icddr), 2018).

Eligible study participants were married women 15–49 years living with their husbands. Thirty villages in the Matlab HDSS were selected with probability proportional to the size of the married female population in each village relative to the total married female population in all 142 villages. In each selected village, 44 households with at least one eligible member were selected. In households with more than one eligible member, one was selected randomly to ensure safety (World Health Organization, 2001). For the parent study (Yount et al., 2021), we targeted a sample size of 900 participants. Of 1019 eligible women, 930 (91%) participated. The Institutional Review Boards at Emory University (IRB00097428) and the International Center for Diarrheal Disease Research, Bangladesh approved the study and provided ethical oversight. The field team followed ethical guidelines from the World Health Organization (WHO) for data collection on violence against women and obtained verbal informed consent pre-interview (World Health Organization, 2001). Fieldwork occurred from November 2018 to January 2019.

## 2.2. Data and measures

The women’s questionnaire included 12 modules on: household and member attributes; demographics; assets owned by households/women; household borrowing behavior; and women’s economic activities; depressive symptoms; group membership including participation in microfinance; social support; multidimensional agency including attitudes about gender and IPV against women; and exposure to economic, psychological, physical, and sexual IPV.

## 2.3. Outcomes

We captured prior-week depressive symptoms using the Center for Epidemiologic Studies Depression (CES-D)-10 scale (Zhang et al., 2012). Participants were asked how often they experienced each of 10 symptoms of depression, including feeling fearful, feeling lonely, and experiencing restless sleep. Response options ranged from rarely or none of the time/less than 1 day a week (=0) to a little/some of the time/1–2 days a week (=1), a moderate amount of time/3–4 days a week (=2), and most/all of the time/5–7 days a week (=3). Following exploratory factor analysis, nine items were retained and showed good fit in confirmatory factor analysis (standardized loadings 0.74–0.89; CFI = 0.99; TLI = 0.98; RMSEA = 0.07). From this model, we generated a standardized score for depressive symptoms.

We assessed prior-year experience of economic coercion using the validated 36-item Economic Coercion Scale (Yount et al., 2021). This bi-dimensional measure captured restrictions on access to work, schooling, or training (14 items, “EC1”) and control over use and maintenance of economic resources (22 items, “EC2”). Example EC1 items included “Has your husband or partner ever” “disallowed you to go to your work, school or training, or to do any home-based income earning activity?” and “demanded that you quit your job, schooling or training?” Example EC2 items included “Has your husband or partner ever” “refused to give you money to buy food, clothes or other necessities, even when he had the money?” and “ever beaten you up if you challenged his financial decisions?” Participants indicated ever-experience of each item (yes = 1, no = 0). We constructed a bi-dimensional measurement model (CFA standardized loadings EC1: 0.52–0.90; EC2: 0.60–0.88, CFI = 0.95, TLI = 0.94, RMSEA = 0.02), from which we derived standardized factor scores for each dimension of economic coercion.

We assessed prior-year experience of other physical, sexual, and/or psychological IPV using 20 items from the *WHO Multi-Country Study on Women’s Health and Domestic Violence against Women* (Garcia-Moreno et al., 2005). Example items were “Has your husband ever” “insulted you or made you feel bad about yourself?”, “slapped you or thrown something at you that could hurt you?”, and “physically forced you to have sexual intercourse when you did not want to?”. Women indicated whether they had experienced each act in the prior year (yes = 1, no = 0). We validated the unidimensional scale (CFA standardized loadings 0.47–0.99; CFI = 0.94; TLI = 0.94; RMSEA = 0.06), and constructed a count outcome for prior-year exposure to any physical, sexual, and/or psychological IPV (“any IPV”).

We assessed women’s *intrinsic agency* using a validated, 29-item three-dimensional measure capturing women’s intrinsic voice and mobility; gender equitable attitudes; and non-justification of wife beating (CFA standardized factor loadings: 0.54–0.81, 0.35–0.82, and 0.87–0.93, respectively; CFI = 0.94; TLI = 0.93; RMSEA = 0.04) (Yount et al., 2020). Intrinsic voice and mobility was measured using nine items capturing women’s level of comfort (0 = not at all to 2 = very) going the embankment); and fixed neighborhood cluster. Partner’s and places alone, like the “home of a relative,” and expressing opinions with community members, like government officials, NGO officials, and community leaders. Gender equitable attitudes was measured using 14 items capturing women’s agreement (0 = strongly disagree to 3 = strongly agree) with items, like “a woman should obey her husband,” “to be a man, you need to be tough,” and “a couple should decide together if they want to have children.” Negatively valenced items were reverse-coded, so higher scores indicated stronger endorsement of more equitable attitudes. Non-justification of wife beating was measured using six items capturing responses (yes = 0, no = 1) to the question, “Does a man have a good reason to hit his wife” if, for example, she “disobeys him” or “rudely argues with him.” Items were reverse-coded, as shown above, so higher scores indicated stronger non-justification of wife beating. We derived standardized factor scores for each dimension of intrinsic agency.

We assessed women’s *instrumental agency* using a validated, 17-item three-dimensional measure capturing women’s use of financial services, voice with husband, and voice and mobility outside the home (CFA standardized loadings 0.57–0.95, 0.48–0.99, and 0.43–0.79,

respectively, CFI = 0.94, TLI = 0.93, RMSEA = 0.05) (Yount et al., 2020). Five items capturing women's frequency of using (0 = never to 3 = often) financial services, such as "money deposit" and "checking account." Three items captured women's level of influence (0 = none to 3 = total) with their husband about "how to spend money your husband gives you" and "how to spend your husband's earnings" and their frequency of expressing opinions (0 = never to 3 = often) with husbands. Nine items capturing women's frequency (0 = never to 3 = often) of going places like "the home of a relative" and expressing opinions with community members like "government officials" and "community leaders." We derived standardized factor scores for each dimension.

We assessed women's *collective agency* using an eight-item validated scale (CFA standardized loadings 0.52–0.84; CFI = 0.96; TLI = 0.95; RMSEA = 0.10) capturing women's influence in the community (Yount et al., 2020). Participants reported their agreement (0 = totally disagreed to 3 = totally agreed) with statements like "women like me can really understand what is going on with my community" and "women like me have the ability to participate effectively in community activities and decision-making." We derived standardized factor scores from the unidimensional CFA model. We also assessed women's collective agency using a validated, seven-item scale of women's leadership in groups (Hinson et al., 2016; Yount et al., 2020) (CFA standardized loadings: 0.54–0.83; CFI = 0.96; TLI = 0.95; RMSEA = 0.10). Participants reported how much they agreed (0 = fully disagreed to 3 = fully agreed) with statements, such as "I am often a leader in groups," "I prefer to be a leader rather than a follower," and "Other people usually follow my ideas." We derived a standardized factor score from the unidimensional CFA model.

#### 2.4. Exposures

The primary exposure for this analysis was women's lifetime participation (ever = 1, never = 0) in a savings group (such as a kin-based, village-based, or occupation-based cooperative) or microfinance organization (such as BRAC). Hereafter, we refer to this variable as participation in microfinance.

#### 2.5. Covariates

Nine covariates measured each participant's: age at marriage in years; religious affiliation (Muslim, Hindu); level of schooling (highest class completed, continuous, range: 0–17), partner's schooling (don't know = 2, any = 1, none = 0), mother's schooling (don't know = 2, any = 1, none = 0); economic standing in childhood (natal family owned non-homestead land, yes = 1, no = 0); natal-home location (inside = 1, outside = 2 Matlab upazila); own-home location (inside = 1, outside = 2 mother's schooling had 4% and 16% "don't know" values, respectively, so we created indicators for these values and used these indicators as predictors. Inside the embankment, villages benefit from more diverse crops and more employment opportunities than villages outside, which experience flooding and may yield only one crop annually.

#### 2.6. Statistical analysis

As a first in our analysis, we described the sample characteristics. For all variables, we assessed their completeness and distributions, overall and by women's ever participation in

microfinance. We then used the propensity score method (Rosenbaum and Rubin, 1983; Shadish and Steiner, 2010; StataCorp, 2019b) to estimate the treatment effect of women's participation in microfinance on outcomes. Using propensity score methods, or generating conditional probabilities of enrollment in microfinance given a set of covariates, we aimed to reduce overt biases in the estimated treatment effect due to observed pre-program differences in participation resulting from the lack of random assignment (Rosenbaum and Rubin, 1983). We included the covariates, above, in a probit model to predict the likelihood of microfinance participation (Supplemental File 1). From this model, we estimated propensity scores for microfinance participation.

With these estimated propensity scores, we used the inverse probability of treatment weighting approach to assign weights to treatment and comparison group members to estimate the average treatment effects, the effect of microfinance across the entire population of participants and non-participants, on the various outcomes (Hirano et al., 2003). To reduce possible residual biases from any misspecifications of the weighted regression models, we applied covariance adjustment using all covariates except the location of the participant's house inside or outside the embankment (Ho et al., 2007). To reduce the risk of a Type I error associated with testing microfinance effects on multiple outcomes, we applied the Bonferroni adjustment by dividing the alpha value by the number of outcomes, i.e.,  $0.05/12 = 0.004$ .

After estimating each of the 12 treatment-effect models, we visually inspected the extent of overlap in the propensity-score distributions across microfinance participants and non-participants, tested formally for balance in the covariates across groups, and tested for any endogenous treatment effects (StataCorp, 2019b). The extent of overlap in the propensity score distributions indicates the likelihood that each participant ever enrolled or not in microfinance also has a certain likelihood of enrollment in the other group. The greater the overlap of the propensity-score distributions across groups, the greater is the common support and the likelihood of balance (Shadish and Steiner, 2010). When balance is achieved, pre-program distributions on the propensity scores and the covariates are likely to be similar, and the dataset provides support for causal inference (Shadish and Steiner, 2010). Supplemental File 1 contains graphs for the propensity score distributions across microfinance participants and non-participants.

Alongside visual inspection of the propensity-score distributions across groups, we performed  $\chi^2$  over-identification tests for balance across groups. Finally, we performed a test for endogenous treatment effects in each of the 12 analyses. Endogeneity occurs when some unobservable components affect program enrollment and outcomes of interest (StataCorp, 2019b), potentially making inaccurate the estimates of treatment effects. To estimate the average treatment effects, to inspect overlap, and to assess balance and endogeneity, we used the modules *teffects* and *eteffects ipwra* in Stata 16 (StataCorp, 2019a).

### 3. Results

#### 3.1. Distribution of characteristics in the sample, by ever participation in microfinance

Table 1 presents participants' characteristics, overall and by ever participation in microfinance. On average, women had first married at age 17 years. The mean age at first marriage was younger among microfinance participants than non-participants (16.7 vs. 17.4 years). Most of the sample was Muslim (88.6%), and this percentage was higher among microfinance participants than non-participants (90.7% vs. 86.2%). On average, women had completed just over six grades of schooling, and mean grades of schooling was lower among microfinance participants than non-participants (5.4 vs. 6.8). Similarly, while a majority of women's partners (76.5%) and more than forty percent of women's mothers (42.8%) had at least some schooling, the percentages of partners and mothers with at least some schooling was lower among microfinance participants than non-participants. Most women lived outside the embankment, had natal family living inside Matlab upazila, and in childhood, had natal family who owned non-homestead land; these percentages did not differ between microfinance participants and non-participants. Overall, microfinance participants had married earlier, more often were Muslim, and were more educationally disadvantaged than non-participants.

Table 1 also presents mean standardized factor scores and robust standard errors for all outcomes, overall and by microfinance participants and non-participants. Here, comparisons of mean scores across groups were most useful. Microfinance participants and non-participants had similar mean scores for prior-week depressive symptoms, prior-year experience of economic coercion, prior-year experience of other IPV, and two of three measures for intrinsic agency at interview (gender equitable attitudes and non-justification of wife beating). Compared to microfinance non-participants, participants had higher mean scores for the remaining measures of agency, including: intrinsic voice and mobility; instrumental agency in use of financial services, voice with husband, and voice and mobility outside the home; and collective agency with respect to leading others and influence in the community (Table 1).

#### 3.2. Average-adjusted treatment effects of microfinance participation

Table 2 presents average (adjusted) treatment effects for microfinance participation on all outcomes. The average adjusted treatment effects were non-significant for all four adverse outcomes for women, including prior-week depressive symptoms, both forms of prior-year economic coercion, and other prior-year IPV. Thus, our results provided no evidence that women's microfinance participation was harmful to their mental health or exposure to IPV.

With respect to women's agency, average adjusted treatment effects were non-significant for the two attitudinal measures of women's intrinsic agency, namely gender-equitable attitudes and non-justification of wife beating. Otherwise, treatment effects were significant in the expected directions for all six remaining agency outcomes, including women's: intrinsic voice and mobility; instrumental agency in use of financial services, voice with husband, and voice and mobility outside the home; and collective agency with respect to leadership of others and influence in the community.



For all 12 models, visual inspection of the propensity-score distributions across microfinance participants and non-participants showed substantial overlaps (Supplemental File 1). Also, for all models except one,  $\chi^2$  over-identification tests indicated covariate balance was achieved, and z-tests provided no evidence of endogeneity. The one model that tested for endogeneity for the EC1 outcome did not converge, so the test was not performed. Overall, these results provided strong and consistent evidence to support our ability to make causal inferences.

## 4. Discussion

### 4.1. Summary and interpretation

This novel study has shed light on the multifaceted social and health effects of women's participation in microfinance in a probability sample of married women living with their husbands in Matlab, Bangladesh. Overall, women's participation in microfinance had favorable effects on multiple dimensions of their agency, and non-significant effects on several adverse outcomes, including depressive symptoms and multiple forms of IPV. In sum, women's participation in microfinance appears to have enhanced their agency without harming their health.

Notably, the agency-enhancing effects of women's participation in microfinance did vary across the dimensions of agency, with important implications for microfinance programming. Specifically, women's participation had positive effects on their intrinsic confidence in voice and mobility; their instrumental use of financial services, voice with husband, and voice/mobility outside the home; and their collective agency as measured by leadership of groups and influence in the community. These findings corroborated neoliberal (Buvini and Furst-Nichols, 2016) *and* social-capital (Putnam, 1993; Rankin, 2002; Sanyal, 2009) theories of how microfinance may favorably affect women's lives (see Fig. 1).

Notably, women's participation in microfinance did *not* change their intrinsic agency with respect to *awareness of women's rights*, as measured by more gender-equitable attitudes and non-justification of wife beating. These non-significant effects of participation in microfinance may indicate women's acquiescence to prevailing gender-inequitable community norms in a historically patriarchal setting, where IPV against women remains prevalent (Yount et al., 2018). These non-significant effects also may indicate deficiencies in the design and content of microfinance-only programs. Such programs, which focus narrowly on targeting microfinance to women only, may fail to alter prevailing inequitable gender norms among men, and/or may not raise awareness among participating women about their entitlements or rights (Bourdieu, 1977; Rankin, 2002).

Moreover, the significant and favorable effects of participation on several measures of agency alongside the non-significant effects of participation on measures of IPV and mental health are notable. One explanation for this set of findings is that the effects of women's enhanced agency on reductions in their depressive symptoms and risk of IPV require time to be realized (Orton et al., 2016). Yet, our cross-sectional study design precluded a longitudinal assessment of the effects of women's participation in microfinance on their depressive symptoms and exposure to IPV through enhancements in agency. Experimental

designs with extended longitudinal follow-up, as well as repeated measurement of women's multidimensional agency and health outcomes, would be the ideal way to assess these pathways of influence.

A second reason for this set of findings is that the mental-health benefits of enhanced agency from microfinance participation were countered by the stress of loan obligations, in themselves and beyond the duties of unpaid dependent care and domestic labor. Qualitative research from the parent study revealed that many women felt pressure to fulfill their unpaid duties at home, such that taking on paid work or microloans were additional to their expected domestic roles (Hoover et al., 2021; Miedema et al., 2021). Some women explicitly discussed the anticipated or real stress of this double burden. Thus, microfinance programs might consider gender-norms components that promote gender equity in unpaid labor among women and men so women who participate in microfinance may experience less time burden and more mental-health benefit. Microfinance programs also might consider adding mental-health services (Rao et al., 2011) to offset the initial stress of participating in microfinance while gender-norms are shifting.

A third reason for this set of findings may have been heterogeneity in the microfinance participation group. Our measure of exposure did not distinguish participation in programs with different repayment schemes and modes of delivery. Microfinance programs might consider more flexible repayment structures to reduce any direct loan-related stress on women (O'Malley and Burke, 2017). Microfinance programs also might emphasize group-based (Mohindra et al., 2008) over individual (Fernald et al., 2008) delivery so women may experience the mental-health benefits of group-based social identity and solidarity among women.

#### 4.2. Study limitations and strengths

Given the findings, certain caveats of this study are notable. First, we conducted the study in the unique setting of Matlab, Bangladesh, so findings may not be more widely generalizable. Still, unlike many non-population-based randomized controlled trials, our probability-based sample allowed for inferences to a defined population. Second, the analysis was based on cross-sectional, observational data, which limited our ability to make causal inferences. To improve our ability to make causal inferences, we established a clearer temporal ordering between treatment and outcomes by including a lifetime measure of microfinance participation and outcomes measured at interview, in the prior week, or in the prior year. We also leveraged pre-program and exogenous characteristics to model the propensity for participation in microfinance. These characteristics included circumstances in childhood (religious affiliation, maternal schooling, economic standing, natal-home location), at marriage (age in years, own schooling, partner's schooling), and exogenous location of residence (inside/outside embankment; fixed neighborhood cluster). Empirically, we achieved balance in observed pre-program characteristics across groups and found no evidence of bias due to unobserved endogeneity.

A third caveat related to the parent study's aim to develop and validate a comprehensive measure of women's exposure to economic IPV. Given this purpose, we were able to use a validated, two-dimensional measure of economic IPV in this analysis (Yount et al., 2021).

However, to capture exposure other forms of IPV, we developed a combined measure of any emotional, physical, or sexual IPV. The limited number of items especially on sexual IPV cautioned against exploring the impacts of microfinance on other, discrete forms of IPV. Acknowledging this caveat, our reliance on multiple IPV outcomes that were validated and measurement invariant across microfinance participants and non-participants lent confidence in the robustness of the findings. We recommend that more refined impacts of microfinance on distinct types of IPV be assessed, and to that end, our refined, validated measure of economic IPV is a contribution.

Thus, the many strengths of this study also are notable. This analysis has advanced a growing literature on how microfinance affects women's lives, with a focus on social outcomes related to empowerment (Brody et al., 2015), risk of IPV (Orton et al., 2016), and overall health (Orton et al., 2016). To date, this literature has been inconclusive as to whether women's participation in microfinance contributes to positive or adverse change. Divergent conclusions may have been due in part to variability in how outcomes were defined and measured. A major contribution of the present study was our reliance on theoretically-based, well-defined outcomes that were operationalized using rigorously validated scales (Garcia-Moreno et al., 2005; Zhang et al., 2012; Yount et al., 2020, 2021). Our study was the first to include a comprehensive measure of women's multidimensional agency, capturing the understudied dimensions of intrinsic agency, or awareness of rights and confidence in capabilities, as well as collective agency, or women's engagement or leadership in groups and influence in the community (Yount et al., 2020). Although the measurement of instrumental agency has been more common in this literature, our combined focus on strategic voice, influence in decisions, and action also was novel. Thus, our comprehensive approach to measuring women's agency has tied our work more closely to theory (Kabeer, 1999) and has enabled us to understand *how* participation in microfinance may influence the distinct but correlated dimensions of women's agency.

Another reason why findings from prior studies may be inconclusive is inconsistency in the methods used to account for potential sources of bias in estimated treatment effects. Unlike most prior observational studies as summarized in reviews (O'Malley and Burke, 2017; Orton et al., 2016), our study relied on a propensity-score adjustment approach to address observed sources of bias (Rosenbaum and Rubin, 1983). A limitation of propensity-score methods is the assumption of selection on observables; however, we also tested and found no evidence for unobserved sources of bias. Our findings corroborated studies in Bangladesh that have used a similar approach to assess effects of microfinance on IPV (Bajracharya and Amin, 2013), further countering earlier evidence suggesting unfavorable effects (Koenig et al., 2003). A critical addition to this body of evidence was our finding that microfinance does not contribute to women's experiences of economic IPV, an understudied type of violence against women. This finding was especially important in light of qualitative research suggesting that economic coercion is one of men's responses to microfinance that targets women (Fig. 1) (Goetz and Gupta, 1996; Kabeer, 2001). Discrepant findings between this study and prior research may be explained by change over time, as well as the inability of survey measures to capture more subtle forms of economic coercion, such as women giving up their earnings to avoid or to mitigate conflict with their spouse (Miedema et al., 2021).

Finally, drawing conclusions on the social and health effects of microfinance based on studies of discrete outcomes assessed in different settings is problematic, as effects on specific outcomes may vary across contexts. Our study addressed this concern by assessing the effects of microfinance on an array of social and health-related outcomes *in the same sample*. Using rigorous analytic techniques, our results for Matlab, Bangladesh showed advantageous effects of microfinance participation on multiple dimensions of women's agency, which were not accompanied by increases in any form of IPV or worsening mental health.

#### 4.3. Public health implications

To build on the findings from the present study, panel studies and randomized-controlled trials should incorporate the novel, validated outcomes assessed here to understand the broader impacts of microfinance on women's lives. Using these outcomes, future trials should assess the effects of microfinance design, including the duration of participation, types of microfinance schemes (savings, loans, insurance, money transfers), structures for repayment (more, less flexible), and mode of delivery (individual vs. group). Future trials also should assess the theorized effects of microfinance participation on the full array of women's human, social, and economic resources (Fig. 1)—including their financial skills, access to financial markets, non-family social networks, and other social capital (Fig. 1). Assessing the full path model in Fig. 1 in an extended panel or intervention trial would be complex but potentially fruitful. Future trials, moreover, should consider adding program components that address broader gender norms, women's attitudinal intrinsic agency, and women's mental health. Our qualitative results (Hoover et al., 2021; Miedema et al., 2021) and other research (Matjasko et al., 2020) suggest the need for supplemental programming to address inequitable gender norms among women and men regarding the distribution of unpaid labor, economic entitlements, and women's rights to freedom from violence. Such programming may support more gender-equitable norms among men and the necessary critical-consciousness among women to enhance other dimensions of women's agency while reducing their depressive symptoms and exposure to IPV. While these gender norms are in transition, mental health services may reduce stress among participating women. In anticipation of this programmatic research, our findings suggest that microfinance appears to benefit women without contributing to harmful health effects.

## 5. Conclusion

Participation in microfinance enhances women's intrinsic, instrumental, and collective agency without increasing their exposure to intimate partner violence and depressive symptoms. Complementary social-norms programming may be needed to strengthen women's attitudinal intrinsic agency and gender-equitable norms among men. Evaluating the potential, competing effects of microfinance on multiple aspects of women's lives remains imperative.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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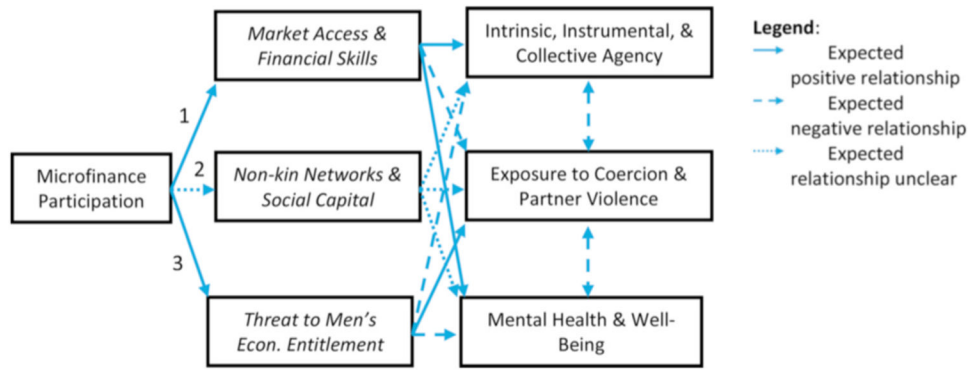
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**Fig. 1.** Competing theories of change regarding the effects of women’s participation in microfinance on women’s lives. Notes. Italics indicate unmeasured mediators. Pathway 1 indicates neoliberal theory. Pathway 2 indicates social capital theory. Pathway 3 indicates status inconsistency theory.

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**Table 1**

Distributions of Covariate and Outcome Variables by Ever-Participation in Microfinance, Married Women 15–49 Years Living with their Husband in Matlab, Bangladesh, Nov. 2018–Jan. 2019 (N = 931).

	Ever participation in microfinance			<i>p</i>
	Overall (N = 931)	Yes (N = 497)	No (N = 434)	
<b>Covariates</b>				
<b>Age at first marriage, mean (SE)<sup>a</sup></b>	17.0 (0.1)	16.7 (0.1)	17.4 (0.1)	<b>&lt;0.01</b>
<b>Religion, %</b>				<b>0.03</b>
Muslim	88.6	90.7	86.2	
Hindu	11.4	9.3	13.8	
<b>Grades of completed schooling, mean (SE)<sup>a</sup></b>	6.1 (0.3)	5.4 (0.2)	6.8 (0.4)	<b>&lt;0.01</b>
<b>Partner's completed schooling, %</b>				<b>0.02</b>
None	19.8	22.1	17.1	
Any	76.5	73.0	80.4	
Don't know	3.8	4.8	2.5	
<b>Mother's completed schooling, %</b>				<b>&lt;0.01</b>
None	41.5	45.1	37.3	
Any	42.8	36.8	49.5	
Don't know	15.8	18.1	13.1	
<b>Home is outside embankment, %</b>	63.5	63.2	63.8	0.84
<b>Natal home inside Matlab upazila, %</b>	74.7	75.5	73.7	0.55
<b>In childhood, natal family owned non-homestead land, %</b>	76.1	74.8	77.7	0.31
<b>Outcomes (mean factor score and SE)<sup>a</sup></b>				
<b>Prior-week depressive symptoms (CES-D 9)</b>	0.07 (0.03)	0.11 (0.04)	0.02 (0.04)	0.09
<b>Prior-year economic coercion in:</b>				
Acquisition of economic resources	0.58 (0.05)	0.65 (0.07)	0.49 (0.07)	0.09
Maintenance, use of economic Resources	1.56 (0.11)	1.58 (0.14)	1.54 (0.15)	0.81
<b>Prior-year other intimate partner violence<sup>b</sup></b>	0.09 (0.03)	0.12 (0.03)	0.06 (0.03)	0.10
<b>Intrinsic agency at interview</b>				
Intrinsic voice and mobility	−0.01 (0.04)	0.09 (0.04)	−0.12 (0.04)	<b>&lt;0.01</b>
Gender-equitable attitudes	0.01 (0.02)	0.00 (0.03)	0.02 (0.02)	0.44
Non-justification of wife-beating	−0.07 (0.04)	−0.10 (0.05)	−0.03 (0.05)	0.26
<b>Instrumental agency at interview</b>				
Use of financial services	0.09 (0.04)	0.16 (0.03)	0.02 (0.05)	<b>&lt;0.01</b>
Voice with husband	0.01 (0.03)	0.07 (0.03)	−0.05 (0.04)	<b>0.01</b>
Voice and mobility outside the home	0.01 (0.02)	0.10 (0.03)	−0.09 (0.03)	<b>&lt;0.01</b>
<b>Collective agency at interview</b>	−0.01 (0.03)	0.05 (0.04)	−0.08 (0.05)	<b>0.02</b>
<b>Leadership competence at interview</b>	0.02 (0.02)	0.09 (0.02)	−0.07 (0.04)	<b>&lt;0.01</b>

<sup>a</sup>All standard errors are adjusted for clustering within primary sampling units.

<sup>b</sup>Psychological, physical, or sexual intimate partner violence (IPV).

Results from propensity score models for ever participation in microfinance on Women’s experience of partner violence, depressive symptoms, and agency, married women 15–49 Years in Matlab, Bangladesh, Nov. 2018–Jan. 2019 (N = 918–931).

**Table 2**

Measure	Estimates for the Average Treatment Effect (ATE)					Over-identification			Endogeneity test		
	N	Coef. (SE)	Z	p > z	[95% CI]	$\chi^2$	df	p	$\chi^2$	df	p
<b>Prior-week depressive symptoms (CES-D 9)</b>	921	0.052 (0.050)	1.05	0.295	[-0.045, 0.150]	15.83	40	>.99	0.28	2	0.87
<b>Prior-year economic coercion in:</b>											
Access to economic resources	920	0.042 (0.028)	1.49	0.135	[-0.013, 0.097]	15.63	40	>.99	<i>b</i>	-	-
Maintenance/use of economic resources	920	0.003 (0.033)	0.10	0.918	[-0.061, 0.068]	15.63	40	>.99	1.36	2	0.51
<b>Prior-year other intimate partner violence<sup>a</sup></b>	920	0.016 (0.030)	0.54	0.589	[-0.042, 0.074]	15.63	40	>.99	0.21	2	0.90
<b>Intrinsic agency at interview</b>											
Intrinsic voice and mobility	921	0.216 (0.039)	5.62	<.001	[0.141, 0.292]	16.38	40	>.99	0.23	2	0.89
Gender-equitable attitudes	921	0.023 (0.024)	0.96	0.338	[-0.024, 0.069]	16.38	40	>.99	1.03	2	0.60
Non-justification of wife-beating	921	0.015 (0.043)	0.35	0.729	[-0.070, 0.100]	16.38	40	>.99	1.21	2	0.55
<b>Instrumental agency at interview</b>											
Financial decision-making	921	0.242 (0.040)	6.08	<.001	[0.164, 0.320]	15.83	40	>.99	0.73	2	0.69
Voice with husband	921	0.166 (0.042)	3.94	<.001	[0.084, 0.249]	15.84	40	>.99	0.04	2	0.98
Voice and mobility outside the home	921	0.228 (0.029)	7.79	<.001	[0.171, 0.286]	15.83	40	>.99	0.61	2	0.74
<b>Collective agency: Influence in community at interview</b>	931	0.206 (0.036)	5.80	<.001	[0.137, 0.280]	15.82	40	>.99	0.13	2	0.94
<b>Collective agency: leadership of others at interview</b>	928	0.135 (0.027)	5.27	<.001	[0.085, 0.185]	16.06	40	>.99	1.35	2	0.51

Notes. CI=Confidence Interval, SE = Robust Standard Error, accounting for clustering within the primary sampling unit, DF = Degrees of freedom.

<sup>a</sup>Psychological, physical, or sexual.

<sup>b</sup>Endogeneity test not performed (model did not converge).