Can Network Ties Help Facilitate Female Entrepreneurship?

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Abstract

Despite many skill and entrepreneurship programs, the gender gap in entrepreneurial activities is high in developing countries. This paper focuses on bridging this gap by studying the role of peers in facilitating entrepreneurial growth for women. Peers provide direct benefits in terms of motivation, skills, and information and indirect benefits in providing access to a broader social network. Through an RCT, we vary if women attend a three-day training program with a randomly matched peer in the network vs. alone and whether the indirect value of the network connections of the matched peers is made salient to them. We measure the impact of the training on outcomes immediately and one year later. While the training significantly improves pro-business outcomes, pairing matters only when the individual is paired with a close friend, and more so if this friend is central. Motivation and the possibility to interact in the future are the main mechanisms that drive the results. Making the indirect value of the network more salient only has modest positive effects.

KEYWORDS: networks, entrepreneurship, RCT, peer effects.
JEL CLASSIFICATION: C93, L14, P48.

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1 Introduction

Peers can help individuals make beneficial and risky investments – they can provide information, insure against shocks, and increase aspirations. In particular, social networks can play an important role in boosting entrepreneurship, be it by providing financial support, and motivation, possessing complementary skills, or giving and taking advice. The gender gap in entrepreneurship in developing countries has been in part due to a lack of social networks for women. Business training programs are often prescribed to close the entrepreneurship gap, but evidence suggests that more than this might be needed (McKenzie & Woodruff 2014). In this paper, we study how leveraging social network ties in conjunction with an entrepreneurship training program can be a potential solution to improve entrepreneurship outcomes and the economic livelihood of women in rural settings.

We conduct an RCT in $\sim$ 30 villages in rural Nepal where we first divide villages into a pure control or treatment group. In treated villages, we either pair women with members in the village (with varying social distances and network centralities) to attend a business training program, or ask them to attend the program alone or not attend it at all. Our sample is primarily employed in agriculture, but we find that 42% express a willingness to open businesses, but 28% do not think they have the capability to do so. Moreover, those who have opened up businesses also have lower risk aversion and higher aspirations. This suggests that a lack of perceived or actual capability, aspirations, and risk-taking can affect decisions to open businesses. In line with this, we provide a short three-day training program for which women would either be treated alone or treated in randomly chosen pairs. The training taught them how to do basic accounting, develop a business plan, and provided information on market access. Additionally, the training included a video on how being an entrepreneur made lives better for women in a similar context to improve aspirations.

We ask whether training women alone or in randomly formed network pairs can increase their likelihood of taking various steps to set up businesses. Moreover, we also randomise the implementation of an additional "connections module" in which we emphasize the importance of pooling network contacts to open businesses. In particular, paired trainees are asked to pool their network contacts and think of ways these contacts can help each other. This allows us to compare the direct value of a peer in terms of being trained with them with the indirect value of being able to access their network contacts. The key experimental variation we focus on is whether women attend the training alone versus paired randomly with a person chosen from their social network and whether or not they attended the connections module.

Our paper focuses on measuring the potential impact that network-sourced pairs have on improving entrepreneurship outcomes and increasing aspirations. Moreover, we leverage the

random variation in the identity of the peer to study if the treatment effect differs as a function of the network position of the peer. It has been shown that using documentaries of success stories from similar backgrounds helps increase aspirations (Bernard et al. 2014). In terms of business trainings, Field et al. (2016) shows that training in the presence of a friend helps improve business outcomes. In our paper, we disentangle this peer effect by randomly varying the network position of the peer and using social distance (i.e., how socially close the peer is) and centrality (i.e., how connected the peer is) as two explanatory factors. We provide a theoretical framework to think through the interaction between centrality and social distance. We hypothesize that support between pairs increases with social distance (Goeree et al. 2010). The effect of centrality is complex, where connecting to central people may give access to more opportunities, boost aspirations, and help improve risk-sharing outcomes. At the same time, central people might not be incentivized to support individuals who are not friends.

We measure various immediate and long-term outcomes (after one year) to test the effect of the treatments. We measured the immediate outcomes at the end of the three training days. We measure aspirations (along various dimensions), willingness to open a business, take up of loans and savings accounts, and business knowledge. First, we find that across the board, training significantly improves outcomes. Second, we find that while the connections module has a higher treatment effect in terms of magnitude, the additional impact is only sometimes significant even though women pool about 6 contacts on average. This suggests that peers mainly have direct value. Third, we find that being paired did not significantly improve outcomes on average except for certain pair types depending on their network position. Interestingly, pairing is always beneficial when the matched person is a friend. Moreover, when we interact this with the "centrality" of the peer i.e. how connected they are in the network, we find that pairing matters only when individuals are paired with a close friend who is central. Individuals paired with a central friend report a significantly higher willingness to open a business. This finding can help bridge the gap between training and take up of entrepreneurship by using a community-based approach. This is largely in line with the literature on networks where central individuals exert greater influence over others.

One year later, we find that only 3.5% of our sample has opened up businesses with significantly but only slightly higher treatment effects for those who were treated alone when compared to the pure control. Importantly, these effects are statistically indistinguishable from the effect on those who were paired with a random person. We also continue to detect significant effects of the training in that those who were trained (especially under the paired treatments) are significantly more likely to have opened up a savings account or taken a loan compared to those in pure control villages. We also find evidence of positive spillover effects on these outcomes for those who were not directly treated but are in treated villages.

Further, the treatment groups will likely report having spoken about opening businesses with their peers in the last year. Finally, those who were paired are significantly more willing to sign up for a potential commitment savings account from which they would only be able to withdraw funds for business expenses. This suggests that while the effects of the training are modest, treated individuals have taken steps and are still willing to take steps toward opening businesses even one year later.

The observed benefit from training with a peer can arise due to multiple mechanisms. We contribute to understanding possible mechanisms that can drive these peer effects and find that the effect is primarily due to motivation and the ability to collaborate and help each other in the future. First, pairing with a random partner who isn't a friend, as per the elicited social networks, does not improve outcomes. This implies that social distance must be low for peer effects to be active. Moreover, being paired with a friend, particularly one central in the network, led to a significant increase in the willingness to open a business. Matching with a friend who is popular improved outcomes the most. We also control for various individual characteristics that can be correlated with network centrality to explore where these centrality effects may be coming from. We do not detect any systematic correlations between individual characteristics and centrality.

Next, we find that the pairs did not necessarily learn better together. To this effect, we find that knowledge post-training is similar between treated and control groups, irrespective of whether women were paired or not. In line with this, we also do not see any impact on performance (i.e., profits) in a business game conducted during the training. Instead, we provide evidence that suggests that central friends might provide motivation and encouragement. In line with this, we find that the treatment significantly benefits those who had low-income aspirations in the baseline. Moreover, the majority of paired participants revealed that motivation was the reason why they thought pairing was beneficial. Finally, having a friend as a training partner can help strengthen the existing network, which can be relied on in the future. This is even more true when individuals are matched with a central friend, as they are significantly more likely to report wanting to meet and collaborate in the future. In line with this, we find effects one year later that the 38% of those matched with a peer reported reaching out to each other for advice, borrowing-lending money, and discussing ideas about forming a business.

Our paper contributes to experimental literature on peer effects on learning and the impact of business training programs. Peer effects are important in various settings, from adopting new technology (Beaman et al. 2021) to learning about financial products (Banerjee et al. 2013, Jack & Suri 2014) and classroom interactions (Duflo et al. 2011, Zárate 2023). For example, Duflo et al. (2011) shows how ability-based peer effects exist, while Zárate (2023) shows that more socially central peers help better with academic performance. Similar to the

latter, we show the importance of central and proximate peers for women's entrepreneurship in developing countries. With a novel design, we aim to tease apart why peer effects can improve the willingness to open a business. In the entrepreneurship literature, Lerner & Malmendier (2013) find that peer type matters in MBA class. Being exposed to peers with prior business experience reduces unsuccessful entrepreneurial attempts. In our paper, we classify peer types depending on their network position: social distance and centrality and comment on this channel by showing if peers can provide skills or motivation to increase the number of entrepreneurial attempts and their success.

There is significant heterogeneity in existing literature regarding the effect of business training programs (McKenzie & Woodruff 2014, McKenzie et al. 2021). Particularly looking at training with peer interactions, Cai & Szeidl (2017) illustrate the significant effects of being paired with higher quality peers on firms' sales and profits. They highlight how indirect peer effects through access to larger networks benefited the treated individuals. In our paper, we are able to measure the direct effect of being paired with a peer given that we mapped the underlying village network and comment on the indirect effect explicitly including a treatment arm to do so. Field et al. (2016) establish how training with a friend as a partner improves business outcomes. We explore if this effect is limited to friends by randomly varying social distance and the peer's centrality and commenting on the mechanisms through which peers could have positive effects. We find that the impact is limited to being paired with friends, particularly central ones. This finding suggests that social networks play an essential role in the decision to be an entrepreneur. Moreover, we find modest effects of training that emphasize the importance and potential of social ties in sharing risk and providing skills, thereby allowing us to contrast between the direct and indirect value of peers that existing work has not done. Stronger replications of this treatment arm that strengthen community ties can be a first step towards bridging the gender gap.

The rest of the paper is organized as follows. Section 2 describes the experiment and the data, followed by Section 3, which looks at the estimation strategy. Section 4 sketches a possible framework to understand our intervention. Section 5 presents the results and Section 6 concludes.

2 Data and Experimental Design

We conduct our surveys and experiments in 30 villages in rural Nepal including a baseline sample with about 2800 women, the RCT and endline survey with 1200 women, and a

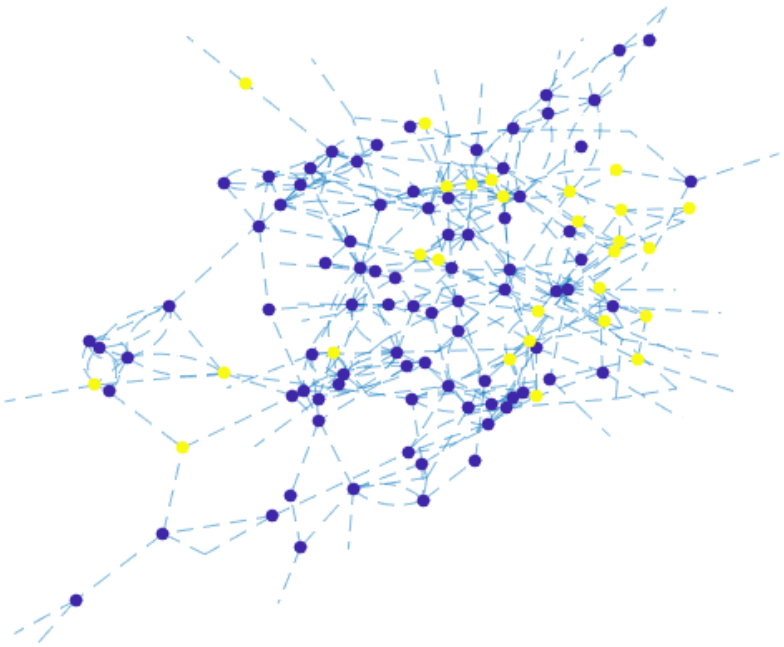


Figure 1: Women with and without an existing business in an example village.

follow-up survey with about 750 women. [1] We outline the various components of our data below.

2.1 Baseline Networks and Demographics

We conducted a detailed baseline survey with about 2800 women across all villages in our sample. We collected data on demographic characteristics such as age, caste, education, aspirations, wealth, source of income and marital status. Data on aspirations were collected in line with the procedure outlined in Bernard & Seyoum Taffesse (2014). We measured aspirations around agricultural investments, non-agricultural investments, and income. Finally, we also collected a list of women whom the individual reports being inspired from.

On average, a village comprised 70 households, with an average of 100 women per village. We used a village census to administer the network survey to every woman in the village ending up with a sample of $\sim$ 2800 women aged 18-60 years.

In addition to this, we require detailed network data to ensure experimental variation in the

[1] We focus on networks of only women, due to the high emigration rate of men either to Kathmandu or abroad, as shown by our pilot experiment conducted in spring 2018. In the districts we worked in, social networks are often gender-specific and women play an important role: they are responsible for households' finances, agricultural production and their children.

nature of pairs in the training. The networks questionnaire included questions designed to elicit information about social networks, inspired by Banerjee et al. (2013). These questions are meant to collect data on whom individuals report being friends with. The average number of connections in the undirected friendship network is ~ 5 links.

2.2 Baseline Findings

Baseline summary statistics are presented in Table A.1. The average age of women in our sample is 31 and 92% of them are married. Around 46% of our sample has no education. In the village network, we see that on an average women have five friends.

On average, women are seen to be risk averse with a risk-aversion level of around 4.6 where 6 stands for very risk averse and 1 stands for risk loving. Risk preferences were elicited using a choice experiment involving a series of lotteries and a fixed payment. We find that roughly 22% of women report having opened businesses already but 42% report a willingness to do so. 84% aspire to earn an income higher than their current income while 23% aspire to spend more on non-agricultural business expenditures than their current investment.

2.2.1 What are the barriers that prevent women from opening up businesses?

We find that women with a business have on average 20% higher income than the ones with no business. We correlate whether or not they have opened businesses already with their baseline characteristics. These results are shown in Table A.2. One of the main characteristics determining business ownership is age. Younger women are more likely to report having a business. Similarly, women who are more educated are more likely to have a business ownership – those with higher education are more likely to and those with no education are less likely. This is in line with what we would expect. Women who already have a business are also less risk averse. Naturally, they also have higher aspirations for investment in non-agricultural business.

When those who haven't opened up businesses were asked about why they haven't done so already, we find that 28% say that they feel they are not capable and 23% say that they lack the financial ability. We correlate willingness to open businesses with baseline demographics, networks, aspiration, and other variables such as risk aversion. These results are shown in Table A.3 and highlight how peers can help along various dimensions. We find that those who are more risk averse are correlated with not being willing to open businesses suggesting that risk-sharing with peers might assist in opening up businesses. Moreover, those who

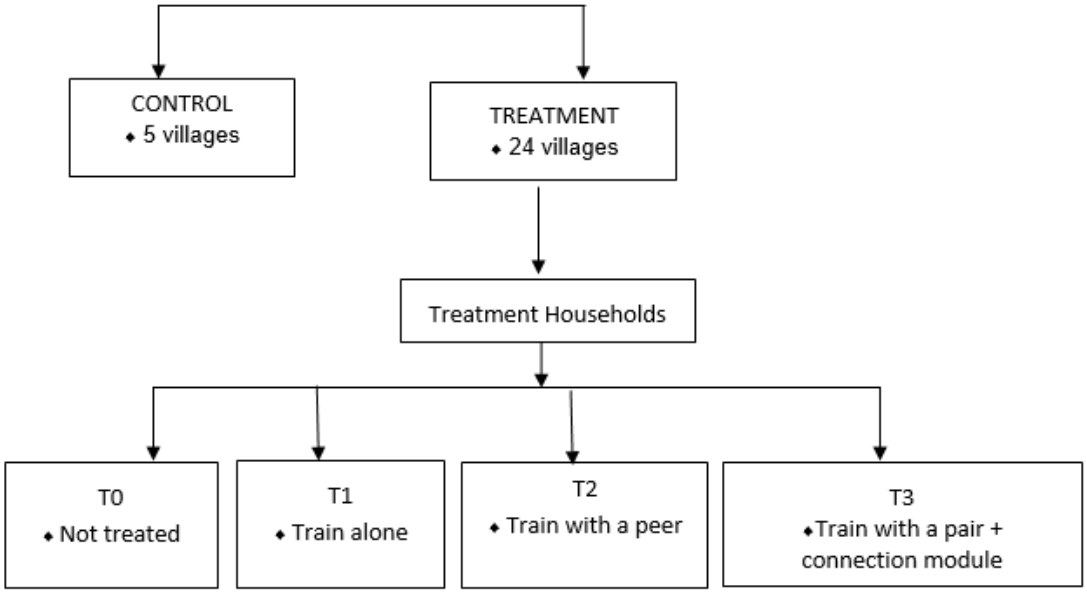
are more educated are correlated with being more likely to open businesses suggesting that skill complementarities with peers might be helpful as well. Finally, those who have higher aspirations are more willing to open businesses suggesting that peers can potentially be used to motivate and boost aspirations that can then be channelled into opening businesses.

2.3 Experimental Design

We conducted our experiment in September 2022 which consisted of a three-day entrepreneurship training motivated by the ILO SYIB module. The training typically lasted 3 hours per day and individuals were given 100 Rs/day (1 euro) for participation. The training focused on building a business plan, setting savings goals, increasing aspirations and market access.

Figure 2 represents our two-step randomisation design. First, we allocated villages to Pure Control and Treatment. Those in treatment villages were then randomly allocated either to the control group or one of the three treatment arms across all villages at an individual level.

Figure 2: Experimental design



From the universe of all women in the village, we exclude the ones that already have a non-agricultural business. The others get randomly allocated into one of the four groups.

- T0: No Training: This group of women do not receive training but live in Treatment villages. They can be thought of as groups to study potential spillovers with.

- T1: Women attend the training and set savings goals alone.
- T2: Women attend the training with a pair and set savings goals together. The pair vary in centrality and distance from each other.
- T3: Women attend the training with a pair and set savings goals together. In addition, the pair are provided with a 30-minute connection module that highlights the importance of networks and sharing contacts for entrepreneurship. The pair vary in centrality and distance from each other.

The Treatment with the connection module (T3) is identical to T2 except for the connection module. The connection module presents the participants with a list of reasons why relying on social networks is important to starting a business and asked them to pool their network contacts. We highlight three main reasons: i) Information ii) Complementarity in skills and iii) Risk pooling. The pairs in addition list their contacts that could potentially help them in opening up a business together. In addition to the direct value of being paired with a friend, T3 explores the indirect value by encouraging pairs to share contacts of people in their network they could rely on for opening a business. In addition to the 2-hour training, the connection module lasted for 30 minutes where we highlighted the indirect value of connections: financial support, advice and risk sharing.

Finally, we randomise individuals into T2 and T3 by stratifying along social distance and differences in centrality. This is to ensure that we were powered to detect heterogeneous effects by these characteristics and to ensure that T2 and T3 are balanced along these lines.

3 Estimation Strategy

We measure the impact of the training using various specifications that help us understand if the training is helpful in general, if it has higher returns for those who were paired, if it has higher returns for those who attended the connections module, and if it works for pairs with specific network and demographic characteristics.

We outline the various specifications below.

3.1 Impact of Training

In the main specification where we study the impact of the treatments, our outcome variables are regressed on the treatment dummies using the specification described below:

$$Y_i = \alpha + \beta_1 T1_i + \beta_2 T2_i + \beta_3 T3_i + \epsilon_i$$

Y_i is an outcome measure for individual i, $T1_i$ is a dummy variable that takes value 1 if the individual was treated alone, $T2_i$ is a dummy variable that takes value 1 if the individual was treated with a pair and $T3_i$ is a dummy variable that takes value 1 if the individual was treated with a pair and an additional connection module that emphasizes the importance of networks. Standard errors are clustered at the level of the village.

3.2 Impact of Training with Peer

In this specification, we club treatment 2 and 3 together as Treated with a pair. We regress outcome variables on the treatment dummies using the specification described below:

$$Y_i = \alpha + \beta_1 T1_i + \beta_2 (T2_i + T3_i) + \epsilon_i$$

Y_i is an outcome measure for individual i, $T1_i$ is a dummy variable that takes value 1 if the individual was treated alone, $T2_i$+ $T3_i$ is a dummy variable that takes value 1 if the individual was treated with a pair. Standard errors are clustered at the level of the village.

3.3 Impact of peer types

We consider differences in outcomes for different pairs in treatments 2 and 3 compared to treatment 1. Let d_{ij} be the network distance between i and j and let ϕ_i be the network centrality (degree and/or eigen-vector centrality) of agent i. We classify peer type into four categories: friendcentral, friendnoncentral, nonfriendcentral and nonfriendnoncentral. We defined friends as pairs with social distance equal to 1 or 2 (d_{ij}=$\{1,2\}$). In a pair ij, j is assigned to friend-central if i has higher degree centrality compared to j, i.e ϕ_i- $\phi_j > 0$

$$\begin{aligned} Y_{iv} = \alpha &+ \beta_1 friendcentral + \beta_2 friendnoncentral \\ &+ \beta_3 nonfriendcentral + \beta_4 nonfriendnoncentral + \epsilon_v \end{aligned}$$

Note that this regression specification nests both the effects of centrality and distance. However, we may separate the two in case we are not powered to detect differences together. We

also show these regressions separately when we discuss the results.

Given that network ties are endogenously formed, we are interested in measuring the heterogeneous effects of the treatment by interacting baseline characteristics with the three treatment dummies. Baseline characteristics include age, education, baseline aspirations, baseline willingness to open a business, network connections, and risk aversion. For characteristic X, this implies running the following regression, using T1 as a base category to precisely focus on the impact of training with peers:

$$Y_{iv} = \alpha + \beta_1 X + \beta_2 T2_i + \beta_3 T2_i X + \beta_4 T3_i + \beta_5 T3_i X + \epsilon_v$$

4 Theoretical Framework

In this theoretical framework, we specifically focus on the role of heterogeneity in the network characteristics of the pair on their outcomes when they attend the training together. There are two variables of interest: distance between the participant and the person they are matched with i.e. d_{ij} and the network centralities of the pair i.e. ϕ_i and ϕ_j. This can be interpreted as the number of connections they have in the underlying social network.

Consider the following utility function where agent i chooses the level of effort (savings, business effort etc) depending on private and social returns.

$$U(e_i) = \underbrace{\theta_0 e_i}_{\text{private returns to effort}} + \underbrace{\theta_1 \alpha(d_{ij})(e_i e_j)}_{\text{returns depending on peer effort}} + \underbrace{\beta_0 \phi_j e_i}_{\text{direct effect of peer centrality}}$$

$$+ \underbrace{\beta_1 f(\phi_i - \phi_j) e_i}_{\text{effect of gap between centralities}} + \underbrace{\lambda \alpha(d_{ij}) f(\phi_i - \phi_j) e_i}_{\text{interaction between distance and centrality}} - \underbrace{c(e_i)}_{\text{cost of effort}}$$

where $c''(e_i) > 0$. d_{ij} is the network distance between i and j. (Degree) Centrality of i and j is ϕ_i and ϕ_j. Note that $\alpha : R^+ \to R^+$ and $f : R \to R^+$ are functions that map network characteristics to positive scalars. Note the following additional assumptions:

1. $\theta_0 > 0$: i.e. there are positive private returns to effort.

2. $\theta_1 > 0$ and $\alpha' < 0$ i.e. there are positive complementarities falling with distance.

3. We will not make any further assumptions on the shape of f but without loss of generality, assume that $\beta_1 > 0$ and $\lambda > 0$.

We do not make assumptions on β_0. This can be positive if getting matched with a more central partner is inspirational, for example. Alternatively, it can be negative, if getting matched to a central partner implies that the partner may not be able to help out in future as they are more likely to be busy etc.

Let us first derive an expression for optimal effort e_i^*.

$$c'(e_i^*) = \theta_0 + \theta_1\alpha(d_{ij})e_j + \beta_0\phi_j + \beta_1 f(\phi_i - \phi_j) + \lambda\alpha(d_{ij})f(\phi_i - \phi_j)$$

4.1 Effects of Treatment Arms

Let's consider the differences in treatment effects across arms. Let us assume, without loss of generality, that costs are quadratic in effort so $c(e_i) = e_i^2$. T3 likely increases β_1 to β_1' and λ to λ' by making the scope for social support and sharing of contacts more salient among the pairs. Then, the optimal effort for individuals in different treatment arms is as follows:

1. T1: $e_i^* = \frac{1}{2}\theta_0$
2. T2: $e_i^* = \frac{1}{2}(\theta_0 + \theta_1\alpha(d_{ij})e_j + \beta_0\phi_j + \beta_1 f(\phi_i - \phi_j) + \lambda\alpha(d_{ij})f(\phi_i - \phi_j))$
3. T3: $e_i^* = \frac{1}{2}(\theta_0 + \theta_1\alpha(d_{ij})e_j + \beta_0\phi_j + \beta_1' f(\phi_i - \phi_j) + \lambda'\alpha(d_{ij})f(\phi_i - \phi_j))$

Under the assumptions made so far, it is already clear that $e_{iT1}^* < e_{iT2}^* < e_{iT3}^*$.

4.2 Heterogeneous Effects of Distance and Centrality

Consider the following proposition.

Proposition 1.

$$\frac{\partial e_i^*}{\partial d_{ij}} = \theta_1\alpha'(d_{ij})e_j + \lambda\alpha'(d_{ij})f(\phi_i - \phi_j) \quad < 0.$$

This directly follows from our assumption that α falls with network distance i.e. $\alpha' < 0$. The direct effect of distance (via effort complementarities) and the interaction effect (via interaction with peer centrality) is higher when the matched person is closer.

Proposition 2.

$$\frac{\partial e_i^*}{\partial \phi_j} = \beta_0 + \beta_1 \frac{\partial f(\phi_i - \phi_j)}{\partial \phi_j} + \lambda \alpha(d_{ij}) \frac{\partial f(\phi_i - \phi_j)}{\partial \phi_j} \quad > 0$$

under the above cases if and only if:

1. $f'_{\phi_j} < 0$ *and* $\beta_0 > \tau(\phi_i, \phi_j, d_{ij}) > 0$ *where* τ *is a threshold depending on agent's absolute centralities and the distance between them. It is easy to check that this threshold is equal to* $-\beta_1 f'_{\phi_j} - \lambda \alpha(d_{ij}) f'_{\phi_j} > 0$ *in this case.*
2. $f'_{\phi_j} > 0$ *and* $\beta_0 > \tau(\phi_i, \phi_j, d_{ij})$ *where* τ *is a threshold depending on both agent's centralities and the distance between them and* $\tau < 0$.

The effect of centrality is more involved. The derivative can be computed as above. The sign of the above derivative depends on the shape of f and the magnitude and sign of β_0. Under the first condition, β_0 i.e. the direct return from peer's centrality (eg: inspiration, perceived social support in future etc) must be positive and large enough. Under the second condition, β_0 doesn't have to be large and positive and can be negative as well. However, it should not be too negative i.e. must not fall below the specified threshold.

4.2.1 Intuition behind Proposition 2

In order to understand what the proposition implies intuitively, consider the following cases depending on the shape of f.

1. Case 1: Only incentives to share contacts matter i.e. $\frac{\partial f(\phi_i - \phi_j)}{\partial (\phi_i - \phi_j)} < 0$: In this case, individuals do not wish to share contacts or socially support those who are different to them in terms of centrality as there are no incentives to share or support. Support can also involve being willing to collaborate with the person in future or motivate them and boost their aspirations.

   Example:

   $$f = k - (\phi_i - \phi_j)^2 \text{ where k } > 0.$$

2. Case 2: Only altruism matters i.e. $\frac{\partial f(\phi_i - \phi_j)}{\partial(\phi_i - \phi_j)} > 0$: In this case, individuals wish to share contacts or socially support those who are more different to them in terms of centrality as they are altruistic and want to help others in their community.

   Example:

   $$f = k + (\phi_i - \phi_j)^2 \text{ where k } > 0.$$

3. Case 3: Both matter i.e. $\frac{\partial f(\phi_i - \phi_j)}{\partial(\phi_i - \phi_j)} < 0$ until a threshold value of $\phi_i - \phi_j$ after which $\frac{\partial f(\phi_i - \phi_j)}{\partial(\phi_i - \phi_j)} > 0$: In this case, individuals wish to share contacts or socially support those who are similar to them in terms of centrality (as there are incentives to share) but become altruistic if the other person's centrality falls below a threshold.

   Example:

   $$f = (\mid \phi_i - \phi_j \mid -k)^2 \text{ where k } > 0.$$

Let us analyze the proposition for Case 1.

$f'_{\phi_j} > 0$ if and only if $\phi_i > \phi_j$. In that case, condition 2 of the proposition applies and higher centrality of peer is beneficial. This makes sense: if my centrality is very high, then in a world where only incentives matter, my matched peer's centrality must also be very high for me to share contacts and provide social support. The direct effect of my peer's centrality (i.e. β_0), if negative, (due to peer being more busy etc) should not be too negative otherwise a higher centrality of peer will decrease optimal effort.

Case 2 is analogous and the reverse of this. In that case, $f'_{\phi_j} < 0$ if and only if $\phi_i > \phi_j$ since i's altruism is more likely to be at work if j is less central than i. Condition 1 of the proposition applies. β_0 must be very large and positive for the peer's centrality to have a positive effect on optimal effort.

The third case is a combination of cases 1 and 2 and depends on the threshold gap between the two centralities. If the gap is too high, case 2 will apply and altruism will be at work. If the gap is low, then case 1 will apply and incentives will matter more.

As a result, we can predict the effect of distance and centrality under all possible cases. For example, if we find that those matched to central peers choose higher business effort, then we know that the conditions in proposition 2 must be true. We can then check if pairs with different centralities shared fewer contacts with each other under T3 (to assess the shape of f) and if higher centrality is beneficial for those in T2 (to assess the sign of β_0).

5 Results

5.1 Balance

Before proceeding with the results, we first check for balance in baseline characteristics among the control and treatment groups. First, we run a joint orthogonality test using baseline variables measuring demographic, network, and business characteristics such as willingness to open a business, age, education, caste, network connections (i.e. degree centrality), and aspirations for income and non-agricultural expenditure. We check for balance in pair network distance and pair centralities for T2 and T3. This is to ensure that the pairs across T2 and T3 are similar in terms of their network characteristics. Standard errors are clustered at the village level for all regressions used to test for balance.

The balance checks are shown in Table B.2. We find that the sample is largely balanced across several individual characteristics. Women have similar income and business investment aspirations across the various groups. Compared to the control group, we find that women in T2 are slightly younger and more educated. Similarly, women in T2 and T3 seem to be more central than the pure control. We control for these characteristics in the robustness section.

5.2 Endline Results

In this section, we look at the impact of the training immediately after the end of the third day of training. We look at the effect of the treatment on four major categories of outcomes: Business outcomes, Knowledge Index, Take up, and Aspirations. We measure these outcomes with our end-line survey.

The outcomes are created as follows:

1. **Aspirations Index:** We measure four types of aspirations: yearly agricultural investment, yearly non-agricultural investment, monthly income, and monthly saving. Additionally, we also ask how much individuals are planning to save next month. We elicit aspirations by following the procedure in Bernard & Seyoum Taffesse (2014). We ask individuals the minimum and maximum of the relevant variables in their neighbourhood, how much they currently do, and how much they wish to do in the corresponding time frame. We take an average of the individual's aspirations on all of these dimensions to create the index.

2. **Knowledge Index:** We ask five questions that measure knowledge gained in the course of the training and take the proportion of correct responses to be the index. We collect this measure for both treatment and control groups. The questions are as follows: (a) What do you understand by a business, (b) What characteristics are required to be a successful entrepreneur, (c) What do you mean by fixed assets, (d) What sector does a beauty parlor come under, and (e) Above what break even percentage does the business become risky? The measure of knowledge is kept brief due to logistical constraints and is therefore likely to be noisy.

3. **Business Index:** For the business index, we use willingness to open a business, and skills to open a business and construct an average of these variables. We ask four questions in particular related to opening a business. First is if individuals are ready to open a business. Secondly, on a scale of 1 to 5 how ready they are to start a business? We then ask if they think they have the skills required to open a particular business. Lastly, we ask if they are willing to submit their business plan for a hypothetical competition.

4. **Takeup Index:** The Takeup index averages variables that report if women were willing to sign up for future mentoring and training. We ask five questions related to the hypothetical takeup of options. We ask individuals if they want to take up a savings account for their future business and if they would be interested in a business loan. Similarly, we ask if individuals would take up the opportunity of additional paid trainers and mentoring workshops in the next year. we also asked if they were willing to take advice from members of their community regarding opening a business.

As seen from Table 1 training with a peer and connection module is better. The effect of training with a connection module is stronger in terms of magnitude but is not significantly different from the other two treatments.

Table 1: Impact of the training

VARIABLES	(1) Aspirations Index	(2) Knowledge index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
Treated alone (T1)	0.0301	0.284***	0.0680	0.222**	0.399***
	(0.0574)	(0.0640)	(0.0474)	(0.0996)	(0.0844)
Treated in a pair (T2)	0.00687	0.272***	0.0940*	0.242**	0.396***
	(0.0610)	(0.0651)	(0.0467)	(0.113)	(0.0827)
Treated in a pair + module (T3)	0.0492	0.275***	0.141***	0.364***	0.388***
	(0.0389)	(0.0671)	(0.0392)	(0.0846)	(0.0775)
Constant	-0.0179	0.572***	0.704***	-0.360***	-0.243***
	(0.0182)	(0.0641)	(0.0283)	(0.0620)	(0.0685)
Observations	1,204	1,204	1,199	1,200	1,184
Treatment 1==2	0.777	0.500	0.635	0.873	0.973
Treatment 2==3	0.582	0.909	0.432	0.364	0.906
Treatment 1==3	0.795	0.631	0.0910	0.167	0.845

Notes: This regression treats the control group as the base category. Standard errors are robust and clustered at the village level

5.2.1 Training with a peer is marginally better

On average, being paired does not necessarily help improve the outcomes of the training. However, the impact varies by peer type as seen in Table 4. In Table 2, both training alone and with a pair improve outcomes. Women training with a peer are more likely to be ready to invest in a business but this effect is not significantly different. Being paired leads to a 4.9 percentage points increase in readiness to invest compared to being treated alone. The effect on the aspiration index, knowledge index and take-up index is not significantly different than attending the training alone. On average, being treated with a friend has larger impacts but not significantly different than being treated alone. What is interesting is that this effect is different depending on the peer type in line with the literature on peer effects.

Table 2: Does being paired help have better outcomes?

VARIABLES	(1) Aspirations Index	(2) Knowledge Index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
Treated alone (T1)	0.0301	0.284***	0.0680	0.222**	0.399***
	(0.0574)	(0.0640)	(0.0474)	(0.0995)	(0.0843)
Treated with a pair	0.0276	0.274***	0.117***	0.302***	0.392***
	(0.0345)	(0.0650)	(0.0314)	(0.0751)	(0.0727)
Constant	-0.0179	0.572***	0.704***	-0.360***	-0.243***
	(0.0182)	(0.0641)	(0.0283)	(0.0620)	(0.0685)
Observations	1,204	1,204	1,199	1,200	1,184
Treatment 1==Pair	0.971	0.461	0.212	0.392	0.906

Notes: This regression treats the control group as the base category. Treated with a pair includes observations from both Treatment 2 and Treatment 3. Standard errors are robust and clustered at the village level

5.2.2 Training with a friend is better

Table 3: Being paired with friends in comparison to control

VARIABLES	(1) Aspirations Index	(2) Knowledge index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
Treatment 1	0.0224	0.268***	0.0589	0.205**	0.379***
	(0.0586)	(0.0594)	(0.0467)	(0.0968)	(0.0795)
Treated with a friend	0.0786	0.254***	0.144***	0.387***	0.396***
	(0.0543)	(0.0624)	(0.0337)	(0.0853)	(0.0716)
Treated with a nonfriend	-0.0327	0.265***	0.0811**	0.222***	0.373***
	(0.0373)	(0.0611)	(0.0384)	(0.0802)	(0.0718)
Constant	-0.0102	0.588***	0.713***	-0.343***	-0.223***
	(0.0182)	(0.0592)	(0.0268)	(0.0577)	(0.0627)
Observations	1,204	1,204	1,199	1,200	1,184
Treatment 1== Paired with friend	0.519	0.542	0.0882	0.128	0.788
Treatment 1==Paired with nonfriend	0.404	0.859	0.579	0.855	0.912
Paired with friend==Paired with nonfriend	0.0551	0.592	0.109	0.0494	0.682

Notes: This regression treats the control group as the base category. Treated with a friend implies observations in Treatment 2 and Treatment 3 that are paired with someone with social distance less than two. Standard errors are robust and clustered at the village level

As seen from the table above, being paired with a friend is better, especially for being ready to invest. Considering women who were treated, pairing with a friend benefits individuals more. Both groups seem to do equally well in terms of knowledge index and take-up index. The increase in aspiration is significantly higher when trained with a friend. Similarly, individuals treated with a friend are 8.6 percentage points more likely to report being ready

to invest in a business. This effect is also carried over to the business index that includes readiness to invest in addition to other business metrics. In the robustness section, we run the same regression but use the characteristics of peers to classify pairs. We see that the effect of friendship is not driven by caste, education, wealth or age. This is important given the assortative nature of networks.

5.2.3 Individuals paired with more central friends benefit the most

We further want to understand who benefits from the intervention. Given that we stratified the pairs in T2 and T3 by centrality and distance, we divided the pairs into four categories: Friends that are more central, friends that are less central, non-friends that are more central and non-friends that are less central. We see that the training is more successful when individuals are paired with their friends that are central as seen in Table 4. Friendcentral is a dummy that takes the value 1 if the pair is a friend and more central than i whereas friendnoncentral is a dummy variable that takes the value 1 if the pair is a friend and less central than i.

The effect of having a friend who is central in the pair positively affects business outcomes. We don't see an effect on knowledge and aspirations. This effect is significantly different for friends v/s non-friends. This result combines pairs in both Treatment 2 and Treatment 3. In the appendix C.3, we look at the effect of friend type after controlling for characteristics of the peers. As seen in Table C.3 impact of friendcentral to some extent is absorbed by the caste of the peer. This is in line with the table in Table C.1 in the Appendix where we try to understand what it means to be central. Brahmin and Cheetri, the more privileged caste groups are likely to be central in the network. We also look at peer-level characteristics to understand this effect further.

Table 4: Impact of training with different friend type

VARIABLES	(1) Aspirations Index	(2) Knowledge Index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
friendcentral	0.125	-0.0141	0.126*	0.279*	0.111
	(0.117)	(0.0278)	(0.0632)	(0.153)	(0.0803)
friendnoncentral	-0.00319	-0.0167	0.0423	0.0811	-0.0813
	(0.0827)	(0.0232)	(0.0481)	(0.111)	(0.0784)
nonfriendcentral	-0.0840	-0.000544	0.0167	0.0302	0.0337
	(0.0782)	(0.0207)	(0.0569)	(0.121)	(0.0787)
nonfriendnoncentral	-0.0387	-0.000396	0.0248	0.00141	-0.0295
	(0.0772)	(0.0187)	(0.0360)	(0.0947)	(0.0686)
Own Degree	0.00285	0.00495**	0.00712	0.0149	0.0222*
	(0.0109)	(0.00180)	(0.00779)	(0.0157)	(0.0113)
Constant	0.00111	0.830***	0.739***	-0.207	0.0447
	(0.0755)	(0.0142)	(0.0608)	(0.124)	(0.0894)
Observations	684	684	682	682	670

Notes: This regression treats Treatment 1 as the base category and we look at individual level outcomes. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is central when the peer is more central than them. A friend/nonfriend is noncentral when the peer is less central. Standard errors are robust and clustered at the village level

5.3 Long Term Effects after one year of Training

In the section above, we presented results based on immediate outcomes. In this section, we will be looking at outcomes based on a phone survey conducted in October 2023, one year after the training with a random subset of the original sample. We will compare the treatment group with those in the pure control villages while including a binary variable controlling for those in the spillover group i.e. control individuals in treated villages, as spillovers are likely to be active over this long time frame. To ensure that the pure control villages are not systematically different from the treated villages, we show a balance test in Table B.1 where we find that almost all characteristics are balanced between individuals in these villages. Crucially, this includes balance in baseline willingness to open businesses, education, and aspirations.

We find that about 3.5% of individuals opened up businesses after one year of training. As shown in Table 5, we find that those who were treated alone were significantly more likely to have opened up businesses. However, this effect is not statistically distinguishable from the effect of Treatment 3 or the spillover group. We also do not find any effects on monthly income or income aspirations. However, we find that those who have been treated are also

significantly more likely to have opened up savings accounts, taken a loan, and more likely to report a willingness to sign up for our hypothetical commitment savings product where they can deposit an amount and will only be able to withdraw it for business expenses. In fact, the effect on commitment savings is only significant for the treatment groups where individuals were paired together. It is also important to note that there are positive spillovers on the control group in all these outcomes but the magnitude is often significantly lower than that in the treatment groups.

Table 5: Long-term effect of the training

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Opened Business	Monthly Income	Income Aspirations	New Savings Account	Savings Amount	Commitment Savings	Taken a loan
Spillover	0.0181	-680.2	-4,916	0.164***	1,605	0.0455	0.0921***
	(0.0191)	(3,985)	(4,099)	(0.0588)	(1,718)	(0.0725)	(0.0322)
Treated alone (T1)	0.0346**	2,144	4,548	0.165***	3,217**	0.0763	0.117***
	(0.0148)	(4,075)	(5,383)	(0.0360)	(1,545)	(0.0654)	(0.0335)
Treated with a friend (T2)	0.00294	7,245	4,845	0.0526	2,403	0.155***	0.0671**
	(0.0103)	(6,815)	(6,098)	(0.0449)	(2,053)	(0.0543)	(0.0309)
Treated with a friend + module (T3)	0.0224	5,033	5,390	0.126***	2,285	0.151**	0.101***
	(0.0139)	(4,586)	(6,023)	(0.0394)	(1,762)	(0.0654)	(0.0342)
Constant	0.0160**	24,774***	49,503***	0.144***	4,208***	0.433***	0.0532***
	(0.00761)	(3,281)	(3,334)	(0.0199)	(1,203)	(0.0445)	(0.0149)
Observations	750	749	749	752	744	751	752
Spillover==T1	0.526	0.255	0.0237	0.992	0.282	0.639	0.563
T1=T3	0.552	0.419	0.896	0.441	0.536	0.176	0.679
T1=T2	0.0737	0.367	0.962	0.0355	0.688	0.168	0.199
T2=T3	0.160	0.741	0.943	0.243	0.953	0.943	0.364

Notes: This regression treats the pure control group as the base category. Spillover are the individuals that were not treated in a treatment village. Standard errors are robust and clustered at the village level

Table 6: Long-term effect of the training: Paired vs non paired

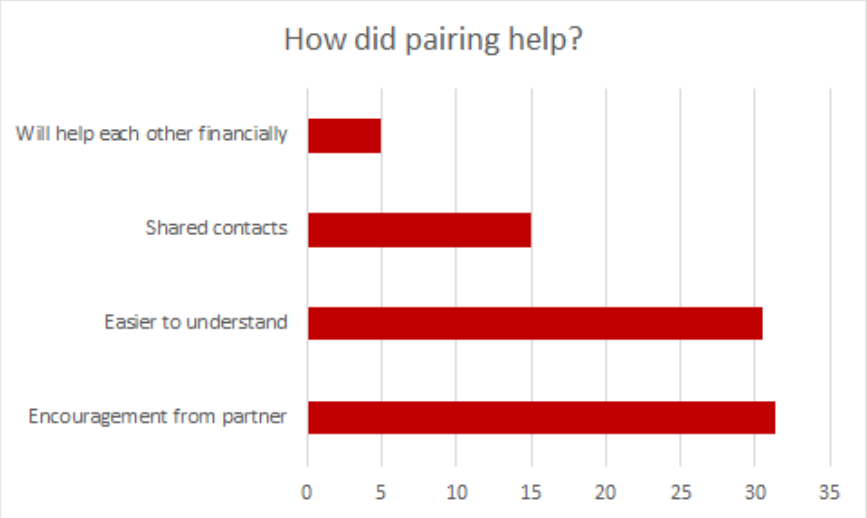
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Opened Business	Monthly Income	Income Aspirations	New Savings Account	Savings Amount	Commitment Savings	Taken a loan
Spillover	0.0181	-680.2	-4,916	0.164***	1,605	0.0455	0.0921***
	(0.0191)	(3,982)	(4,096)	(0.0588)	(1,716)	(0.0725)	(0.0322)
Treated alone (T1)	0.0346**	2,144	4,548	0.165***	3,217**	0.0763	0.117***
	(0.0148)	(4,072)	(5,380)	(0.0360)	(1,544)	(0.0653)	(0.0335)
Treated with a pair	0.0117	6,247	5,091	0.0855***	2,349	0.154***	0.0822***
	(0.0100)	(4,898)	(4,749)	(0.0293)	(1,652)	(0.0527)	(0.0269)
Constant	0.0160**	24,774***	49,503***	0.144***	4,208***	0.433***	0.0532***
	(0.00760)	(3,278)	(3,332)	(0.0199)	(1,202)	(0.0445)	(0.0149)
Observations	750	749	749	752	744	751	752
Spillover=T1	0.526	0.255	0.0236	0.992	0.281	0.639	0.563
Paired=Nonpaired	0.193	0.239	0.915	0.0574	0.564	0.116	0.311
Spillover=Paired	0.767	0.116	0.0385	0.182	0.615	0.0917	0.786

Notes: This regression treats the pure control group as the base category. Spillover are the individuals that were not treated in a treatment village. Treated with a pair combines both Treatment 2 and Treatment 3. Standard errors are robust and clustered at the village level

6 Mechanisms

We observe that, on average, being paired does not significantly improve outcomes in the training. It is only being with a central friend that helps. In order to study the role of these pairs, we look at different potential mechanisms. First, we asked the perceptions of women who attended the training in pairs as to how pairing was useful rather than training alone. Figure 3 shows the responses to this question. Most of them reported receiving encouragement and support from their pair was a credible channel. 33% of women paired report having received encouragement from their partnered peer. This is followed by 31% of the women who report the training was easier to grasp due to being paired in the training.

Figure 3: Why does pairing matter?



6.1 Do pairs learn better together?

Learning can be a potential mechanism driving friends to be able to help each other learn better. Women who attended the training with a friend may have been able to better discuss the material being taught. If this is the case then women treated with a friend should perform better in the knowledge and performance in the training. Knowledge Index is an outcome collected at the endline where we asked questions learnt during the training. Similarly, we measure knowledge gained by the training by two variables: game profit and yearly profit. Game profit records the performance on the first day of the training where women played an investment and saving game. Yearlyprofit on the other hand was measured on the last day of the training, which is the amount of profit made in the business plan. We see in table 7 that there was no differential effect on these outcomes as a function of the peer type.

Table 7: Learning as a potential mechanism

VARIABLES	(1) Knowledge Index	(2) Game profit	(3) Yearly profit
friendcentral	-0.0139	-1.317	694,441
	(0.0277)	(75.32)	(883,937)
friendnoncentral	-0.0166	15.46	207,476
	(0.0218)	(70.23)	(659,673)
nonfriendcentral	-0.000406	-5.105	310,682
	(0.0192)	(61.42)	(700,844)
Own Degree	0.00494**	12.00	87,093
	(0.00185)	(8.194)	(99,268)
Constant	0.830***	239.1***	192,046
	(0.0122)	(61.16)	(553,790)
Observations	684	684	683
friendnoncentral==friendcentral	0.918	0.608	0.205
friendnoncentral==nonfriendnoncentral	0.466	0.791	0.923
friendnoncentral==nonfriendcentral	0.466	0.791	0.923
central==noncentral	0.944	0.773	0.425
friend==nonfriend	0.440	0.886	0.729

Notes: This regression treats nonfriendnoncentral as the base category. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is central when the peer is more central than them. A friend/nonfriend is noncentral when the peer is less central. Standard errors are robust and clustered at the village level

6.2 Do pairs encourage each other?

One possible channel driving peer effects could be encouragement. This effect is in line with the fact that friends who have more friends are likely to be 'popular' and, therefore, are better at encouraging. As seen from Table 8, women with lower baseline aspiration tend to benefit more from the training. We find that being paired with a friend who is central improves aspiration towards entrepreneurship. Friends are better able to motivate and support each other. This is in line with the literature on social networks where peers that are close have higher levels of trust and altruism. The majority of individuals that were paired reported encouragement and support from their matched peer was the most useful part of the training. 33% of women report having received encouragement from their partner.

Table 8: Baseline aspiration and treatment effect

VARIABLES	(1) Aspiration Index	(2) Knowledge Index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
Treatment 1 (T1)	0.0616	0.268***	0.0829*	0.294***	0.400***
	(0.0648)	(0.0661)	(0.0475)	(0.103)	(0.0902)
Treated in a pair (T2)	0.00986	0.250***	0.108*	0.225*	0.379***
	(0.0609)	(0.0666)	(0.0540)	(0.127)	(0.0901)
Treated in a pair+ module (T3)	0.0125	0.255***	0.130***	0.362***	0.349***
	(0.0484)	(0.0674)	(0.0443)	(0.0915)	(0.0884)
Baseline Income Aspirations	-8.12e-09	-6.80e-08***	3.07e-08***	9.27e-08***	-2.71e-08*
	(2.82e-08)	(1.01e-08)	(6.12e-09)	(2.27e-08)	(1.34e-08)
T1#Baseline Income Aspirations	1.14e-07	2.94e-08	-2.31e-08	-5.34e-07***	1.71e-07***
	(2.25e-07)	(2.82e-08)	(1.31e-07)	(1.91e-07)	(5.82e-08)
T2#Baseline Income Aspirations	-4.36e-08	7.01e-08***	-1.07e-07***	-1.55e-07***	-1.60e-07***
	(3.09e-08)	(9.27e-09)	(1.09e-08)	(2.70e-08)	(1.69e-08)
T3#Baseline Income Aspirations	-4.28e-08	7.47e-08***	-1.08e-07***	-1.55e-07***	5.59e-08***
	(4.25e-08)	(1.04e-08)	(9.55e-09)	(2.70e-08)	(1.51e-08)
Constant	-0.0300	0.589***	0.706***	-0.361***	-0.216***
	(0.0206)	(0.0653)	(0.0318)	(0.0704)	(0.0720)
Observations	935	935	930	931	919

Notes: This regression treats the control as the base category. Standard errors are robust and clustered at the village level

6.3 Do pairs provide access to network connections for risk-sharing and/or other purposes?

Contact pooling and access to connections could be a second channel that we look at. Treatment 3 i.e. where women were paired during the training and a connection module was introduced to highlight the role of social networks. This treatment does fare better in terms of magnitude but the effects are not significantly different compared to Treatment 2. On an average, women in Treatment 3 pool 6 friends. In Table 9 we try to understand what determines how many friends pairs list down during the connection module. We see that there is no difference as a function of age, degree, education and income of the peer. Being same caste leads to one additional friend being listed in the connection module.

Table 9: Number of friends noted during the connection module

VARIABLES	(1) Number of Contacts Pooled
Difference in Degree	0.0219
	(0.0190)
Difference in Education	-0.0501
	(0.145)
Difference in Age	-0.0124
	(0.0269)
Difference in Income	2.21e-06
	(2.19e-06)
Same caste	1.219*
	(0.615)
Constant	5.696***
	(0.592)
Observations	211
R-squared	0.069

Notes: This regression looks at Treatment 3. Standard errors are robust and clustered at the village level

We also do not find effects of a peer being more central when we use eigenvector centrality as a measure of influence. This also suggests that risk-sharing might not be a relevant mechanism. As seen from Table 11, friend central defined differently using eigenvector centrality does not have differential effects compared to the other categories. In addition to this, we do not find any heterogeneous effects by baseline risk aversion of the peer. Being paired with a peer that is less risk averse does not impact the outcomes of the training.

Table 10: Effect of Peer Risk Aversion

VARIABLES	(1) Aspiration Index	(2) Knowledge Index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
Treatment 1 (T1)	0.0617	0.210***	0.0686	0.247**	0.402***
	(0.0655)	(0.0295)	(0.0488)	(0.109)	(0.0946)
Treated in a pair (T2)	0.0289	0.184***	0.0902	0.180	0.361***
	(0.0766)	(0.0334)	(0.0574)	(0.140)	(0.108)
Treated in a pair+ module (T3)	-0.00360	0.216***	0.122**	0.294**	0.382***
	(0.0715)	(0.0347)	(0.0498)	(0.129)	(0.102)
Peer risk averse	-0.0360	-0.230	-0.0342	-0.103	-0.0481
	(0.0498)	(0.136)	(0.0536)	(0.0955)	(0.0744)
T1#Peer risk averse	-0.124	0.250*	-0.00675	-0.106	-0.0178
	(0.0848)	(0.137)	(0.0731)	(0.149)	(0.116)
T2#Peer risk averse	-0.0136	0.258*	0.0243	0.150	0.0791
	(0.1000)	(0.137)	(0.0767)	(0.165)	(0.0955)
T3#Peer risk averse	0.106	0.213	0.0483	0.169	0.0342
	(0.103)	(0.138)	(0.0691)	(0.152)	(0.112)
Constant	-0.00703	0.641***	0.715***	-0.329***	-0.228***
	(0.0243)	(0.0282)	(0.0307)	(0.0737)	(0.0748)
Observations	1,204	1,204	1,199	1,200	1,184

Notes: This regression treats the control as the base category. Peer risk averse is a dummy variable that is one if the peer is more risk averse. Standard errors are robust and clustered at the village level

Table 11: Impact of Peer's Eigen Vector Centrality and Distance

VARIABLES	(1) Aspirations Index	(2) Knowledge Index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
friendcentral	0.0236	-0.00710	0.0825	0.182	0.0417
	(0.0890)	(0.0210)	(0.0527)	(0.142)	(0.0689)
friendnoncentral	0.0798	-0.0247	0.0738	0.151	-0.0366
	(0.104)	(0.0280)	(0.0519)	(0.124)	(0.0713)
nonfriendcentral	-0.0552	0.0134	0.0276	0.0449	-0.0292
	(0.0684)	(0.0159)	(0.0547)	(0.0960)	(0.0655)
nonfriendnoncentral	-0.0629	-0.0136	0.0138	-0.0224	0.0165
	(0.0810)	(0.0205)	(0.0389)	(0.108)	(0.0720)
Own Degree	0.000482	0.00568***	0.00569	0.0104	0.0153
	(0.00907)	(0.00167)	(0.00750)	(0.0144)	(0.0105)
Constant	0.0139	0.826***	0.746***	-0.182	0.0820
	(0.0672)	(0.0152)	(0.0581)	(0.117)	(0.0822)
Observations	684	684	682	682	670
friendnoncentral==friendcentral	0.525	0.450	0.828	0.812	0.298
friendnoncentral==nonfriendnoncentral	0.0599	0.716	0.377	0.284	0.433
friendnoncentral==nonfriendnoncentral	0.147	0.161	0.146	0.0364	0.921
central==noncentral	0.689	0.103	0.712	0.462	0.766
friend==nonfriend	0.0664	0.451	0.143	0.0510	0.873

Notes: This regression treats Treatment 1 as the base category. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is central when the peer is more central than them. A friend/nonfriend is noncentral when the peer is less central. Standard errors are robust and clustered at the village level

6.4 Do pairs perform better as they can collaborate together in future?

Lastly, friends may be more likely to open a business together if paired. We find that individuals are more likely to report being willing to open business with a friend rather than a random individual. When asked to report if they were likely to open a business with the individual they were paired with, being friends has a strong and significant effect. This reinforces our argument that distance between pairs matters as they make future plans together.

Table 12: More likely to start a business together with friend

	(1)
VARIABLES	Start business together
friendcentral	0.149**
	(0.0653)
friendnoncentral	0.151**
	(0.0550)
nonfriendcentral	0.0750
	(0.0563)
Own Degree	0.0119
	(0.0131)
Constant	0.227**
	(0.0939)
Observations	435
friendnoncentral==friendcentral	0.976
friendnoncentral==nonfriendnoncentral	0.238
friendnoncentral==nonfriendcentral	0.238
central==noncentral	0.381
friend==nonfriend	0.0319

Notes: This regression treats nonfriendnoncentral as the base category. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is central when the peer is more central than them. A friend/nonfriend is noncentral when the peer is less central. Standard errors are robust and clustered at the village level

Further, we find that one year later, individuals who are in the treatment group are also significantly more likely to report discussing business-related concerns with their social networks. This is shown in Table 13. 35% of individuals in treatment 2 and 42% of individuals in treatment 3 report meeting their matched peer. When asked what they spoke about, 85% report speaking to the peer for advice, 10% report interacting to borrow/lend money, and 5% report speaking about setting up businesses.

Table 13: Follow-up survey and Network Communication

VARIABLES	(1) Talk to anyone about business	(2) Talk to matched peer about business
Spillover	0.0411	
	(0.0261)	
Treated alone (T1)	0.0648**	
	(0.0243)	
Treated with a pair (T2)	0.107***	
	(0.0296)	
Treated with a friend + module (T3)		0.0663
		(0.0590)
Constant	0.0106	0.352***
	(0.00941)	(0.0509)
Observations	751	267
Spillover=T1	0.511	
Paired=Nonpaired	0.208	
Spillover=Paired	0.0144	

Notes: This regression treats the pure control group as the base category. Spillover are the individuals that were not treated in a treatment village. Standard errors are robust and clustered at the village level

7 Robustness

Networks are assortative in nature and in this section, we look at characteristics beyond centrality to understand what is driving the effect. Looking at categories of friends as a function of caste, education, age and income, we find that the friend central effect is not replicated by any of the other classification. In Table 14, we create two caste categories: high and others. We find no significant difference in outcomes of friends with high caste versus friends with low caste. Looking at Table 15, we look at two categories of friends, one with education and the other with no education. We find no difference in outcomes between the two groups. This is interesting to note since one would expect that being paired with a more educated friend would help understand the training material better. This further points to encouragement being a possible mechanism driving the effect of being paired with a friend. Similarly, looking at Table 16, we see no difference in outcomes in being paired with a friend that is younger vs older than the individual.

Table 14: Impact of being paired with friends of different caste

VARIABLES	(1) Aspirations Index	(2) Knowledge Index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
friendhighcaste	0.288	0.0404	0.0797	0.223	0.320
	(0.178)	(0.0384)	(0.0701)	(0.148)	(0.192)
friendothercaste	0.0919	0.0563	0.0217	0.116	0.249
	(0.155)	(0.0357)	(0.0763)	(0.163)	(0.172)
nonfriendhighcaste	0.0964	0.0817***	-0.0655	-0.0933	0.222
	(0.127)	(0.0273)	(0.0714)	(0.163)	(0.194)
nonfriendothercaste	0.108	0.0530*	0.0114	0.0720	0.315
	(0.142)	(0.0298)	(0.0751)	(0.160)	(0.195)
Own Degree	0.00837	0.00430**	0.00778	0.0174	0.0204*
	(0.00910)	(0.00188)	(0.00623)	(0.0126)	(0.0101)
Constant	-0.160	0.769***	0.765***	-0.221	-0.226
	(0.130)	(0.0233)	(0.0780)	(0.141)	(0.209)
Observations	711	711	708	708	696

Notes: This regression treats Treatment 1 as the base category. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is highcaste if they are Brahmin/ Chhetri. othercaste includes Newar, Tamang, Dalits and others. Standard errors are robust and clustered at the village level

Table 15: Impact of being paired with educated friends

VARIABLES	(1) Aspirations Index	(2) Knowledge Index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
friendeducated	-0.214	0.00754	0.110	0.306	0.109
	(0.152)	(0.0346)	(0.0868)	(0.218)	(0.147)
friendnoteducated	0.230	0.0715	-0.110	-0.0604	0.170
	(0.177)	(0.0605)	(0.0984)	(0.201)	(0.306)
nonfriendeducated	-0.265	0.0388	0.0631	0.178	0.132
	(0.155)	(0.0284)	(0.0832)	(0.203)	(0.144)
nonfriendnoteducated	0.119	0.0775	-0.177*	-0.218	0.139
	(0.154)	(0.0590)	(0.100)	(0.232)	(0.304)
education	0.488*	0.132**	-0.0571	-0.0676	0.238
	(0.247)	(0.0604)	(0.122)	(0.318)	(0.341)
Constant	-0.188	0.729***	0.867***	-0.0800	-0.106
	(0.148)	(0.0554)	(0.0838)	(0.197)	(0.296)
Observations	725	725	722	722	710

Notes: This regression treats Treatment 1 as the base category. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is educated if they have any education level. Standard errors are robust and clustered at the village level

Table 16: Impact of being paired with younger friends

VARIABLES	(1) Aspirations Index	(2) Knowledge Index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
friendyounger	-0.0402	0.0352	-0.0211	0.130	0.0803
	(0.116)	(0.0324)	(0.0603)	(0.143)	(0.131)
friendnotyounger	0.0109	0.0379	0.0584	0.190	0.182
	(0.118)	(0.0361)	(0.0663)	(0.129)	(0.145)
nonfriendyounger	-0.130	0.0540*	-0.0450	-0.00402	0.142
	(0.107)	(0.0305)	(0.0665)	(0.148)	(0.163)
nonfriendnotyounger	-0.0652	0.0401	-0.0407	-0.00966	0.0969
	(0.108)	(0.0362)	(0.0728)	(0.167)	(0.138)
Age	-0.00218	-0.00361***	-0.00907***	-0.0131***	-0.0154***
	(0.00247)	(0.000559)	(0.00196)	(0.00410)	(0.00253)
Peer age	-0.000899	-0.000133	1.54e-06	-0.000463	2.31e-05
	(0.00197)	(0.000505)	(0.00139)	(0.00304)	(0.00238)
Constant	0.199	0.948***	1.181***	0.397*	0.622***
	(0.129)	(0.0315)	(0.0775)	(0.206)	(0.140)
Observations	725	725	722	722	710

Notes: This regression treats Treatment 1 as the base category. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is younger if they have a lower age. Standard errors are robust and clustered at the village level

Table 17: Impact of being paired with richer friends

VARIABLES	(1) Aspirations Index	(2) Knowledge Index	(3) Ready to invest	(4) Business Index	(5) Takeup Index
friendricher	0.0696	0.0538	0.0162	0.140	0.171
	(0.104)	(0.0333)	(0.0665)	(0.176)	(0.136)
friendnotricher	-0.167*	0.0242	0.0222	0.165	0.103
	(0.0970)	(0.0405)	(0.0627)	(0.129)	(0.146)
nonfriendricher	-0.0266	0.0445	-0.0914	-0.0703	0.110
	(0.100)	(0.0394)	(0.0579)	(0.140)	(0.141)
nonfriendnotricher	-0.105	0.0521*	-0.0350	0.0142	0.126
	(0.0988)	(0.0298)	(0.0625)	(0.153)	(0.151)
income	6.65e-06***	8.08e-08	9.45e-07***	2.04e-06**	1.07e-06**
	(1.18e-06)	(1.49e-07)	(3.16e-07)	(8.64e-07)	(4.37e-07)
Constant	-0.0976	0.802***	0.806***	-0.178	0.00181
	(0.0811)	(0.0255)	(0.0538)	(0.145)	(0.147)
Observations	723	723	720	720	708

Notes: This regression treats Treatment 1 as the base category. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is richer if they have more wealth. Standard errors are robust and clustered at the village level

8 Conclusion

Peer effects are important, especially in helping women succeed as entrepreneurs. We document that training with a central friend helps improve willingness to open a business. One of the potential factors hindering women entrepreneurs is a lack of peer support. In this paper, we first study whether pairing women together for business training improves outcomes and if so, what kind of pairs are most helpful in terms of their network centrality and social distance. Firstly, we find that being paired with a friend helps increase people's aspirations towards entrepreneurship. This effect lasts and people trained with friends are more likely to have taken loans for business.

Our field experiment is carefully designed to study the effect of having different peers from the network. Similar to the existing literature on networks that emphasize the role of central monitors (Banerjee et al., 2019) to influence people and spread information, in our setting, friends are more effective in supporting. In contrast, being paired with a central peer does not improve post-training or long-term outcomes unless the central peer is also a friend. Unlike in Breza & Chandrasekhar (2019) where the reputation effect is amplified by a central monitor, in our context of learning from a business training, centrality does not play a role. This could be potentially because central people are busy and can be effective information spreaders but not necessarily supporters unless they happen to also be network peers.

We compare the direct value of friends to the indirect value in terms of providing access to the wider network using a treatment arm which makes the wider network of the peer more salient and asks the pair to share contacts. While the treatment arm that initiates network contact pooling is more effective on certain outcomes, we do not find that it is significantly stronger compared to the arm where individuals are paired without pooling contacts. This suggests that the direct value of being connected with a friend is more important than indirect in terms of increasing the effectiveness of the training program.

One's position in the network as a central individual has the strategic advantage of being connected to more people. This effect can primarily benefit their direct connections rather than everyone in the network. By connecting the business training literature to social networks, we find that adding a central- friend component to training helps women.

Appendix

A Baseline Tables

Table A.1: Summary Statistics

Age	37.98	(10.85)
Divorced	0.00141	(0.0375)
Married	0.918	(0.274)
Unmarried	0.0669	(0.250)
Widow	0.0134	(0.115)
Higher Education (Class 11, 12)	0.104	(0.305)
Informal_education	0.126	(0.332)
No Education	0.326	(0.469)
Primary (Class 1-5)	0.155	(0.362)
Secondary (Class 6-10)	0.249	(0.432)
University	0.0402	(0.196)
Degree (Main)	5.085	(2.466)
Eigen (Main)	0.0101	(0.0183)
Own Non Agr. Business (Yes/No)	0.220	(0.415)
Feel not Capable	0.277	(0.448)
Willingness to Open Non Agr. Business	0.419	(0.494)
Risk Aversion (1-6)	4.610	(1.406)
Aspirations- Annual Non Agr. Investments	592607.8	(2991506.9)
Aspirations- Monthly Income	556120.4	(13902715.0)
Aspirations- Annual Agr. Investments	307888.2	(1716845.5)
Income Aspirations > Current Income	0.839	(0.367)
Non Agr Exp Asp > Current Exp	0.229	(0.420)
Observations	2840	

Notes: This was collected during baseline data collection in 30 villages

Table A.2: Who have already opened businesses?

	Own Non Agr. Business (Yes/No)
Age	-0.0944***
Divorced	0.00270
Married	-0.0354
Unmarried	0.0499**
Widow	-0.0250
Higher Education (Class 11, 12)	0.129***
Informal_education	-0.00791
No Education	-0.181***
Primary (Class 1-5)	0.00828
Secondary (Class 6-10)	0.00354
University	0.221***
Degree (Main)	-0.0331
Eigen (Main)	-0.0207
Risk Aversion (1-6)	-0.0910***
Aspirations- Annual Non Agr. Investments	0.138***
Aspirations- Monthly Income	0.0127
Aspirations- Annual Agr. Investments	-0.0244
Income Aspirations > Current Income	-0.0303
Non Agr Exp Asp > Current Exp	0.374***
Observations	625

Notes: This was collected during baseline data collection in 30 villages. 22% of the women owned a non agricultural business.

Table A.3: Who are willing to open businesses?

	Willingness to Open Non Agr. Business
Age	-0.391***
Divorced	0.0187
Married	-0.0508*
Unmarried	0.0965***
Widow	-0.0826***
Higher Education (Class 11, 12)	0.167***
Informal_education	-0.104***
No Education	-0.300***
Primary (Class 1-5)	0.0367
Secondary (Class 6-10)	0.251***
University	0.100***
Degree (Main)	0.0281
Eigen (Main)	0.0143
Feel not Capable	-0.00718
Risk Aversion (1-6)	-0.103***
Aspirations- Annual Non Agr. Investments	0.104***
Aspirations- Monthly Income	-0.0188
Aspirations- Annual Agr. Investments	0.0428*
Income Aspirations > Current Income	0.0129
Non Agr Exp Asp > Current Exp	0.212***
Observations	2215

Notes: This was collected during baseline data collection in 30 villages. 42% of the women reported being interested in opening a business.

B Balance Checks

Table B.1: Balance test between Individuals in Pure Control and Treated Villages

	Control	Treatment	p-value
Willingness to Open	0.404	0.412	0.883
Age	39.533	39.128	0.760
Elementary Education	0.185	0.161	0.339
Higher Education	0.077	0.086	0.736
Informal Education	0.324	0.293	0.471
University Education	0.007	0.010	0.697
Secondary Education	0.268	0.261	0.820
Own Degree	4.623	5.086	0.025
Eigen	0.010	0.012	0.293
Between	227.687	372.471	0.034
Brahmin	0.052	0.088	0.565
Chettri	0.202	0.159	0.679
Dalit	0.059	0.020	0.289
Tamang	0.216	0.296	0.581
Newar	0.460	0.395	0.755
Other	0.010	0.043	0.066
Investment aspiration	2.99e+05	3.44e+05	0.587
Income aspiration	93230.769	87803.801	0.896

Notes: We look at balance across Control and Treatment villages.

Table B.2: Balance test for Treatment Arms

	0	1	2	3	(0) vs. (1), p-value	(0) vs. (2), p-value	(0) vs. (3), p-value	(1) vs. (2), p-value	(1) vs. (3), p-value	(2) vs. (3), p-value
Willingness to Open	0.362	0.426	0.434	0.470	0.143	0.187	0.046	0.870	0.345	0.560
Age	40.040	39.496	37.613	38.940	0.653	0.036	0.347	0.055	0.537	0.100
elementary	0.165	0.173	0.177	0.154	0.749	0.631	0.692	0.921	0.539	0.493
higher	0.079	0.077	0.091	0.094	0.906	0.680	0.521	0.598	0.299	0.889
informal	0.319	0.282	0.292	0.291	0.451	0.399	0.470	0.838	0.879	0.964
university	0.006	0.004	0.021	0.009	0.720	0.079	0.767	0.076	0.554	0.273
secondary	0.242	0.270	0.267	0.291	0.404	0.508	0.175	0.946	0.527	0.527
Own Degree	4.504	5.381	5.268	5.202	0.001	0.002	0.002	0.676	0.389	0.780
Eigen	0.009	0.012	0.014	0.014	0.122	0.041	0.035	0.473	0.409	0.986
Between	247.438	427.958	382.352	382.730	0.005	0.006	0.014	0.337	0.423	0.993
Brahmin	0.061	0.085	0.086	0.107	0.560	0.491	0.303	0.921	0.390	0.211
Cheetri	0.205	0.145	0.144	0.150	0.408	0.347	0.385	0.979	0.910	0.876
Dalit	0.048	0.028	0.012	0.009	0.467	0.172	0.157	0.404	0.382	0.687
Tamang	0.228	0.323	0.284	0.321	0.306	0.528	0.339	0.277	0.962	0.334
Newar	0.443	0.371	0.403	0.393	0.574	0.764	0.711	0.328	0.561	0.678
Other caste	0.017	0.048	0.070	0.021	0.137	0.046	0.645	0.530	0.240	0.114
Investment Aspirations	2.74e+05	3.29e+05	3.60e+05	4.28e+05	0.567	0.537	0.185	0.831	0.477	0.684
Income Aspirations	75609.254	72021.422	1.14e+05	1.12e+05	0.917	0.224	0.570	0.460	0.315	0.983

Notes: We look at balance across Control, Treatment 1, Treatment 2 and Treatment 3.

Table B.3: Balance test for friend type

Table B.4: Orthogonality Table

	1	2	3	4	(1) vs. (2), p-value	(1) vs. (3), p-value	(1) vs. (4), p-value	(2) vs. (3), p-value	(2) vs. (4), p-value	(3) vs. (4), p-value
peer age	38.091	37.705	38.092	38.765	0.764	1.000	0.616	0.739	0.418	0.535
peer caste	2.416	2.486	2.523	2.584	0.675	0.578	0.309	0.826	0.489	0.628
peer degree	7.182	4.695	6.394	3.718	0.000	0.019	0.000	0.000	0.002	0.000
peer eigen	0.021	0.012	0.017	0.008	0.000	0.432	0.000	0.180	0.101	0.011
peer educ	1.169	1.143	1.028	0.919	0.847	0.312	0.066	0.377	0.090	0.392
peer marital	0.987	1.010	0.991	0.973	0.763	0.951	0.816	0.714	0.448	0.613
peer income	28551.948	37061.905	23952.294	23987.691	0.090	0.272	0.263	0.072	0.071	0.992
age	37.208	38.352	37.495	39.201	0.432	0.871	0.107	0.506	0.547	0.182
caste	2.481	2.438	2.661	2.483	0.797	0.268	0.988	0.095	0.768	0.050
Degree	4.455	6.695	3.431	5.886	0.000	0.001	0.000	0.000	0.020	0.000
Eigen	0.013	0.018	0.007	0.015	0.003	0.016	0.472	0.000	0.499	0.012
Education	1.182	1.133	0.954	0.973	0.780	0.171	0.163	0.288	0.179	0.897
married	0.961	1.029	0.963	0.993	0.327	0.971	0.487	0.196	0.528	0.473
income	39084.416	29338.095	22181.954	25282.772	0.229	0.057	0.135	0.108	0.363	0.209
N	77	105	109	149						

Notes: We look at balance across the different pair types. 1- friendcentral 2-friendnoncentral 3-nonfriendcentral 4-nonfriendnoncentral

C Endline Results

Table C.1: Who is central?

VARIABLES	Own Degree
Age	-0.0127
	(0.00998)
Income	5.82e-07
	(2.65e-06)
Caste: Brahmin chhetri	0.826**
	(0.310)
Caste: Newar	-0.0358
	(0.208)
Educated = 1	0.206
	(0.286)
Married	0.954***
	(0.316)
Willingness to Open Non Agr. Business	0.00496
	(0.156)
Risk averse	-0.464***
	(0.140)
Proportion of peers with businesses	0.112
	(0.265)
Aspirations- Monthly Income	-6.79e-07
	(1.46e-06)
Constant	4.904***
	(0.566)
Observations	814

Notes: This regression looks at individual characteristics that determine centrality. Standard errors are robust and clustered at the village level

Table C.2: Impact of Treating Alone

VARIABLES	Aspirations Index	Knowledge Index	Ready to invest	Business Index	Takeup Index
Treatment 1	0.214	0.117	0.256	-0.162	-0.144
	(0.378)	(0.146)	(0.375)	(0.801)	(0.558)
Own Degree	-0.0109	0.00914	0.00141	0.0189	0.0193
	(0.0240)	(0.00686)	(0.00885)	(0.0223)	(0.0199)
t1#Degree	0.0119	0.00239	0.00968	-0.0100	-0.00875
	(0.0304)	(0.00861)	(0.0183)	(0.0417)	(0.0362)
Age	-0.00298	0.00155	-0.00582	-0.0184*	-0.0213**
	(0.00337)	(0.00237)	(0.00444)	(0.00947)	(0.00842)
T1#Age	0.00926	-0.00158	0.00194	0.0192	0.0190*
	(0.00631)	(0.00312)	(0.00617)	(0.0125)	(0.0107)
Income	1.31e-05**	1.71e-06***	2.05e-06***	5.22e-06***	4.69e-06***
	(4.77e-06)	(5.66e-07)	(6.24e-07)	(1.30e-06)	(1.52e-06)
T1#Income	-2.08e-06	-4.03e-07	1.67e-08	3.55e-07	-1.83e-06
	(5.53e-06)	(7.39e-07)	(1.37e-06)	(3.71e-06)	(2.01e-06)
Married	0.108	-0.00231	0.236**	0.428**	0.0952
	(0.0970)	(0.0392)	(0.0970)	(0.178)	(0.180)
T1#married	-0.307*	0.119*	-0.177	-0.189	-0.120
	(0.165)	(0.0642)	(0.181)	(0.411)	(0.219)
Educated	-0.0351	0.119**	0.124	0.131	0.168
	(0.0915)	(0.0452)	(0.0818)	(0.181)	(0.134)
T1#Educated	0.0229	-0.0384	-0.0596	0.119	-0.0553
	(0.137)	(0.0490)	(0.109)	(0.231)	(0.143)
Brahmin/Cheetri	-0.128*	0.0282	-0.0621	-0.126	-0.0388
	(0.0727)	(0.0609)	(0.100)	(0.221)	(0.226)
Newar	-0.125**	-0.0682	0.0554	0.130	-0.0315
	(0.0533)	(0.0487)	(0.0618)	(0.137)	(0.153)
T1#Caste=Brahmin/Cheetri	-0.0185	-0.0614	-0.0984	-0.174	-0.111
	(0.177)	(0.0628)	(0.130)	(0.308)	(0.278)
T1#Caste= Newar	0.0211	0.0223	-0.178	-0.365	0.00283
	(0.186)	(0.0562)	(0.110)	(0.232)	(0.196)
Baseline income asp	2.81e-06**	-3.22e-07	-3.86e-08	-2.91e-07	5.74e-07
	(1.27e-06)	(5.11e-07)	(4.71e-07)	(1.11e-06)	(6.63e-07)
T1#Baseline Income Aspirations	-1.83e-06	3.16e-07	-8.29e-07	-1.05e-06	-5.16e-07
	(1.53e-06)	(5.43e-07)	(6.58e-07)	(1.70e-06)	(9.67e-07)
Risk Aversion = 1	0.0868	-0.0235	-0.0119	-0.00525	-0.0882
	(0.0771)	(0.0295)	(0.0458)	(0.104)	(0.105)
T1#Risk Aversion	-0.331**	0.0338	0.00957	0.0368	0.0681
	(0.122)	(0.0413)	(0.0726)	(0.162)	(0.127)
Constant	-0.314	0.505***	0.623**	-0.262	0.322
	(0.195)	(0.116)	(0.250)	(0.477)	(0.421)
Observations	496	496	492	493	485

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: This regression treats the control group as the base category. Standard errors are robust and clustered at the village level

Table C.3: Impact of training with Different Peer Types, controlling for Peer Characteristics

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Aspirations Index	Knowledge Index	Ready to invest	Business Index	Takeup Index
friendcentral	0.115	-0.0634	0.102	0.229	-0.219
	(0.222)	(0.378)	(0.158)	(0.383)	(0.233)
friendnoncentral	-0.0338	-0.0561	0.0538	0.121	-0.317
	(0.237)	(0.336)	(0.139)	(0.349)	(0.200)
nonfriendcentral	0.0204	-0.0117	0.0308	0.108	-0.234
	(0.250)	(0.389)	(0.159)	(0.358)	(0.243)
nonfriendnoncentral	-0.0777	-0.0285	0.0567	0.0864	-0.243
	(0.218)	(0.326)	(0.125)	(0.343)	(0.191)
Constant	-0.272	3.814***	1.008***	-0.0623	0.494***
	(0.159)	(0.197)	(0.103)	(0.207)	(0.153)
Observations	682	669	680	680	668
friendnoncentral==friendcentral	0.123	0.966	0.372	0.325	0.300
friendnoncentral==nonfriendnoncentral	0.504	0.828	0.712	0.605	0.454
friendnoncentral==nonfriendnoncentral	0.431	0.784	0.943	0.920	0.405
central==noncentral	0.0648	0.974	0.814	0.516	0.535
friend==nonfriend	0.251	0.658	0.349	0.270	0.601

Notes: This regression treats Treatment 1 as the base category. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is central when the peer is more central than them. A friend/nonfriend is noncentral when the peer is less central. Standard errors are robust and clustered at the village level

D Heterogeneity

Table D.1: Heterogeneity by Baseline Willingness to Open a Business

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Aspirations Index	Knowledge Index	Ready to invest	Business Index	Takeup Index
Treatment 1 (T1)	0.107	0.280***	0.0872	0.349**	0.493***
	(0.0892)	(0.0671)	(0.0707)	(0.139)	(0.124)
Treated in a pair (T2)	-0.0639	0.259***	0.106	0.325**	0.472***
	(0.0708)	(0.0668)	(0.0686)	(0.137)	(0.115)
Treated in a pair+ connection module (T3)	-0.0513	0.250***	0.0979	0.328***	0.391***
	(0.0694)	(0.0679)	(0.0608)	(0.110)	(0.106)
Willing to open business	-0.0350	0.0365	0.157***	0.360***	0.420***
	(0.0723)	(0.0330)	(0.0436)	(0.0842)	(0.0888)
T1#Willing to open business	-0.106	-0.0106	-0.0217	-0.205	-0.239*
	(0.106)	(0.0376)	(0.0771)	(0.147)	(0.126)
T2#Willing to open business	0.119	-0.0105	-0.0265	-0.300*	-0.283**
	(0.106)	(0.0376)	(0.0773)	(0.161)	(0.123)
T3#Willing to open business	0.119	0.0212	0.0454	0.00683	-0.134
	(0.108)	(0.0336)	(0.0648)	(0.144)	(0.122)
Constant	-0.00903	0.564***	0.642***	-0.497***	-0.388***
	(0.0358)	(0.0663)	(0.0356)	(0.0720)	(0.0884)
Observations	962	962	957	958	945
R-squared	0.006	0.222	0.051	0.052	0.097

Notes: This regression treats the control as the base category. Willingness to open business is a dummy variable that is one if the individual reported willingness. Standard errors are robust and clustered at the village level

Table D.2: Heterogeneity by proportion of friends who have opened businesses

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Aspirations Index	Knowledge Index	Ready to invest	Business Index	Takeup Index
Treatment 1 (T1)	0.0505	0.273***	0.0553	0.174	0.315***
	(0.0673)	(0.0677)	(0.0569)	(0.115)	(0.0876)
Treated in a pair (T2)	-0.0236	0.241***	0.0974**	0.213**	0.352***
	(0.0699)	(0.0696)	(0.0447)	(0.104)	(0.0852)
Treated in a pair+ connection module (T3)	0.0117	0.257***	0.141***	0.332***	0.310***
	(0.0605)	(0.0711)	(0.0489)	(0.106)	(0.0949)
Prop peer business	-0.159	0.0185	0.165*	0.245	-0.165
	(0.132)	(0.0774)	(0.0850)	(0.190)	(0.218)
T1#Prop peer business	-0.131	-0.00587	0.0778	0.264	0.392
	(0.187)	(0.101)	(0.140)	(0.329)	(0.250)
T2#Prop peer business	0.157	0.0974	-0.0838	-0.0142	0.0348
	(0.203)	(0.0860)	(0.106)	(0.234)	(0.272)
T3#Prop peer business	0.0488	0.0472	-0.111	0.00540	0.242
	(0.256)	(0.0985)	(0.134)	(0.306)	(0.305)
Constant	0.00607	0.581***	0.687***	-0.369***	-0.184***
	(0.0327)	(0.0676)	(0.0289)	(0.0621)	(0.0643)
Observations	1,151	1,151	1,146	1,147	1,134
Treatment 1==2	0.390	0.185	0.511	0.789	0.651
Treatment 2==3	0.691	0.588	0.510	0.414	0.632
Treatment 1==3	0.655	0.489	0.136	0.258	0.954

Notes: This regression treats the control as the base category. Prop peer business is a variable that contains what proportion of the individual's friends are entrepreneur. Standard errors are robust and clustered at the village level

Table D.3: Heterogeneity by Baseline Degree

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Aspirations Index	Knowledge Index	Ready to invest	Business Index	Takeup Index
Treatment 1 (T1)	-0.0831	0.203***	0.0809	0.295	0.531***
	(0.138)	(0.0528)	(0.0942)	(0.211)	(0.190)
Treated in a pair (T2)	-0.0832	0.236***	0.136*	0.467***	0.518***
	(0.136)	(0.0529)	(0.0669)	(0.156)	(0.170)
Treated in a pair + connection module (T3)	0.209	0.258***	0.146**	0.345**	0.433**
	(0.132)	(0.0543)	(0.0604)	(0.157)	(0.167)
Degree	0.00992	-0.00216	0.0155**	0.0466**	0.0493**
	(0.0184)	(0.00800)	(0.00733)	(0.0211)	(0.0180)
T1#Degree	0.0208	0.0132	-0.00487	-0.0225	-0.0350
	(0.0237)	(0.00874)	(0.0140)	(0.0339)	(0.0262)
T2#Degree	0.0145	0.00454	-0.0109	-0.0525	-0.0350
	(0.0236)	(0.00910)	(0.0113)	(0.0317)	(0.0231)
T3#Degree	-0.0347	0.00151	-0.00471	-0.00606	-0.0207
	(0.0244)	(0.00856)	(0.00906)	(0.0252)	(0.0231)
Constant	-0.0659	0.594***	0.639***	-0.551***	-0.444***
	(0.0872)	(0.0494)	(0.0463)	(0.119)	(0.136)
Observations	1,173	1,173	1,168	1,169	1,154
Treatment 1==2	0.999	0.358	0.597	0.462	0.936
Treatment 2==3	0.0799	0.433	0.896	0.553	0.574
Treatment 1==3	0.0349	0.0838	0.504	0.833	0.446

Notes: This regression treats the control as the base category. Degree is a variable that contains how many friends an individual has. Standard errors are robust and clustered at the village level

Table D.4: Heterogeneity by Baseline Aspirations

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Aspirations Index	Knowledge Index	Ready to invest	Business Index	Takeup Index
friendcentral	0.111	0.231	0.0844	0.0906	0.132
	(0.164)	(0.267)	(0.0976)	(0.209)	(0.1000)
Income Aspiration	1.06e-07	-5.86e-07***	7.59e-09	-4.42e-07**	1.44e-07**
	(2.25e-07)	(1.26e-07)	(1.33e-07)	(1.91e-07)	(5.54e-08)
friendcentral#Income Aspiration	-9.85e-07	-3.20e-06	2.93e-07	1.14e-06	-1.60e-06*
	(2.78e-06)	(4.23e-06)	(6.95e-07)	(1.37e-06)	(8.15e-07)
friendnoncentral	-0.131	0.0512	0.0476	0.0436	-0.0663
	(0.0916)	(0.143)	(0.0521)	(0.130)	(0.0978)
friendnoncentral#Income Aspiration	1.95e-06***	-5.96e-07*	1.33e-07	7.43e-07**	-5.39e-07***
	(2.96e-07)	(3.21e-07)	(1.75e-07)	(3.58e-07)	(1.42e-07)
nonfriendcentral	-0.126	-0.0544	-0.000110	-0.0161	0.0228
	(0.0747)	(0.134)	(0.0565)	(0.128)	(0.0825)
nonfriendcentral#Income Aspiration	-1.74e-07	5.80e-07***	-8.28e-08	3.71e-07*	-1.21e-07**
	(2.23e-07)	(1.30e-07)	(1.35e-07)	(1.93e-07)	(5.72e-08)
nonfriendnoncentral	-0.0848	-0.0955	-0.0134	-0.115	-0.0701
	(0.0819)	(0.133)	(0.0436)	(0.118)	(0.0896)
nonfriendnoncentral#Income Aspiration	1.34e-07	-1.83e-07	4.07e-07	1.15e-06*	3.46e-07*
	(4.21e-07)	(5.45e-07)	(2.52e-07)	(6.61e-07)	(1.88e-07)
Constant	0.0316	4.042***	0.789***	-0.0672	0.184***
	(0.0562)	(0.0809)	(0.0414)	(0.0853)	(0.0465)
Observations	526	517	524	524	514

Notes: This regression treats Treatment 1 as the base category. friend includes pairs that have social distance less than two and nonfriend includes pairs with social distance greater than two. A friend/nonfriend is central when the peer is more central than them. A friend/nonfriend is noncentral when the peer is less central. Income Aspiration is a variable that contains monthly income aspiration. Standard errors are robust and clustered at the village level

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