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A Foot in the Door: Field-experiments on Entrepreneurs' Network Activation Strategies for Investor Referrals

Jared Nai
Singapore Management University, jarednai@smu.edu.sg

Yimin Lin
Singapore Management University, ymlin@smu.edu.sg

Reddi Kotha
Singapore Management University, reddikotha@smu.edu.sg

Balagopal (Bala) Vissa*
INSEAD, Balagopal.vissa@insead.edu
Corresponding author

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Research summary: We investigate entrepreneurial network activation – the processes by which entrepreneurs select specific contacts from their existing personal network and persuade the selected contacts to provide referrals to access targeted early-stage investors (venture capitalists or angel-investors). We differentiate between selection of entrepreneur-centric contacts versus investor-centric contacts. We also distinguish between persuasion tactics that induce contacts' cooperation through promises of reciprocity versus offers of monetary incentives. We conducted two field-experiments in India and one in Singapore. Our primary field-experiment involved 42 Singapore-based entrepreneurs seeking referrals from 684 network contacts to reach a panel of 4 investors. Our evidence suggests that selecting investor-centric contacts leads to greater referral success; in addition, persuasion by promising reciprocity also leads to greater referral success.

Managerial summary: A vital first-step for resource-starved entrepreneurs seeking funding for their scalable business-idea is to obtain referrals to early-stage investors, since such investors pay more attention to referrals from trusted contacts. Using field-experiments, we examine how entrepreneurs' choices in selecting network contacts and persuading them to provide referrals drive their access to investors. Results suggest that compared to the habitual pattern of requesting referrals from contacts proximate to themselves, entrepreneurs are about 6 times more likely to secure successful referrals when they select investor-centric contacts for referral requests. Further, actively persuading contacts by promising future reciprocity results in about 3 times higher likelihood of securing successful referrals. Our findings show how thoughtful activation of existing contacts can enable even modestly-connected entrepreneurs to gain investor access.

Keywords: Entrepreneurship; Social Networks; Network Activation; Venture Financing; Field Experiments

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INTRODUCTION

A key insight from the voluminous research on entrepreneurial networks is that better-connected entrepreneurs are more successful at resource mobilization (Aldrich, 1999), thereby mitigating the liability of newness and smallness of their ventures (Stinchcombe, 1965). Much entrepreneurial networks research however takes a structural approach, focusing on the network size and density of an entrepreneur's personal network and linking these attributes with outcomes such as securing capital or alliance partners (cf. reviews by Hoang & Yi, 2015; Wouter, Arzlanian & Elfring, 2014). Entrepreneurs' efforts to activate their networks to gain access to resource-holders is treated as a black-box (Clough, Fang, Vissa, & Wu, 2019). We shed light on the network activation process by which an entrepreneur selects a specific contact in her personal network and persuades the selected contact to provide referrals connecting her to targeted resource-holders such as early-stage investors.

We conceptualize entrepreneur's contact selection process by distinguishing between contacts selected based on social proximity to the entrepreneur (entrepreneur-centric) versus targeted investors (investor-centric). We then draw on social exchange theory's notion of reciprocal and negotiated exchange (Blau, 1964; Emerson, 1972) to conceptualize reciprocity and monetary incentives as two active persuasion tactics that entrepreneurs utilize to induce referrals from network contacts to secure pitch meetings with targeted investors.

We tested our conceptual model across three field-experiments (using within-subject randomization) in India and Singapore. Our primary field-experiment involved 42 Singapore-based entrepreneurs looking for early-stage funding seeking referrals from 684 of their network contacts to reach a panel of 4 investors. Entrepreneurs first selected contacts through entrepreneur-centric and investor-centric cognitive search. Subsequently, entrepreneurs' digital messages to

their selected network contacts were randomly assigned to one of the persuasion tactics (reciprocity, monetary incentive, or a baseline control condition) using within-subject randomization within each entrepreneur's list of selected contacts to account for heterogeneity across entrepreneurs. Results suggest that the odds of securing successful referrals to investors improve when entrepreneurs select investor-centric contacts and when entrepreneurs use the active persuasion tactic of reciprocity. Sample size restrictions prevent estimation of the multiplicative effects of contact selection and contact persuasion on referral success.

ENTREPRENEURIAL NETWORKS AND RESOURCE MOBILIZATION

Conceptualizing contact selection

Entrepreneur's success in securing a venture pitch meeting with a targeted investor through a selected network contact entails two distinct steps. First, the selected contact ought to be connected to the entrepreneur by a pre-existing tie of sufficient strength (Granovetter, 1983; Krackhardt, 1992) to have a baseline propensity to favorably consider the referral request. Second, because social search chains rarely terminate at their target due to exponential attenuation as chain length increases (Dodds, Muhamad & Watts, 2003), referral success also requires that the specific selected contact is socially proximate to the targeted investor[1]. This allows us to differentiate between cognitive search cued by social proximity either to the focal entrepreneur or to targeted investors as alternative cognitive search pathways for a focal entrepreneur to select specific network contacts (see Figure 1).

[1] If the entrepreneur is endowed with a network contact that is both strongly tied to entrepreneur **and** well connected in the entrepreneurial ecosystem and thus socially proximate to the target as well, then such influential access would lead to successful referrals. We control for entrepreneurs' social structural endowment in our analyses.

When the entrepreneur's cognitive search for contacts (Smith, Menon, & Thompson, 2012) brings entrepreneur-centric sub-sections of her personal network into salience, the selected entrepreneur-centric contact will likely have sufficient emotional intensity in her relationship with the entrepreneur to pay attention to the request and be motivated to assist (Obukhova, 2012). However, the focal selected entrepreneur-centric contact will likely be socially distal from the targeted investor [2], which necessitates social search chains of longer length. On the other hand, contacts selected through cognitive search that bring investor-centric sub-sections of the average entrepreneur's personal network into salience will likely have a relationship of sufficient strength with the investor that increases the odds of securing investor's acknowledgement of the referral request from the selected contact – should she pay heed to entrepreneur's referral request to begin with. But it is less clear whether the relationship between the average entrepreneur and her selected investor-centric contact is of sufficient strength to motivate the selected investor-centric contact to pay heed to her request and be sufficiently motivated to assist her.

Entrepreneur-centric contacts' relationship with the focal entrepreneur is likely to be of sufficient strength to have a baseline propensity to attend to entrepreneur's referral request and take action. However, since entrepreneur-centric contacts are socially distant from the targeted investors, they need longer social chain lengths to reach the target. Dodds, Muhamad and Watts (2003) show that premature termination of unfolding social search chains is largely driven by the length of the chain rather than the strength of the relationship between the chain originator (here the focal entrepreneur) and her initially selected contact. This implies contacts selected through entrepreneur-centric search are less likely to provide successful referrals than contacts selected through investor-centric search. More formally:

[2] This reasoning applies to the average entrepreneur but not for entrepreneurs with high social structural endowments, which as mentioned earlier is controlled for empirically in our analyses.

H1: *When an entrepreneur selects network contacts through investor-centric search as opposed to entrepreneur-centric search, the entrepreneur secures a greater volume of successful referrals to targeted investors.*

Conceptualizing contact persuasion

Social exchange theorists (Blau, 1964; Emerson, 1981; Molm, 1994) propose that exchanges between two individuals in a pre-existing relationship (such as between an entrepreneur and her selected network contact) occur within relations of mutual dependence (Emerson, 1972). Exchanges can take two primary forms— reciprocal and negotiated. In reciprocal exchange, individuals contribute to an exchange (such as giving assistance), without knowing when and to what extent the counterparty (or a third party) will reciprocate. Conversely, in negotiated exchange, individuals know the precise terms of exchange—what each is getting for what each is giving—before making it. We sharpen our theoretical focus by examining a specific type of negotiated exchange – an unambiguous offer of monetary incentives by the entrepreneur to a selected network contact in return for the contact rendering assistance. We thus conceptualize promises of reciprocity and monetary incentives as two active persuasion tactics that entrepreneurs can deploy to induce successful referrals from the selected network contacts, when compared to the baseline of not using any active persuasion tactics.

We expect that the promise of future reciprocity is likely to increase an average selected contact's motivation to react favorably to entrepreneur's referral request compared to baseline, which will lead to more successful referrals.

H2a: *When an entrepreneur persuades contacts through offers of reciprocity (compared to a baseline of no active persuasion tactics), the entrepreneur secures a greater volume of successful referrals to targeted investors.*

We also expect that an average selected contact's reaction to entrepreneur's unambiguous offer of monetary incentives in return for rendering assistance depends on the specific social context – since attitudes towards money and its role in exchange varies across contexts (Baker & Jimerson, 1992; Rose et al. 2019). In social contexts where offers of monetary incentives are not perceived as impolite or illegitimate business practice[3], the average selected contact may react favorably to entrepreneur's active persuasion tactic of offering monetary incentives.

H2b: *When an entrepreneur persuades contacts through offers of monetary incentives (compared to a baseline of no active persuasion tactics), the entrepreneur secures a greater volume of successful referrals to targeted investors.*

METHODS

We conducted three field-experiments (using within-subject randomization) of which our primary field-experiment described here in detail involved 42 Singapore-based entrepreneurs[4]. We partnered with the entrepreneurship institute of a large autonomous university in Singapore, solicited help from several platforms (i.e., incubators, entrepreneurship web-platforms), and scraped contact details of more than 10,000 newly registered companies to recruit entrepreneurs for the study as part of an online entrepreneurship workshop on leveraging social networks to connect to a panel of early-stage investors. All entrepreneurs who participated were offered USD$30 gift vouchers as an honorarium. Entrepreneurs who gain a successful referral to any investor on the panel within the stipulated three-day window following the day of the workshop

[3] Offering monetary incentives (termed referral or finders' fee) is a legitimate business practice in our Asian setting.
[4] Our two prior field experiments were with accelerators in two Indian cities: Hyderabad and Bangalore. The research design for the two studies did not include the stimulus to generate list of contacts by entrepreneur-centric and investor-centric and only included stimulus to vary persuasion messages. Hence, the two studies cannot be used to test the hypothesis on the main effect of social proximity (H1). Also, the two studies had smaller sample sizes (14 and 20 entrepreneurs respectively). We report the results of these two prior studies in Online Appendix A5.

secured the opportunity to pitch to the investor(s) and receive feedback. Data and syntax for all results in this study is available online at https://osf.io/cpmde/.

Study design

At the beginning of the online workshop, entrepreneurs were briefed in detail regarding the design of the study. Entrepreneurs were specifically informed that they would have to nominate contacts from their personal networks for assistance by forwarding their digital referral message to the investor panel. The entrepreneurs did not know the identities of the investors on our 'mystery panel' and were informed that the identity of our panel investors would be revealed later during the workshop. Furthermore, the entrepreneurs were also told that the workshop organizers would provide them with templated referral messages that they could not alter. The data collection procedure is described in Appendix 1.

Entrepreneur vs Investor Centric Contacts

We followed prior research on entrepreneur-centric networks that use name generator questions to identify a focal entrepreneur's direct social ties (Burt, 1992; Marsden & Campbell, 1984). In particular, we utilize three name generator questions used in prior networks research to identify an entrepreneur's socially proximate contacts (Vissa & Bhagavatula, 2012).

We asked the entrepreneurs to report names of individuals, external to the venture, they relied on (a) for referring or endorsing their business to others, (b) as sources of trusted support when faced with a crisis or emergency in their business, and (c) as sources of valuable advice and counsel on crucial business decisions. For each of the questions, entrepreneurs could list between three to five contacts, with overlap in names across the questions. The contacts elicited by the three questions were pooled and duplicate names removed. We classified this set of selected network contacts as *entrepreneur-centric contacts*. Next, following the disclosure of the identity and

background information of the targeted investors, entrepreneurs were then asked to list names of new contacts not already named in ‘entrepreneur-centric contacts' to help them connect to these investors. We classified this new set of selected contacts as ‘*investor-centric contacts*.' Combining these two sets yielded the full set of selected network contacts for a focal entrepreneur.

Persuasion Templates

The focal entrepreneur’s full set of selected contacts was first stratified based on closeness (to ensure no differences on closeness) and then randomly assigned to receive one of three templated messages: a) *baseline*, b) *reciprocity*, and c) *monetary incentives*. The *baseline* condition provides information on the exercise to the contact in an objective manner, including the specific referral request. The *reciprocity* condition provides the same information in the *baseline* condition and adds a promise of future reciprocity. In the *monetary incentives* condition, in addition to the information in the *baseline* condition, a "finder's fee" of 1% of the funds raised capped at SGD 1,000 was proposed. Appendix 2 provides details of the text used for all three message templates. We present analysis of the manipulation checks for the three persuasion tactics templates in online Appendix A1.

Participants

Of the 64 entrepreneurs who initially participated in the study, 10 dropped out (4 exited the study without completing the survey, and 6 completed the survey but informed the research team that they would like to withdraw). Abiding by Institutional Review Board (IRB) guidelines, no data collected on those who withdrew from the study was used for any analysis. Following IRB guidelines, an entrepreneur was excluded from the sample since he was a minor (14-years old). An entrepreneur experienced a system glitch when nominating contacts and did not provide information about the contacts. Ten entrepreneurs completed all the study steps but did not forward

or copy the research team on the messages sent and did not respond to the request from the research team for updates. The data from these 10 entrepreneurs were excluded from all the main analysis. Including the data from the 10 entrepreneurs did not change the results of the hypotheses testing. The final sample for the analysis consists of 684 contacts nominated by 42 entrepreneurs.

Dependent variable.

Our dependent variable is the count of successful referrals to panel investors that originated from a selected contact of the entrepreneur. Therefore, the dependent variable ranges from 0 (no successful referral to any investor) to 4 (successful referrals to all four investors). We code a digital message as a successful referral only if the investor informs the research team that the message which reached them came from a person whom the investor would respond to. We coded 40 such cases as successful referrals that originated from the 684 contacts of entrepreneurs. Out of the 40 successful referrals, investors reported to the research team that they would respond immediately to 22 messages and would respond in due course to the remaining 18 messages. Furthermore, investors reported receiving 6 messages from individuals that they would normally ignore – which we coded as unsuccessful referrals. Additional analyses were done by re-classifying these 6 cases as successful referrals and these analyses yielded the same pattern of findings.

Explanatory variables

We created an indicator variable *investor-centric contact* that was coded as '1' for those selected contacts in the investor-centric set (370 contacts) and coded as '0' for those selected contacts in the entrepreneur-centric set (314 contacts). We also created three indicator variables to represent the three persuasion tactics templates: *baseline, reciprocity* and *monetary incentive*.

Control variables

We run models without the control variables to know the effect of investor-centric versus entrepreneur-centric difference in referral probability. Then, we add control variables (defined below) to partial out other aspects of the network that may influence referral probability. We control for heterogeneity in entrepreneurs' social capital endowment through a variable that captures entrepreneurs' direct access to a central player (Burt, 1992). We define *influential access* as the extent to which entrepreneurs' relationships with their network contacts provides them unfettered access to resource holders in the entrepreneurial eco-system. We measure influential access as the product of entrepreneur's closeness to a focal network contact and the extent to which the focal network contact is embedded (i.e. central) in the entrepreneurial eco-system. We measured the degree of *closeness* of the entrepreneur with their network contacts with the question "How close are you to <contact's name>?" answered on a seven-point Likert scale ranging from 1=Not at all close to 7=Extremely close. We measured the *embeddedness* of each contact using the question "How well connected is <contact's name> in the entrepreneurial community here in Singapore?" answered on a seven-point Likert scale ranging from 1=Not at all embedded to 7=Extremely embedded. We then constructed our measure of *influential access* as *closeness* X *embeddedness*.

We asked the entrepreneurs the number of years they had known (*years known*) each selected contact. As the entrepreneurs may have a good sense of whom in their network will be more likely to connect them with investors, we asked entrepreneurs to report the subjective probability each selected contact will successfully reach each of the four specific panel investors on a five-point Likert scale ranging from 1=Not likely at all to 5=Extremely likely. As our analysis is at the focal contact level, we computed the mean of the four probabilities as entrepreneur's estimate of a focal selected contact's *probability of reaching* investors.

Estimation strategy

The dependent variable for the analysis is the count of successful referrals originated by each network contact activated by a focal entrepreneur. Since the outcome is a count variable and is over-dispersed (mean=0.06, SD=0.34), we use negative binomial regression to test the hypotheses. Our within-individual research design with stratified random assignment of message templates to contacts allows for causal inference. We controlled for strata closeness with assigned weights as we conducted stratified sample random assignment of message templates according to closeness (see online Appendix A2 for a detailed description). Heterogeneity in entrepreneurs' social capital endowments may bias inference since better-endowed entrepreneurs may select contacts that are more likely to generate successful referrals to investors. We control for heterogeneity in social capital endowment through our measures of *influential access*, in addition to *years known* and *probability of reaching*.

RESULTS

Table 1A reports the descriptive statistics of all variables used in our hypothesis testing. The 684 contacts nominated by 42 entrepreneurs originated a total of 40 successful referrals. Table 1B reports the distribution and simple t-tests of our dependent variable (count of successful referrals) across treatment conditions for contact selection (investor-centric versus entrepreneur-centric) and contact persuasion (reciprocity, monetary incentive, and baseline). Online Appendix A3 provides details of all t-tests reported in the Table 1B; these simple t-test results support hypothesis 1 on the positive effect of investor-centric contacts (t=2.34, p=.02) on count of successful referrals. Hypotheses H2a and H2b receive no support. As simple t-tests do not allow for clustering of observations by entrepreneurs, inclusion of control variables, and appropriate

accounting for the (over-dispersed) count nature of our outcome variable, we use a negative binomial estimation approach to test our hypotheses.

Table 2 reports the negative binominal estimation of the count of successful referrals originated by 684 contacts after standard errors were clustered by entrepreneurs and inclusion of control variables. In model 1, we introduce the indicator variable *investor-centric contact* that denotes whether a selected contact was the result of an investor-centric search versus an entrepreneur-centric search; we also introduce indicators for the type of persuasion tactic (*baseline* is the omitted category which we compare to *reciprocity* and *monetary incentive* conditions). Model 2 reports the base model with only control variables: *years known* (B=-0.16, p=.01), entrepreneurs' subjective estimate of the contact's *probability of reaching* investors (B=1.41, p=.00) and entrepreneurs' social capital endowments proxied by *influential access* (B=0.04, p=.09). In model 3, we combine all predictor variables and control variables. The positive coefficient for *investor-centric contact* (without controls, B=1.44, p=.00; with controls, B=1.73, p=.00) suggests investor-centric search for contacts is more likely to yield a higher count of successful referrals to investors, thus supporting H1 (see Figure 2A). The probability for reaching investors increases from .029 to .161 (with controls), an increase of 5.55 times.

In addition, the coefficient for *reciprocity* (without controls, B=0.93, p=.09; with controls, B=0.98, p=.07) suggests a mildly positive relationship between the use of reciprocity as a persuasion tactic (compared to baseline) and the count of successful referrals, weakly supporting H2a (see Figure 2B). The probability for reaching investors increases from .060 to .159 (with controls), an increase of 2.65 times. The coefficient of *monetary incentive* (without controls, B=0.64, p=.20; with controls, B=0.55, p=.24) suggests no support for our H2b. Repeating the

analysis estimating the likelihood that a contact will contact to a particular investor using Logit models yields similar pattern of support for the hypotheses (see online Appendix A4).

Additional analysis: Pooled sample

We estimated the sample size required for the Singapore study based on the initial study conducted in Hyderabad, India (see online Appendix A6 for sample size calculation). Ex-post sensitivity analysis suggests that if we assume the Hyderabad study results were unusual, then we may have needed a much larger sample size for our Singapore study. Although beset with many limitations, one analysis could be to pool the data from the three studies to increase sample size[5]. In the pooled sample we check if the persuasion strategies regulate network activation. We describe the t-tests and negative binomial regression analysis of the hypotheses in the pooled sample in online Appendix A7. Table A7-1 of online Appendix A7 reports descriptive statistics for the pooled sample while Table A7-2 reports the simple t-test conducted on the pooled sample. The t-tests support hypothesis 1 on the positive effect of selecting investor-centric contacts (t=3.62, p<.00) and hypothesis 2a on the positive effect of reciprocity as a persuasion tactic (t=1.95, p=.05).

We repeated the negative binomial regression analysis in the pooled sample (see Table A7-3 of online Appendix A7). We find that investor-centric contacts (in model 1 without controls, B=1.48, p<.00; in model 3 with controls, B=1.63, p<.00) have a positive effect on count of successful referrals as predicted by hypothesis 1. In addition, the positive co-efficient of *reciprocity* in model 1 (without controls) (B=0.81, p=.03) and in model 3 (with controls) (B=0.71, p=.06) provide reasonable support for hypothesis 2a.

Taken together, we conclude that patterns in our data are consistent with hypothesis 1 that investor-centric contacts are more likely than entrepreneur-centric contacts in securing successful

[5] We thank an anonymous reviewer for suggesting we conduct the pooled analysis.

referrals. In addition, our hypothesis 2a that the persuasion tactic of reciprocity has a positive influence on the count of successful referrals cannot be conclusively rejected in our data.

**** Insert Tables 1a, 1b, & 2 about here***

Though not hypothesized, entrepreneurs' estimation of the probability of reaching investors positively and significantly (Table 2, Model 2, B=1.41, p<.00) predicted the count of successful referrals across all the models. When the probability estimates by entrepreneurs increase from one standard deviation below the mean (.012) to one standard deviation above the mean (.100), the probability of successful referrals increases about 8.33 times. The positive relationship between probability estimates by entrepreneurs and successful referrals suggests that entrepreneurs have a good understanding of which social search chains they initiate are likely to be successful.

Limitations and boundary conditions

Limited sample size prevents us from testing whether there is a dominant approach to network activation beyond focusing on investor-centric contacts. Given the constraints of a field experiment of this nature with entrepreneurs, our findings are underpowered (see online Appendix A6). Future research with much larger samples may test fit arguments (e.g.: monetary incentives could be particularly appropriate for investor-centric contacts) by examining the multiplicative effects of contact selection and contact persuasion. In addition, our analyses suggest structural endowment proxied by influential access is an independent pathway to secure referrals to investors. Thus, future work could examine how heterogeneity in a focal entrepreneur's social structural endowments, which may be more diverse for those living in more diverse neighborhoods (Nai, Narayanan, Hernandez, & Savani, 2018), might interact with her network activation actions to regulate her access to valuable resources via referrals - especially for entrepreneurs from traditionally marginalized groups (such as women and minorities).

DISCUSSION

Our field-experiments add to this burgeoning approach to strategy and entrepreneurship research (Anderson et al., 2021; Astebro & Hoos, 2021; Camuffo et al, 2020; Chatterji et al., 2019). We complement prior work that has examined the impact of different types of signals (by customers, intermediaries, other investors) on equity investing (Bapna, 2019) by investigating how network activation, an intermediate step to resource mobilization, influences access to investors. We find that referral success is responsive to the selection of investor-centric contacts. In addition, we find evidence that reciprocity as a persuasion tactic has a positive influence on referrals. Furthermore, social capital endowments proxied by influential access were positively related to successful referrals regardless of persuasion tactic.

Responding to Clough et. al.'s (2019) call for a process perspective on how entrepreneurs get their 'foot in the door' to initiate the first interaction with resource-holders (such as investors or customers), we investigate how entrepreneurs successfully secure access to valued resource-holders by applying the conceptual framework of network cognition to the novel setting of entrepreneurial resource mobilization. Our conceptual distinction between network contact selection based on entrepreneur-centric versus investor-centric search sheds light on how entrepreneurs can differentially activate network resources that are objectively available to them. Our findings suggest it is hard for the average entrepreneur to obtain successful referrals from her contacts; yet, selecting contacts through backward induction from the target is helpful and that phrasing the referral request using reciprocity may be a preferred active-persuasion tactic. Our focus on network activation processes thus complements prior resource mobilization research which examines entrepreneurs' structural endowments (Aldrich, 1999; Kotha & George, 2012).

Our study also joins the debate on the relative primacy of social structure versus actor agency in driving economic outcomes (Hallen, Davis & Murray, 2020; Shipilov et al., 2014; Vissa, 2012). Our results suggest that social structural heterogeneity (i.e., social capital endowment) matters – entrepreneurs with greater influential access secure more successful referrals irrespective of activation tactic. Yet, we provide evidence for agentic action as well - which is particularly important for entrepreneurs that lack high social capital endowments. Interestingly, this pathway could be psychologically costly (Casciaro, Gino & Kouchaki, 2014) since it requires a focal entrepreneur to actively search out of her comfort zone and reach out to investor-centric contacts - who would typically be her "weak ties" (Granovetter, 1973) or actively use explicit persuasion tactics for referral requests.

Finally, our findings also parallel prior research on network-based job search (Granovetter, 1973). As noted earlier, we find evidence for the beneficial effects of the entrepreneur actively soliciting assistance from her weaker ties (investor-centric contacts). In contrast, research on network-based job search highlights serendipitous interactions with weaker ties that leads a job-seeker to a potential job-opportunity. Future research could build on the distinction we make between active, agentic (out-bound) interactions with weaker ties versus the serendipitous (in-bound) interactions with weaker ties. In summary, opening the black-box of resource mobilization actions is crucial for scholars of entrepreneurship, given how little we understand the processes underlying this critical phenomenon. We take a step in this direction by conceptualizing and providing evidence on how entrepreneurs activate their personal networks to access investors.

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REFERENCES

Aldrich HE. (1999). *Organizations Evolving*, Sage Publication, UK

Anderson, S. J., Chintagunta, P., Germann, F., & Vilcassim, N. (2021). Do marketers matter for entrepreneurs? Evidence from a field experiment in Uganda. *Journal of Marketing*, *85*(3), 78-96.

Astebro, T., & Hoos, F. (2021). The effects of a training program to encourage social entrepreneurship. *Strategic Entrepreneurship Journal*. 1-25, DOI: 10.1002/sej.1391

Baker, W. E., & Jimerson, J. B. (1992). The sociology of money. *American Behavioral Scientist*, *35*(6), 678-693.

Bapna, S. (2019). Complementarity of signals in early-stage equity investment decisions: Evidence from a randomized field experiment. *Management Science, 65(2),* 933-952.

Blau, P. M. (1964). *Exchange and power in social life.* New York: Wiley

Burt R. (1992). *Structural Holes: The Social Structure of Competition*, Harvard University Press: Cambridge, Massachusetts

Camuffo, A., Cordova, A., Gambardella, A., & Spina, C. (2020). A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. *Management Science*, *66*(2), 564-586.

Casciaro, T., Gino, F., & Kouchaki, M. (2014). The contaminating effects of building instrumental ties: How networking can make us feel dirty. *Administrative Science Quarterly*, *59*(4), 705-735.

Chatterji, A., Delecourt, S., Hasan, S., & Koning, R. (2019). When does advice impact startup performance?. *Strategic Management Journal*, *40*(3), 331-356.

Clough, D. R., Fang, T. P., Vissa, B., & Wu, A. (2019). Turning lead into gold: How do entrepreneurs mobilize resources to exploit opportunities? *Academy of Management Annals*, *13*(1), 240-271.

Dodds, P. S., Muhamad, R., & Watts, D. J. (2003). An experimental study of search in global social networks. *Science*, *301*, 827-829.

Emerson, R. M. (1972). Exchange theory, part II: Exchange relations and networks. *Sociological theories in progress*, *2*, 58-87.

Emerson, R. M. (1981). Social exchange. In M. Rosenberg and R. Turner (Eds.), *Social psychology: Sociological perspective* (pp. 3-24). New York: Basic Books.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, *78*(6), 1360-1380.

Granovetter, M.S. (1983). The Strength of Weak Ties: A Network Theory Revisited. *Sociological Theory*, 1: 201-233

Hallen, B. L., Davis, J. P., & Murray, A. (2020). Entrepreneurial network evolution: Explicating the structural localism and agentic network change distinction. *Academy of Management Annals*, *14*(2), 1067-1102.

Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.

Hoang, H., & Yi, A. (2015). *Network-based research in entrepreneurship: A decade in review*.

Kotha, R., & George, G. (2012). Friends, family, or fools: Entrepreneur experience and its implications for equity distribution and resource mobilization. *Journal of Business Venturing*, 27(5), 525-543.

Krackhardt, D. (1992). The Strength of Strong Ties: The Importance of *Philos* in Organizations. In N. Nohria & R. Eccles (eds.), *Networks and Organizations: Structure, Form, and Action*. Boston: Harvard Business School Press, pp. 216-239

Marsden, P. V., & Campbell, K. E. (1984). Measuring tie strength. *Social forces*, *63*(2), 482-501.

Molm, L. D. (1994). Dependence and risk: Transforming the structure of social exchange. *Social Psychology Quarterly*, 163-176.

Molm, L. D., Whitham, M. M., & Melamed, D. (2012). Forms of exchange and integrative bonds: Effects of history and embeddedness. *American Sociological Review*, *77*(1), 141-165.

Nai, J., Narayanan, J., Hernandez, I., & Savani, K. (2018). People in more racially diverse neighborhoods are more prosocial. *Journal of Personality and Social Psychology*, 114(4), 497-515.

Obukhova, E. (2012). Motivation vs. relevance: Using strong ties to find a job in urban China. *Social Science Research*, *41*(3), 570-580.

Rangan, S. (2000). The problem of search and deliberation in economic action: When social networks really matter. *Academy of Management Review*, *25*(4), 813-828.

Rose, G. M., Merchant, A., Rose, M., Bakir, A., & Martin, D. (2019). Money attitudes and social values. In Gurel-Atay, E., & Kahle, L. R. (Eds.), *Consumer Social Values*, 127-142, Routledge, Taylor & Francis Group, UK.

Shipilov, A., Labianca, G., Kalnysh, V., & Kalnysh, Y. (2014). Network-building behavioral tendencies, range, and promotion speed. *Social Networks* 39, 71-83.

Smith, E. B., Menon, T., & Thompson, L. (2012). Status differences in the cognitive activation of social networks. *Organization Science*, *23*(1), 67-82.

Smith, S. S. (2005). "Don't put my name on it": Social capital activation and job-finding assistance among the black urban poor. *American Journal of Sociology*, *111*(1), 1-57.

Stam W., Arzlanian S., & Elfring, T. (2014). Social capital of entrepreneurs and small firm performance: A meta-analysis of contextual and methodological moderators. *Journal of Business Venturing*, *29*(1), 152-173.

Stinchcombe, A. L. (1965). Social structure and organizations. *Handbook of Organizations*, 142-193.

Vissa, B. (2012). Agency in action: Entrepreneurs' networking style and initiation of economic exchange. *Organization Science*, *23*(2), 492-510.

Vissa, B., & Bhagavatula, S. (2012). The causes and consequences of churn in entrepreneurs' personal networks. *Strategic Entrepreneurship Journal*, *6*(3), 273-289.

Figure 1: Depicting Cognitive Network Search Cued by Social Proximity to Entrepreneur versus Investor

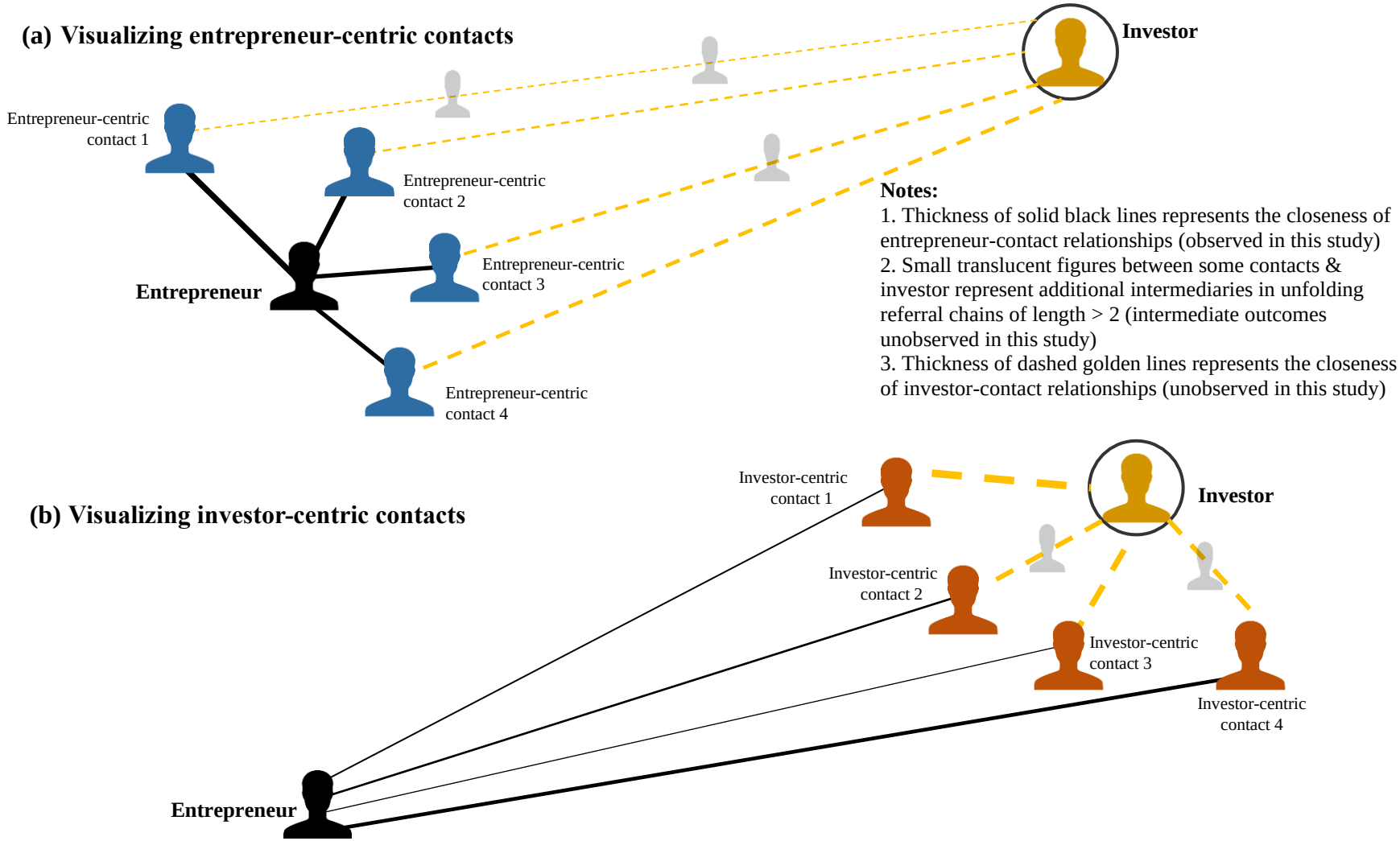
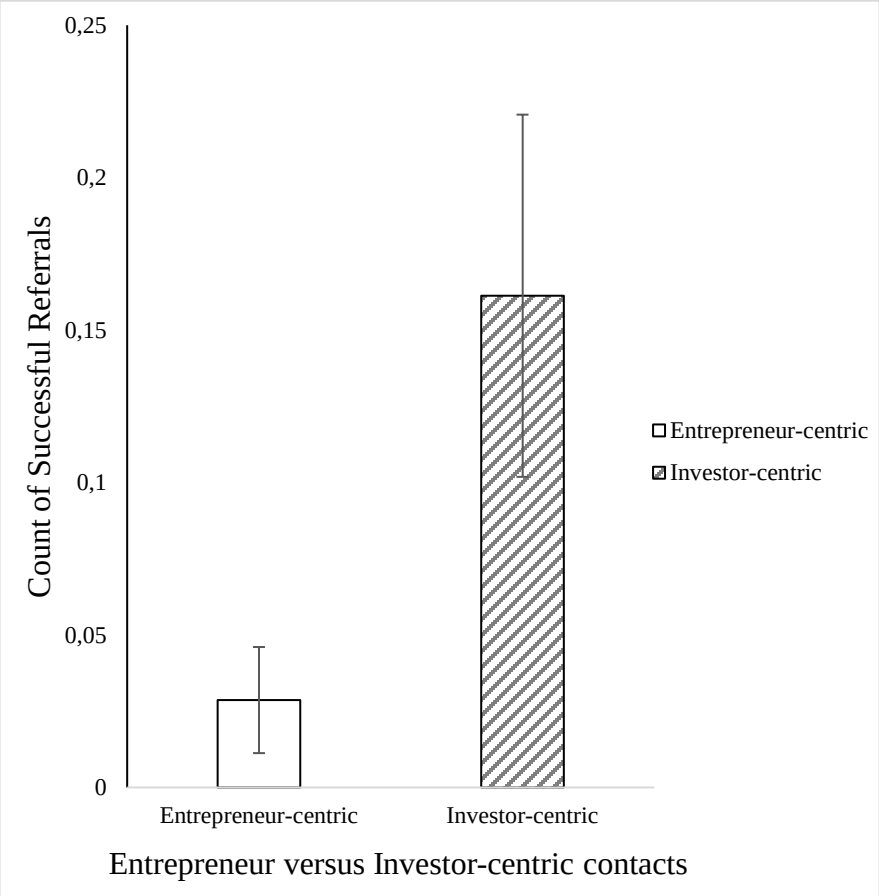


Figure 2A

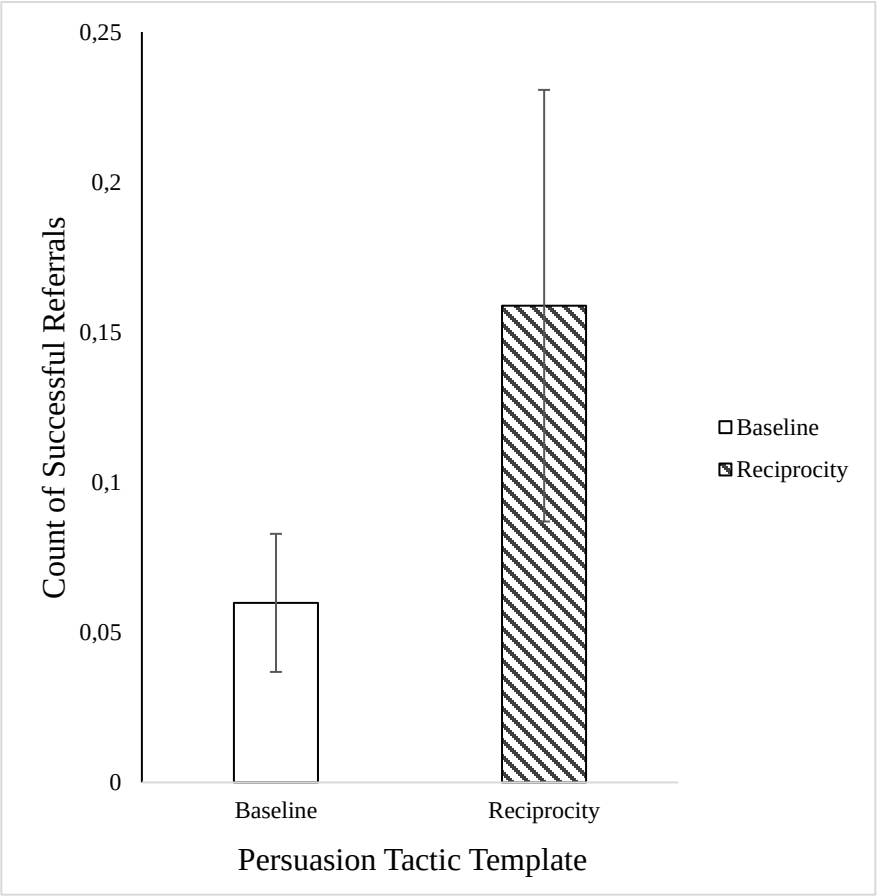
Count of Successful Referrals by Entrepreneur versus Investor Centric contacts



Notes: Error bars denote standard errors. Chart generated using coefficient from margins command from Model 3 in Table 2

Figure 2B

Count of Successful Referrals by Persuasion Tactic Template



Notes: Error bars denote standard errors. Chart generated using coefficient from margins command from Model 3 in Table 2

Table 1a: Descriptive Statistics for Count of Successful Referrals Originated by Activated Network Contacts

Variable	Mean	Std. Dev.	Min	Max
Count of successful referrals	.06	.34	0	3
Years known	6.27	6.88	1	50
Probability of reaching	2.58	.74	1	5
Influential access**	16.27	11.14	1	49
Investor-centric contact	.54	.50	0	1
Reciprocity	.34	.47	0	1
Monetary incentive	.33	.47	0	1
Baseline*	.33	.47	0	1
Close**	3.64	1.91	1	7
Embedded**	4.42	1.68	1	7

N = 684 network contacts - activated by 42 entrepreneurs

* Baseline is the (omitted) comparison condition for the two persuasion tactics of reciprocity and monetary incentive

** Influential access is constructed as close X embedded & controls for heterogeneity in entrepreneurs' social capital endowments

Table 1b: T-tests of Successful Referrals by Contact Selection and Contact Persuasion Tactics

		Entrepreneur-Centric Contacts (a)		Investor-Centric Contacts (b)		Total		(b) – (a) Δ Percentage
		Raw Count	Percentage	Raw Count	Percentage	Raw Count	Percentage	
Baseline (1)	Mean	2	.02	7	.05	9	.04	t=1.01; p=.31
	SD		.14		.31		.25	
	Obs.		100		129		229	
Reciprocity (2)	Mean	6	.05	13	.11	19	.08	t=0.99; p=.33
	SD		.35		.50		.44	
	Obs.		112		118		230	
Monetary Incentive (3)	Mean	0	.00	12	.10	12	.05	t=2.38; p=.02
	SD		.00		.41		.31	
	Obs.		102		123		225	
Total	Mean	8	.03	32	.09	40	.06	t=2.34; p=.02
	SD		.22		.41		.34	
	Obs.		314		370		684	
(1) – (2)		t=-0.89; p=.37		t=-1.06; p=.29		t=-1.30; p=.19		
(1) – (3)		t=1.44; p=.15		t=-0.94; p=.35		t=-0.53; p=.60		
(2) – (3)		t=1.54; p=.12		t=0.21; p=.83		t=0.83; p=.41		

Notes: The table presents the count of successful referrals by contact type (entrepreneur or investor centric) and type of persuasion message (baseline, reciprocity, or monetary incentive).

Table 2: Negative Binomial Estimation of Count of Successful Referrals Originated by Activated Network Contacts

	(1)	(2)	(3)
Years known		-0.16	-0.15
		(0.06)	(0.06)
		[.01]	[.02]
Probability of reaching		1.41	1.24
		(0.44)	(0.38)
		[.00]	[.00]
Influential access		0.04	0.06
		(0.03)	(0.02)
		[.09]	[.01]
Investor-centric contact **(H1)**	**1.44**		**1.73**
	(0.50)		**(0.57)**
	[.00]		**[.00]**
Reciprocity **(H2a)**	**0.93**		**0.98**
	(0.54)		**(0.53)**
	[.09]		**[.07]**
Monetary incentive **(H2b)**	**0.64**		**0.55**
	(0.50)		**(0.46)**
	[.20]		**[.24]**
Log alpha	2.74	2.25	1.96
	(0.37)	(0.30)	(0.40)
Constant	-4.30	-7.00	-8.77
	(0.51)	(1.36)	(1.10)
	[.00]	[.00]	[.00]
Wald Chi^2	13.49	25.10	91.15
Prob > Chi^2	.00	.00	.00
Pseudo-R^2	.04	.12	.16
Log likelihood	-152.91	-139.77	-133.62

Notes: N=684 contacts. The dependent variable is the count of referrals by a contact selected by an entrepreneur. Robust standard errors in parentheses and p-values in square brackets. Standard errors clustered for 42 entrepreneurs. For *reciprocity* and *monetary incentive* condition indicator variables, the (omitted) comparison group is the *baseline* condition. The regression is weighted by "closeness"; see online Appendix A2 for detailed description.

APPENDIX 1

Singapore Field Study Design Steps 1-10

Demographics and background information: **Step 1**: The entrepreneurs provided basic demographic information when they signed up for the workshop. During the workshop, the entrepreneurs had to provide a brief description of their start-up and their own background. The brief description and background would be appended to the templated referral messages that the entrepreneurs forward to their contacts to connect to the investor panel.

Within-Subject (Entrepreneur) Manipulation: Entrepreneur vs Investor-Centric Contacts

Steps leading to collection of entrepreneur-centric contacts: **Step 2**: The entrepreneurs were asked three social network name generator questions (Burt, 1982; Vissa & Bhagavatula, 2012) that elicited contacts socially proximate to entrepreneurs by asking entrepreneurs to report names of contacts she relied on (a) for referring or endorsing her business to others; (b) as trusted support when faced with a crisis or emergency in her business, and (c) for valuable advice and counsel on crucial business decisions. For each of the questions, entrepreneurs could list between three to five contacts, with an overlap in names across the questions. The contacts elicited by the three questions were pooled and duplicate names removed. This set of selected network contacts is classified hereafter as *entrepreneur-centric contacts*.

Steps leading to the collection of investor-centric contacts: **Step 3**: The identity and background information of the four early-stage investors (target) were revealed to the entrepreneurs. **Step 4**: Entrepreneurs were then asked to list names of new contacts not already named in '*entrepreneur-centric contacts*' to help them connect to the investors. This set of selected network contacts is hereafter classified as '*investor-centric contacts*.'

Between-subject (Contacts) manipulation: Persuasion Templates

Intermediaries' details: **Step 5**: *Entrepreneur-centric* and *investor-centric contacts* were pooled. Entrepreneurs provided information on their *closeness* with each contact and their number of *years known*. In addition, the entrepreneurs provided their perceived *embeddedness* of each contact in the local entrepreneurial ecosystem. The entrepreneurs also provided their estimated probability that each contact would be able to connect to each of the four investors.

Randomization of persuasion templates to contacts: **Step 6**: The pooled list of e*ntrepreneur-centric* and *investor-centric contacts* (i.e. the focal entrepreneur's full set of selected contacts) was first stratified based on closeness (to ensure no differences on closeness) and then randomly assigned to receive one of three templated messages: (a) baseline (b) reciprocity and (c) monetary incentive (see Appendix A2 for a detailed description of the templates).

Sending out messages: **Step 7**: The entrepreneurs sent the assigned templated messages to their contacts. The entrepreneurs had to copy or forward the messages that they sent to a designated research email address for the research team to verify. They were free to send the assigned templated messages to their contacts via any medium of their choice (e.g. email, WhatsApp, LinkedIn, Facebook).

Reaching investors: **Step 8**: The investors collated all messages that reached them in the three-day window following the day of the workshop and forwarded all the messages to the research team. The investors further informed the research team if a message they received was from a person they would typically: a) ignore; b) pay attention in due course of time; c) pay prompt attention. Entrepreneurs were deemed to have successful referrals to investors via their contacts if the messages received by investors were classified as (b) or (c).

Feedback: **Step 9**: After the three-day window, all entrepreneurs were informed whether they have successful referrals to the investors. **Step 10**: Entrepreneurs who had successful referrals to investors were introduced to the particular investor(s) they reached via email. The entrepreneurs then arranged a mutually convenient time with the investor(s) for their pitching and feedback session.

APPENDIX 2

Common Text in Templated Digital Messages from Entrepreneurs to Selected Network Contacts in Singapore Field Study (names of investors, companies and institutions hidden to protect privacy)

Dear <contact>,

Hope you are well! Writing to you in the context of my entrepreneurial venture. We are participating in the 'Find a Funder' workshop run by professors from XXX. As workshop participants, we have to message the Singaporean investors listed below about our venture, through a person they know and trust.

Can you please forward this message to the investors from the list below that you know well? Even if you don't know an investor, you can forward this message to someone else you know, so it finally reaches the investor. <templated persuasion text>

These investors have already committed to listening to our venture pitch if our message reaches them through a person they know and trust before the deadline of 18th August.

1) <Target 1>, early-stage angel investor
2) <Target 2> XXX Ventures
3) <Target 3>, XXX Capital
4) <Target 4>, XXX Capital

Note that it is possible that you may receive similar messages from your other contacts who are also participating in the same workshop. Of course, you are welcome to reach out to me to find out more about this workshop.

<100-word description of the venture and (co) founder>

Best Regards,
<Entrepreneur>

Templated Persuasion Text in Portion of Templated Digital Message from Entrepreneur to Selected Network Contacts

Message type A (Baseline condition; no additional information)

Message type B (Reciprocity condition)
Needless for us to mention, you will earn our heartfelt gratitude for forwarding this email. We look forward to reciprocating your help and support appropriately in the future.

Message type C (Monetary Incentive condition)
If it is fine with you, we would like to propose a "finder's fee" for you i.e. 1% of the funds raised capped at SGD 1,000, if investors referred by you fund our venture. (The workshop team will reimburse us).

Authors' Note: All data and syntax for all analyses reported in this appendix are available upon request from the authors.

ONLINE APPENDIX A1

Manipulation Checks of Message Templates

Participants

We recruited 105 participants from the United Kingdom with entrepreneurship experience on Prolific to complete a scenario study asking them to imagine receiving a referral request from a network contact. 21 participants were dropped for failing instruction checks, leaving us with a final sample of 84 participants (age mean=41.0, SD=10.1; 59 females, 24 male, 1 declined to reveal gender information). Participants were randomly assigned to one of three conditions. Out of the 84 participants, 35 participants were assigned to monetary incentive condition, 27 participants were assigned to reciprocity condition, and 22 participants were assigned to baseline condition.

Manipulation Checks

Participants responded to the following items with the common heading "To what extent do you agree with the following statements about the email request", on a 1-7 Likert scale from 1 (strongly disagree) to 7 (strongly agree).

Monetary Incentives – 1. I may receive monetary rewards in return for my referral. 2. I am financially motivated to forward the email. 3. The referral request promises a financial incentive. 4. Forwarding this email will make the contact who sent this request financially obligated to me. 5. I thought about the potential monetary benefits to myself when reading this email. ($\alpha = 0.90$)

Reciprocity – 1. This contact admits s/he will owe me a favour. 2. This contact promises to be socially indebted to me. 3. This contact admits that my forwarding this email will make him / her socially obligated to me. ($\alpha = 0.86$)

Baseline-absence of benefits - 1. I am not aware of how I will personally benefit from forwarding this email. 2. There was no mention of any sort of gains to me from forwarding this email. 3. I am not aware of how I will be recompensed for forwarding this email. 4. I know the direct benefits I will obtain from forwarding this email (reverse-coded). 5. I did not have any specific motivation to act on the email. ($\alpha = 0.91$)

Results

We found that participants who were asked to imagine receiving a monetary incentive message template classify the message template as being more focused on monetary incentive (mean=4.84, SD=1.10) than reciprocity (mean=2.72, SD=1.44, p<.00) or baseline (mean=2.56, SD=1.39, p<.00) message templates. There was no difference between reciprocity and baseline message templates (p=.70).

Participants who were asked to imagine receiving reciprocity message template classify the message template as being more focused on explicit reciprocity (mean=3.91, SD=1.21) than monetary incentive (mean=3.30, SD=1.37, p=.07) or baseline (mean=2.76, SD=1.24, p<.00) message templates. There was no difference between monetary incentive and baseline message templates (p=.14).

Finally, participants who were asked to imagine receiving baseline message template classified the message as not including benefits (mean=5.37, SD=1.22) compared to monetary incentive message template (mean=2.55, SD=1.09, p<.00), but did not distinguish it from reciprocity message template (mean=4.99, SD=1.07, p=.24).

ONLINE APPENDIX A2

Coding and Analysis Approach

Experimental Design

The 42 focal entrepreneurs listed 684 contacts (average number of contacts=18.89, min=9, max=30), and they rated each of the contacts on perceived *closeness* ("How close are you to <contact's name>?" answered on a seven-point Likert scale ranging from 1=Not at all close to 7=Extremely close).

Contacts' Treatment and Assignment of Persuasion Templates

First, within each entrepreneur's list of contacts, we ordered the contacts in descending order of *closeness* (i.e. highest *closeness* to lowest *closeness*; mean=3.64, SD=1.91, min=1, max=7). Next, on the ordered contacts, we grouped them into groups of 3. Then, we randomly assigned one of the three persuasion templated messages to each group of 3 contacts. We created a variable capturing the probability *weight* of being assigned the persuasion templates. For all contacts of focal entrepreneurs who listed total number of contacts divisible by 3 (e.g.: 9, 12, 15… 27, 30 contacts), the contacts were assigned the probability *weight* of 1, as they had 100% chance of being assigned to either of all 3 conditions.

For contacts that did not fit into the groups of 3 (i.e.: focal entrepreneur listed total number unique contacts that were not divisible by 3), they were assigned a probability *weight* of 1/3 if there was 1 remainder contact (e.g.: total 10 contacts listed, 1^{st} – 9^{th} contacts assigned *weight* of 1, 10^{th} contact assigned *weight* of 1/3). If there were 2 remainder contacts, these contacts were assigned a probability *weight* of 2/3 (e.g.: 11 contacts listed, 1^{st} – 9^{th} contacts assigned *weight* of 1, 10^{th} and 11^{th} contact assigned *weight* of 2/3).

Finally, we inversed the probability *weight* assigned to each contact, and used [pweight=weight] in all estimations predicting successful referrals.

Data Analysis Approach

We conducted a negative binomial regression in STATA to test the hypotheses. We clustered standard errors by focal entrepreneur and controlled for the probability weight of each contact with the syntax [pweight= *weight*].

ONLINE APPENDIX A3

T-tests analyses for Singapore Study

Table 1b reports the distribution and simple t-tests of our dependent variable (count of successful referrals) across treatment conditions for contact selection (investor-centric versus entrepreneur-centric) and contact persuasion (reciprocity, monetary incentive, and baseline). Nineteen entrepreneurs pitched to at least 1 investor, and there was a total of 34 pitches[6] (mean=1.79, maximum=3).

The t-test of differences by contact selection and contact persuasion on the percentage of successful referrals showed that there was a positive relationship between selecting investor-centric contacts and referral success (t=2.34, p=.02) consistent with hypothesis 1. Hypothesis 2a, the main effect of reciprocity (mean=0.08, SD=0.44) when compared to baseline (mean=0.04, SD=0.25) was not supported (p=.19). Similarly, hypothesis 2b, the main effect of monetary incentive (mean=0.05, SD=0.31) when compared to baseline (mean=0.04, SD=0.25) was not supported (p=.60).

[6] The 40 successful referrals led to 34 pitch meetings because there were 6 redundant referrals linking the same entrepreneurs to the same investors

ONLINE APPENDIX A4

Replicating Analyses in Table 2 of Main Manuscript with Logistic Regression.

We run Table 2 of main manuscript as a logistic regression at the level of individual contacts reaching a specific investor. The positive coefficient for *investor-centric contact* (without controls, B=1.34, p=.01; with controls, B=1.48, p=.02) suggests investor-centric search for contacts is more likely to yield a higher count of successful referrals to investors. In addition, the coefficient for *reciprocity* (without controls, B=0.83, p=.13; with controls, B=1.00, p=.08) suggests a positive relationship between the use of reciprocity as a persuasion tactic (compared to baseline) and the reaching investors. See Table A4-1.

Table A4-1: Logistic Regression of Reaching Investors Originated by Activated Network Contacts

	(1)	(2)	(3)
Years known		-0.11	-0.11
		(0.07)	(0.08)
		[.12]	[.16]
Probability of reaching		0.78	0.77
		(0.23)	(0.23)
		[.00]	[.00]
Influential access		0.03	0.05
		(0.02)	(0.02)
		[.11]	[.01]
Investor-centric contact **(H1)**	**1.34**		**1.48**
	(0.54)		**(0.61)**
	[.01]		**[.02]**
Reciprocity **(H2a)**	**0.83**		**1.00**
	(0.54)		**(0.58)**
	[.13]		**[.08]**
Monetary incentive **(H2b)**	**0.47**		**0.64**
	(0.50)		**(0.56)**
	[.34]		**[.26]**
Constant	-5.63	-6.74	-8.71
	(0.53)	(0.85)	(0.99)
	[.00]	[.00]	[.00]
Wald Chi^2	10.14	39.27	63.68
Prob > Chi^2	.02	.00	.00
Pseudo-R^2	.04	.11	.16
Log likelihood	-210.93	-195.63	-185.77

Notes: N=2,736 contact by investor dyads (=684 contacts * 4 panel investors). The dependent variable is whether a contact selected by an entrepreneur reached an investor. Probability of reaching is reported probability by entrepreneur of each nominated contact reaching each investor. Robust standard errors in parentheses and p-values in square brackets. Standard errors clustered for 42 entrepreneurs. For *reciprocity* and *monetary incentive* condition indicator variables, the (omitted) comparison group is the *baseline* condition. The regression is weighted by "closeness"; see online Appendix A2 for detailed description.

ONLINE APPENDIX A5

Results of Two Prior Field Experimental Studies with Different Research Design

FIELD EXPERIMENTAL STUDY #A (Hyderabad, India RCT):

Participants

We had a sample of 13 entrepreneurial teams from an accelerator in Hyderabad, India, that were looking for seed-round funding. The 13 teams selected 150 contacts to reach a panel of 4 early-stage investors. The entrepreneurs were offered feedback on their social capital in return for participation.

Study Design

Participants were informed of the following: (i) Prize money of Rs 50,000[7] to the first team whose pitch deck successfully reached all four investors on our panel via emails from participants' contacts; (ii) Entrepreneurs with successful referrals to a panel investor would get to pitch their venture to the investor; (iii) Participants could not email an investor unless they knew the investor well (there was no such case), and had to use email templates generated by the research team to reach out to their contacts; (iv) Each team provided a list of the 12 contacts most likely to successfully refer them to the targeted four investors.

Experimental manipulation.

Each entrepreneurial team provided a list of 12 contacts which they believed were most likely to successfully refer them to the targeted four investors. We then randomly allocated each contact within each team's list to receive one of four email templates that constituted the experimental manipulation: *baseline*, *monetary incentive*, *reciprocity*, and *hybrid* (monetary incentives and reciprocity combined). In the *baseline* condition, the email used neutral language to request the focal network contact to forward the pitch deck to the target investors. In the *monetary incentive* condition, up to Rs 10,000[8] was offered to network contacts that referred the start-up team. In the *reciprocity* condition, the email used language that invokes dyadic reciprocity (between start-up team and network contact) as well as generalized reciprocity (between network contact and entrepreneurial ecosystem in India) for referring the start-up team. The *hybrid* condition combined the text from the monetary incentive and reciprocity conditions. The participating teams forwarded their solicitation emails to the research team as evidence of following the research protocol, which also served as our instruction check.

Study #A Results

Our dependent variable is the count of successful referrals to panel investors that originated from a selected contact of the entrepreneur. Therefore, the dependent variable ranges from 0 (no successful referral to any investor) to 4 (successful referrals to all four investors). We code an email as a successful referral only if the investor informs the research team that the email which reached them came from a person whom the investor would respond to. We coded 19 such cases as successful referrals that originated from the 150 contacts[9] of entrepreneurs.

We use a negative binomial regression estimation to estimate the count of successful referrals to investors with the four randomly assigned conditions of *baseline, monetary incentive, reciprocity* and *hybrid* (=*reciprocity + monetary incentive*) as explanatory variables.

The probability that an entrepreneurial team's reciprocity-invoking email to a contact leads to more successful referral to the targeted investor, relative to the same team's monetary incentive-

[7] Rs 50,000 is equivalent to US$ 2,865 at the purchasing power parity (PPP) exchange rate at the time of the contest

[8] Rs 10,000 is equivalent to US$573 (PPP)

[9] One team listed only 6 contacts while the other 12 teams listed 12 contacts per team. In addition, 3 contacts were common across the competing teams, thus giving us a total of 147 unique contacts generated by 13 founding teams.

invoking email (B=1.04, p=.17), baseline email (B=0.86, p=.15), and hybrid email (B=1.04, p=.09) are positively related.

FIELD EXPERIMENTAL STUDY #B (Bangalore, India RCT):

Participants

We had a sample of 20 entrepreneurs from an entrepreneurship accelerator in Bangalore, India. The 20 entrepreneurs selected 214 contacts to reach a panel of 6 early-stage investors. The entrepreneurs were offered feedback on their social capital in return for participation.

Study Design

The design was the same as Study #A, except that there is now no prize money for being the first to reach investors, participants are individual entrepreneurs instead of teams, hybrid condition is dropped, and participants report embeddedness of contacts and subjective probability of reaching each investor.

Experimental manipulation.

We randomly allocated each nominated contact within each entrepreneur's list to receive one of three email templates that constituted the experimental manipulation: *baseline*, *monetary incentive*, and *reciprocity*. Similar to Study #A, the *baseline* email used neutral language to request the focal network contact to forward the pitch deck to the target investors. In the *monetary incentive* condition, similar to the field experiment with Singapore-based entrepreneurs (the study described in the main paper), contacts were offered a Finder's Fee of 1% of funds raised capped at US$1,000 upon successful referral and funding. In the *reciprocity* condition, similar to the Singapore field experiment, the email used language that invokes dyadic reciprocity. The participating teams forwarded their solicitation emails to the research team as evidence of following the research protocol, which also served as our instruction check.

Study #B Results

Similar to Study #A, our dependent variable is the count of successful referrals to panel investors that originated from a selected contact of the entrepreneur. Therefore, the dependent variable ranges from 0 (no successful referral to any investor) to 6 (successful referrals to all six investors). In all, 20 entrepreneurs named a total of 214 network contacts. 21 referrals were coded as successful.

We use a negative binomial regression estimation to estimate the count of successful referrals to investors with the three randomly assigned conditions of *baseline, monetary incentive,* and *reciprocity* as explanatory variables. We added closeness, embeddedness, years known, and the subjective probability of reach investors of each contact as control variables.

The probability that an entrepreneurial team's reciprocity-invoking email to a contact leads to successful referrals to the targeted investors, relative to the same team's monetary incentive-invoking email (B=1.40, p=.08), is positively related. However, reciprocity-invoking email has no difference relative to baseline email (B=0.55, p=.46).

Closeness of contact (B=0.59, p=.01), embeddedness (B=0.91, p=.02), and years known of contact (B=-0.26, p<.00) are positive predictors of successful referrals, whereas there is no evidence supporting the effect of subjective probability of reaching investor on successful referrals (B=-0.01, p=.22).

ONLINE APPENDIX A6

Sample size calculations

Table A6-1: Summary Statistics of Success Referrals by Persuasion Conditions in Hyderabad RCT and Singapore RCT to Establish Initial and Anticipated Effect

Treatment Conditions	Raw count of successful referrals		Mean		Standard Deviation	
	Hyderabad RCT	Singapore RCT	Hyderabad RCT	Singapore RCT	Hyderabad RCT	Singapore RCT
Baseline	4 out of 40	9 out of 229	.10	.04	.31	.25
Reciprocity	9 out of 38	19 out of 230	.24	.08	.60	.44
Monetary incentive	3 out of 36	12 out of 225	.09	.05	.28	.31
Hybrid	3 out of 36	N.A.	.08	N.A.	.28	N.A.
Total	19 out of 150	40 out of 684	.13	.06	.39	.34

Notes: This table reports the mean and standard deviations in Hyderabad Study and Singapore study. The means and standard deviations are used to estimate sample size needed to detect statistical effect.

Table A6-2: Sample Size Estimation for Singapore RCT Extrapolating from Hyderabad RCTs

	Hyderabad sample at count of reaches by contact (A)	Singapore sample at count of reaches by contact (B)
Successful referrals rate under Baseline condition	.10	.04
Successful referrals rate under Reciprocity condition	.24	.08
Odd ratio	2.84	2.087
Risk ratio	2.40	2.00
Predicted observation per group needed	112	552
Total sample size recommended for two conditions (treatment and control)	224	1104
Total sample size recommended for six conditions (Entrepreneur-centric: baseline, reciprocity, monetary incentive; Investor-centric: baseline, reciprocity, monetary incentive) using five factors	672	3312
Actual sample size of Singapore RCT	684	684

(i) We treat the initial study as a random sample and representative of the population and extrapolate using the proportions from the prior study. Hence, in column (A) we used the Hyderabad, India RCT data as a representative sample that is consistent with the population central tendencies to calculate a recommended sample size[10]. We used the same standard assumptions of a Type-I error rate of (two-tailed) $\alpha = 0.05$ threshold and Type II error rate $\beta = 0.20$ and proportion of subjects in treatment and control as equal (q1=.50 proportion of subjects are in treatment and q2=.50 proportion of subjects in control). This approach yielded a recommended sample size of 672 contacts.
(ii) Next, in column (B) we applied the exact same calculations but with the actual data from the Singapore study. The new calculations indicated a recommended sample size of 3,312 contacts.

[10] We used a simple online tool https://sample-size.net/sample-size-proportions/

ONLINE APPENDIX A7

POOLED STUDIES (Hyderabad, India; Bangalore, India; Singapore, Singapore)

Participants

We combined the data from Field Experimental Study #A, #B, and the study in the main manuscript. There were a total 1,012 contacts originated from 75 entrepreneurs (13 teams in #A, 20 entrepreneurs in #B, and 42 entrepreneurs in Singapore study). We omitted 36 contacts from Study #A that were in the hybrid condition, as this condition was not conducted in the later studies.

Data Treatment

From Field Experimental Study #A, there were 13 observations which were missing data on years known, 12 observations missing data on closeness, and 12 observations missing data on probability of reaching investors. We conducted a mean replacement of these control variables within the study, and conducted the analyses with and without control variables, as there were differences in the wording of the questions and the response labels of these variables across the studies.

For probability of reaching investor, in Studies #A and #B, participants answered using a slider scale ranging from 0% to 100%, but in Singapore study participants answered on a 5 point Likert scale ranging from 1=not likely at all to 5=extremely likely.

In pooled analysis with control variables, we transformed the probability of reaching investor score in Singapore study with the formula (x – 1)/4 * 100% (i.e. response 1 = 0%, and 5=100%).

Similar to Singapore study, we assigned probability weights to each observation from Study #A and Study #B. We inversed the probability weight assigned to each contact and used [pweight=weight] in all estimations predicting successful referrals.

Pooled Data Results

In the pooled sample, using simple t-tests (see Table A7-2), we find that the main effect of selecting investor-centric contacts (mean=0.10, SD=0.42) when compared to baseline (mean=0.02, SD=0.22) is positive (t=3.62, p=.00), consistent with H1. We find the main effect of reciprocity as predicted by H2a (mean=0.12, SD=0.48) when compared to baseline (mean=0.06, SD=0.31) is positive (p=.05). However, we do not find support for the main effect of monetary incentive as predicted by H2b (mean=0.05, SD=0.29) when compared to baseline (mean=0.06, SD=0.31; p=.94). Thus, in the pooled sample, the prediction that reciprocity is better than baseline cannot be rejected.

In Table A7-3, we report the results of the negative binomial regression estimation of the count of successful referrals originated by 1,012 network contacts; standard errors clustered around 75 entrepreneurs. Model 1 report the findings without control variables. Model 3 report the same analyses with control variables.

We find that there are positive main effects of selecting investor-centric contact (without controls, B=1.48, p<.00; with controls, B=1.63, p<.00) and reciprocity persuasion (without controls, B=0.81, p=.03; with controls, B=0.71, p=.06), thus supporting H1 and H2a. There was no main effect of monetary incentive persuasion (without controls, B=0.28, p=.47; with controls, B=0.18, p=.62) on referral success, suggesting no support for our H2b.

Table A7-1: Descriptive Statistics for Count of Successful Referrals Originated by Activated Network Contacts in the Pooled Sample

Variable	Mean	Std. Dev.	Min	Max
Count of successful referrals	.08	.37	0	3
Years known	5.71	6.47	0	50
Probability of reaching	39.27	21.59	0	100
Investor-centric contact	.69	.46	0	1
Reciprocity	.34	.47	0	1
Monetary incentive	.33	.47	0	1
Baseline*	.33	.47	0	1
Close	3.55	1.88	1	7

Notes: (i) N = 1,012 network contacts - activated by 75 entrepreneurs. We obtain this sample by pooling across the 3 RCTs (Hyderabad, Bangalore and Singapore)
(ii) * Baseline is the (omitted) comparison condition for the two persuasion tactics of reciprocity and monetary incentive. The probability of reaching was measured as an estimate between 0 and 100 percent in Hyderabad and Bangalore studies and as a 1 to 5 scale in Singapore study. The Singapore study probability of reaching variable was transformed into a 0 to 100 percent variable to be congruent with the other two studies.

Table A7-2: T-tests of Successful Referrals by Contact Selection and Contact Persuasion Tactics in the Pooled Data

		Entrepreneur-Centric Contacts (a)		Investor-Centric Contacts (b)		Total		(b) – (a) Δ Percentage
		Raw Count	Percentage	Raw Count	Percentage	Raw Count	Percentage	
Baseline (1)	Mean	2	.02	17	.07	19	.06	*t=1.91; p=.06
	SD		.14		.35		.31	
	Obs.		100		238		338	
Reciprocity (2)	Mean	6	.05	34	.15	40	.12	*t=1.94; p=.05
	SD		.35		.53		.48	
	Obs.		112		231		343	
Monetary Incentive (3)	Mean	0	.00	18	.08	18	.05	
	SD		.00		.34		.29	*t=3.48; p=.00
	Obs.		102		229		331	
Total	Mean	8	.02	69	.10	77	.08	*t=3.62; p=.00
	SD		.22		.42		.37	
	Obs.		314		698		1,012	
(1) – (2)		t=-0.89; p=.37		t=-1.82; p=.07		t=-1.95; p=.05		
(1) – (3)		t=-1.44; p=.15		t=-0.22; p=.82		t=0.08; p=.94		
(2) – (3)		t=1.54; p=.12		t=1.64; p=.10		t=2.03; p=.04		

Notes: The t-tests of the differences to test the hypotheses are reported in online Appendix A7. Hypothesis 1 on effect of investor-centric contacts (t=3.62; p <.01) and hypothesis 2 on the main effect of reciprocity (t =1.95, p=.05). *Unequal t-tests conducted due to unequal sample size between investor-centric and entrepreneur-centric contacts

Table A7-3: Negative Binomial Estimation of Count of Successful Referrals Originated by Activated Network Contacts in the Pooled Sample

	(1)	(2)	(3)
2.study (Bangalore)	-0.38	-0.20	-0.17
	(0.47)	(0.52)	(0.53)
	[0.41]	[0.70]	[0.75]
3.study (Singapore)	-0.25	-0.66	-0.08
	(0.42)	(0.44)	(0.45)
	[0.55]	[0.13]	[0.85]
Years known		-0.13	-0.13
		(0.05)	(0.05)
		[0.01]	[0.01]
Probability of reaching investors		0.03	0.03
		(0.01)	(0.01)
		[0.00]	[0.00]
Closeness		0.19	0.31
		(0.13)	(0.13)
		[0.16]	[0.01]
Investor-centric contact **(H1)**	**1.48**		**1.63**
	(0.51)		**(0.49)**
	[0.00]		**[0.00]**
Reciprocity (**H2a)**	**0.81**		**0.71**
	(0.37)		**(0.37)**
	[0.03]		**[0.06]**
Monetary incentive (**H2b)**	**0.28**		**0.18**
	(0.39)		**(0.36)**
	[0.47]		**[0.62]**
Log alpha	2.25	2.07	1.89
	(0.30)	(0.24)	(0.27)
Constant	-3.89	-3.77	-6.05
	(0.62)	(0.67)	(0.86)
	[0.00]	[0.00]	[0.00]
Wald Chi^2	20.00	38.53	97.93
Prob > Chi^2	0.00	0.00	0.00
Pseudo-R^2	0.03	0.07	0.10
Log likelihood	-270.14	-259.72	-252.15

Notes: N = 1012 contacts. The dependent variable for the analysis is the count of successful reaches by a contact nominated by an entrepreneur. The results of the hypotheses testing in the pooled sample are described in the manuscript on page 14. Robust standard errors in parentheses and p-values in square brackets. Standard errors clustered for 75 entrepreneurs. For *reciprocity* and *monetary incentive* condition indicator variables, the (omitted) comparison group is the *baseline* condition. The regression is weighted by "closeness"; see online Appendix A2 for detailed description.