Johnson
Cornell
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Administrative Science Quarterly
1–39

DOI: 10.1177/0001839219834011
journals.sagepub.com/home/asq
SAGE

How to Join the Club: Patterns of Embeddedness and the Addition of New Members to Interorganizational Collaborations

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Abstract

Using U.S. venture capital investment data from 1985 to 2008 and qualitative interviews, we examine how group dynamics influence the growth of interorganizational collaborations through the addition of new members. We argue that group dynamics that develop among members in a collaboration, as well as between each member and prospective newcomers, influence which new members join existing collaborations. For prospective newcomers, we distinguish between their depth of embeddedness, the strength of a prospective newcomer's past relationships with any incumbent member of the collaboration, and breadth of embeddedness, the proportion of incumbent members with which the newcomer has had prior ties. For incumbent members, we examine network faultlines, or subgroups in their collaboration, that may lead to power struggles. We find that when strong network faultlines exist, the depth and breadth of a prospective newcomer's embeddedness will have different influences on its likelihood of joining the collaboration: A newcomer with greater depth of embeddedness with the collaboration may be perceived to influence power dynamics in the group, leading to lower likelihood of joining, whereas a newcomer with greater breadth may not suffer the same liability. We also find that newcomers with greater depth benefit from the status of their strongest tie in the collaboration, and newcomers with greater breadth are more desirable partners when they are more experienced. Overall, our results highlight the mechanisms of anticipated power distribution and mediation as overlooked concerns in member additions to collaborations, especially when there is conflict.

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Keywords: social networks, interorganizational relations, syndicates, venture capital firms, network faultlines

A large body of research examining interorganizational collaborations has focused on the formation of ties (e.g., Gulati, 1995a; Ahuja, 2000; Sorenson and Stuart, 2008; Shipilov, Li, and Greve, 2011) or their termination (e.g., Polidoro, Ahuja, and Mitchell, 2011; Heidl, Steensma, and Phelps, 2014). For the most part, however, this literature assumes that the composition of collaborations remains stable between inception and dissolution. In reality, many collaborations grow or contract over time, as new members join (Lavie, Lechner, and Singh, 2007) and some withdraw. While recent research has begun to examine how members withdraw from ongoing collaborations (Rowley et al., 2005; Greve et al., 2010; Greve, Mitsuhashi, and Baum, 2013; Zhelyazkov and Gulati, 2016), we know little about how collaborations grow by adding members.

It is important to understand the patterns of new member additions to existing collaborations because the structure and composition of collaborations influence their performance (e.g., Granovetter, 1985; Uzzi, 1996; Gulati and Gargiuo 1999; Ter Wal et al 2016). While one might expect the growth of interorganizational collaborations to lead to higher performance due to increased resource access, this expectation might not materialize if partners are selected for reasons other than the joint objectives of a collaboration. For instance, it is well understood that the tendency of embedded partners to engage in repeated collaborations may eventually hurt their performance by decreasing their access to external opportunities (e.g., Uzzi 1996; Ahuja 2000). Similarly, the addition of new partners to existing collaborations may pose challenges to collaboration outcomes that have not yet been fully explored. Explaining the patterns of growth of interorganizational collaborations could aid our understanding of how collaborations and their outcomes evolve over time.

Growth of interorganizational collaborations may be distinct from partnership formation because new member additions are subject to concerns that are not prominent at initial formation. For instance, once a collaboration is formed, members form a social unit. The interactions and group dynamics among the incumbent members may influence subsequent partner selection decisions. This requires considering the group dynamics that ensue in the collaboration, a concern that is much more salient in growth than at inception. In contrast, the current literature is overwhelmingly focused on dyadic tie formation and explores how two organizations evaluate one another as partners. This study focuses on how potential newcomers to an already formed collaboration are evaluated and selected by the incumbent partners.

Studies of partnership formation have singled out embeddedness as an important mechanism of partnership formation, along with other mechanisms such as homophily and spatial proximity (Podolny, 1994; Gulati and Gargiulo, 1999; Chung, Singh, and Lee, 2000; Sorenson and Stuart, 2001; Powell et al., 2005). Here we distinguish between two kinds of embeddedness that a prospective newcomer may have with incumbent members of a collaboration and that may influence the newcomer's selection into the group: depth of embeddedness, meaning the strength of a prospective newcomer's past relationships with any incumbent member of the collaboration, and breadth of

embeddedness, or the proportion of incumbent members with which the newcomer has had prior ties. While depth of embeddedness indicates the level of alignment between the prospective newcomer and a single incumbent member, breadth denotes the prospective newcomer's familiarity with a dispersed set of incumbent members in a collaboration. To our knowledge, this is a novel approach to disentangle a focal organization's embeddedness with a multimember social unit, and it recognizes that a focal organization may be tied to different parts of a social unit in distinct yet interacting ways.

In general, both depth and breadth of embeddedness support the continuation of dyadic relationships and increase the likelihood of a new member joining a collaboration, but they potentially lead to very different outcomes when considered in the context of group dynamics. For instance, recent research has explored the possibility of power struggles as well as subgroup and coalition formation in interorganizational collaborations with multiple members (Ma, Rhee, and Yang, 2013; Davis, 2016), especially due to variations in tie strength among members, labeled network faultlines (Heidl, Steensma, and Phelps, 2014). The group dynamics emanating from network faultlines may lead members of a collaboration to respond differently to the depth and breadth of embeddedness of a prospective newcomer. Depth of embeddedness may be seen as a source of power imbalance and raise concerns about the alignment of the prospective newcomer, while breadth may be a potential source of mediation that increases the acceptance of the newcomer. As a result, unlike in partner selection in dyadic collaborations, embeddedness may have an adverse effect on new member additions under certain conditions. Building on the theories on embeddedness (Gulati, 1995a; Uzzi, 1996; Li and Rowley, 2002; Sorenson and Waguespack, 2006), social exchange (Emerson, 1962; Cook and Gillmore, 1984; Lawler, 2001), and group decision making (e.g., Lau and Murnighan, 1998, 2005), we consider the conditions under which embeddedness may be perceived through the lens of power or mediation.

The setting for our investigation is venture capital (VC) syndicates. To better assess how collaboration dynamics influence the selection of new partners, we first present qualitative evidence about the workings of VC syndicates and new member additions in subsequent (follow-on) rounds. Our large-sample empirical examination follows theory development and focuses on the addition of new members to VC syndicates in follow-on rounds of financing between 1985 and 2008.

GROWTH OF INTERORGANIZATIONAL COLLABORATIONS AND INTERNAL CONFLICT

Studies of interorganizational collaborations from a network perspective have identified several mechanisms for tie formation. Firms tend to choose partners through past direct or indirect ties (Gulati, 1995b; Gulati and Gargiulo, 1999) and prefer to partner with prominent firms (Powell, Koput, and Smith-Doerr, 1996; Gulati and Gargiulo, 1999) and those that are close in proximity or have similar traits (Podolny, 1994; Powell, Koput, and Smith-Doerr, 1996; Chung, Singh, and Lee, 2000). This literature has typically focused on dyadic tie formation, with the implicit assumption that similar mechanisms are likely to apply even when a collaboration has multiple members. For this to be true, however, all members must have complete agreement on preferences. For instance, in

evaluating new members, firms must uniformly value or trust one another's past direct ties. Recent work on interorganizational collaborations has suggested that this may not necessarily be the case (Sytch and Tatarynowicz, 2014). Each member may have individual interests and preferences that do not fully overlap with those of the others or the overall collaborative effort, and these may influence value distribution, partner selection, and collaboration dissolution (Polidoro, Ahuja, and Mitchell, 2011; Davis, 2016; Zhang, Gupta, and Hallen, 2017). Considering internal conflict in a collaborative arrangement helps us understand it as a ''concrete, living unit'' (Simmel, 1955: 20).

Social exchange theory provides a complementary approach to network-based studies by explicating the mechanisms underlying interorganizational relationships. Both social exchange and network theories contend that social structure is formed through social relationships between actors (Cook and Whitmeyer, 1992). But the two perspectives are distinct in their emphasis on some aspects of interorganizational relationships. A fundamental assumption of exchange theory is that actors are instrumental, and they commit to a relationship as long as they are rewarded (Lawler, 2001; Molm, 2006), while the network perspective suggests that tie formation and maintenance may be motivated by non-economic reasons such as trust, inertia, or norms of social stratification (Granovetter, 1985; Gulati, 1995a; Li and Rowley, 2002; Sytch and Gulati, 2013). More recent research using exchange theory has also suggested that exchange partners may develop affect-based ties with one another, even in relationships with instrumental roots (Lawler and Yoon, 1993; Lawler, 2001). In addition, an important tenet of exchange theory is that members continually observe power dynamics in a collaboration and engage in bargaining and coalitions as power-balancing acts (Emerson, 1962), which have been underplayed in network-based studies until recently.

Research on group dynamics provides an understanding of the process through which internal conflict may occur in the growth of interorganizational relationships. Studies of faultlines in groups suggest that members may be split along dimensions of perceived similarity when faced with a contentious decision. Faultlines are hypothetical dividing lines that divide a group into subgroups based on individual attributes (Blau, 1977; Lau and Murnighan, 1998). The social mechanisms that underlie faultlines are self-categorization, social identification, and similarity attraction (Lau and Murnighan, 1998; Thatcher and Patel, 2012). When a group's faultlines are strong, ingroup–outgroup dynamics may lead to tension and ineffective communication between subgroups, influence group decisions, and increase conflict (Sherif et al., 1961; Labianca, Brass, and Gray, 1998; Lau and Murnighan, 2005; Thatcher and Patel, 2012).

The faultline literature in social psychology has provided experimental evidence on teams of individuals. Since then, several researchers have applied the concept at the firm level through empirical work (e.g., Li and Hambrick, 2005; Barkema and Shvyrkov, 2007; Thatcher and Patel, 2012). Heidl and colleagues (2014) applied the faultline logic to interorganizational relationships and argued that the dispersion in the strength of relationships in a collaboration may lead to faultlines based on patterns of past ties. They showed that collaborations in which members were strongly tied in subgroups but weakly tied across them were more likely to experience fractures and dissolve than those in which all members were strongly or weakly tied. Zhang, Gupta, and Hallen (2017) similarly found that network faultlines had a negative impact on the formation of multi-firm collaborations.

A parallel stream of work on group dynamics also suggests that common ties between some members of a collaboration may become the basis of coalitions within multi-member relationships, further highlighting that collaborations may not always act as monolithic entities. Experimental evidence has demonstrated that coalitions in organizations can emerge around the strength of past interactions (Kapferer, 1969; Thoden van Velzen, 1973; Thurman, 1979; Doreian, 1982), a finding corroborated by field research (Eisenhardt and Bourgeois, 1988; Stevenson and Greenberg, 2000). This is also consistent with the findings that prior contact between group members is related to internal cohesiveness and shared perceptions of the level of conflict (Nelson, 1989; Labianca, Brass, and Gray, 1998).

Based on this research, we expect that the addition of new members to interorganizational collaborations may be subject to internal conflict under certain conditions, and patterns of past relationships among members may shape the patterns of alignment among members. We thus challenge the implicit assumption that adding new members to an interorganizational collaboration is conceptually identical to dyadic tie formation. In our theory development, we consider the implications of these observations for the growth of interorganizational collaborations by investigating whether and how group-level processes such as conflict and power considerations among members influence the addition of new members with varying levels of embeddedness.

Empirical Setting: Venture Capital Syndicates

The ideal context for a study of embeddedness and group dynamics in the growth of interorganizational collaborations must demonstrate several characteristics. To establish that VC syndicates fulfill these criteria, and to understand the dynamics of VC syndicate behavior, we have compiled field evidence based on interviews with 29 venture capitalists as well as an extensive study of VC-related books, blogs, and podcasts describing the VC syndication process. We present descriptive statistics of our informants in table 1, illustrations of working assumptions and mechanisms in tables 2 and 3, and details on our

Table 1. Summary Statistics on the Qualitative Study Informants

Number of informants	29
Number of firms	22
Informant's title	
Partner, vice president, or managing director	23
Associate or principal	6
Informants' mean (S.D.) industry experience in years*	13.2 (7.17)
VC firm HQ location*	
East Coast	16
West Coast	6
Firms' mean (S.D.) number of investments over lifetime*	95.5 (63.7)
Firms' mean (S.D.) syndicate partners over lifetime*	140 (248)
Firms' mean (S.D.) age*	15.6 (8.89)

* Interviews took place in four waves between 2016 and 2018. Information on backgrounds of participants and their firms was compiled from Crunchbase, VentureXpert, and LinkedIn as of December 2018. Details on the qualitative study methodology are available in Online Appendix A.

Table 2. Illustrations of Working Assumptions from Qualitative Study

Theme	Illustrative quotes
Assumption 1: VCs may experience conflict in collaboration	
Conflicting goals	''Ideally the interests of everyone in the syndicate [are] aligned, but sometimes that's not the case. You might have situations where a fund is in [a] different stage . . ., you know. We have a bunch of capital that we need to put to work, so we're advocating an inside round, whereas somebody is kind of at the end, they don't have any more capital to put in, or else someone else is advocating to sell the company. So certainly perfect alignment doesn't happen every time.''
Group dynamics	''At the board level we have found that the more VCs you have in the room the worse things go in terms of getting agreement [*laughs*]. There are a lot of egos; we'd like to think we are more collaborative than they are, but certainly investors disagree.''
Politics and coalition building	''You know it's not so much having a disagreement . . . but [people] take it personally or go behind your back and try to get the CEO you like fired, that kind of stuff. That's not good.''
Assumption 2: Formal mechanisms and reputation are not sufficient to prevent conflict	
Formal mechanisms	[*What kinds of safeguards protect you from the risk of misalignment?*] ''Safeguards [*long laugh*], yeah, what are some safeguards. . . . [*still laughing*] Well, the older I get the more I fall into the camp that most of them in reality aren't worth the paper they're written on.''
Reputation	''I've seen an instance where one VC decided to continue to bridge the company basically to help them buy time to figure it out, and they are both kind of marquee VCs, the other VC in the cap table decided, essentially, not to put good money after bad, and so they kind of backed off. I don't know if their thought was that this company just went awry and we don't want to put any more money in, or if they were trying to be very opportunistic. So what ultimately happened was the company ran out of that bridge capital, and the second VC who was not supporting them along the way came in and let a recap [recapitalization] at a very, very low valuation, very advantageous terms for them. And so they essentially kind of duped the other VC who had been bridging the company all along.''
Assumption 3: Embedded ties influence choice of syndicate partners	
Trust and predictability	''If it's somebody I know, I know how they're going to work, that they're a good trustworthy person, I know how they will behave. It just takes a lot of risk out of it.''
Friendship and affect	''Basically, it's a good old boys club, you've got friends across the street. You play golf together, you go to dinner with the wives, you know. And you've been on two boards before that did well. So why bring in somebody you don't know?''
Assumption 4: VCs use relational information in partner selection	
VCs seek relational data on newcomers	''We talk to their co-investors, other people they worked with, other companies they've invested in. You can get this info through Pitchbook or any other source.''
Newcomers seek relational data on the syndicate	''Part of your diligence is to talk to people that are already invested in the company. You should be able to get a sense even if the VCs are trying to put on a nice front. . . . That's just part of the experience, the part of knowing how things are. . . . You can miss it, you can also make mistakes, in which case, buyer beware, right?''

qualitative design in Online Appendix A (http://journals.sagepub.com/doi/suppl/10.1177/0001839219834011).

The first condition for an appropriate context for this study is that interorganizational collaborations must be common. VC satisfies this condition, as firms

Table 3. Illustrations from the Qualitative Study of the Key Mechanisms

Past collaborative histories may induce faultlines and shape expectations about power and conflict among collaborative partners
''I think there is a probability because you care more about somebody you've already established a relationship with, you are a little bit willing to be [aligned]. If you think of what it requires to be aligned, [what] we are really talking about is potentially collaborating together and negotiating some give-and-take together. Those types of acts require certain trust. So if this is a new party I am co-investing with and I never co-invested with before, and we are negotiating the deal, then I am likely to be a little more guarded and put more protection in places to protect my firm than saying, 'Well, I know how Sarah operates, and I know she is not going to take advantage of me on this particular deal point.' So I am okay giving a little bit on the negotiation related to this and creating an alignment.''
''[Y]ou could have disagreement in some aspects, like over timing, or whether to accept an offer for sale, something like that. It is less likely to happen if you have a long history with the fund.''
''You always go to people you know first. Because you like them and know how they behave. When you can't get them to bite, you go to people you don't know well who have big pots of money and it's just a crap shoot, you just don't know.''
Collaborative histories and the resultant expectations about power and conflict shape partnering dynamics and the choice of new partners
''Because there is already misalignment, you got to be extremely careful who you bring in. Because now you are changing the balance, it depends on if the syndication has control of the board. If the syndication has control of the board, then you want to make sure that the newcomer . . . is aligned with you, and not with the person you are misaligned with. It's going to become a delicate balance as to whether or not you want to bring somebody in if you suspect there could be a misalignment.''
''Before the decision is made to accept a certain investor, you definitely want to understand, you know, are they going to be on my side or their side. There is no question about that.''
''Clearly if [you and I are not aligned . . . and] you are going to bring in someone who works closely with you, they are going to be more aligned with you. I would argue longer about who [to pick] as long as I had a choice between your friend and a third party.''
Status acts as a source of power in a syndicate
''[Marquee investors] will typically bring in their friends to do later stage investing.''
''Votes are equal for the most part. But when [a high-status VC] comes in, we all kind of lean on [them]. . . . if we all disagree, they have a little more influence.''
''If you just have a small local VC firm, Excel or Sequoia is in the company and Sequoia thinks that we should sell the company, you will have to think twice before you stand up and say no. There is no question about that, in respect of our relationship with the company.''
Experience helps mediate frictions
''Because you've already got contention, you want a very professional, very astute, and very experienced newcomer. . . . Because if you've got experience, you've done a fair amount of these. And also you know each other, you know that you've been through this before, you know how you are going to have to deal with it.''
''There is some skill involved in trying to build collaborative syndicates. And it comes from in-person board meetings. . . . There are a variety of VC personalities, probably more type A, big ego people than typical professions, so I've had to, for example, talk to each of the different parties in the syndicate, try to get votes on a specific case for multiple months about a process, and try to structure a deal.''
''The new experienced partner can bring consensus . . . because of their experience, they can back up their opinions with examples. They can explain to you based on their history why they make this decision. They are very credible.''

often syndicate with one another to share risk, information, deals, and resources (Lerner, 1994; Brander, Amit, and Antweiler, 2002). Syndication patterns in VC and the social structure enacted by syndication have been topics of frequent study (e.g., Podolny, 2001; Sorenson and Stuart, 2001, 2008; Kogut, Urso, and Walker, 2007). Moreover, syndicates are relatively similar in purpose

and function to other interorganizational collaborations, providing a good canvas for our study.

Second, the appropriate context must contain collaborations that grow over time and provide a way to reliably track changes of membership in collaborations. VC firms invest in companies sequentially in financing rounds, and the composition of syndicates often changes at every round, as new VC firms join syndicates and some withdraw. Between 1985 and 2008, 58 percent of all follow-on syndicates had newcomer additions (69% of multi-VC syndicates). On average, syndicates started with three members and added one newcomer in each follow-on round, and about two newcomers were added over the life of a syndicate in follow-on rounds.[1] Newcomer additions are more frequent in expansion and later-stage rounds than in startup/seed, early-stage, buyout/acquisition, and other stage rounds.

Third, we need a context in which members potentially experience conflict on joint decisions. Prior research and our own interviews suggest that this tension is not trivial among VC firms. Venture capitalists have a double role of balancing the objectives of the ventures they invest in with those of their limited partners, so ''VCs may find themselves in a fiduciary sandwich'' (Feld and Mendelson, 2016: 128). They may be concerned about their own reputations, their ability to raise the next fund (Garg, 2013; Barrot, 2016; Zhelyazkov and Gulati, 2016), or the resource needs of other ventures in their portfolios (Ozmel and Guler, 2015). These diverging objectives may create conflict in a syndicate. As result of their colliding roles, venture capitalists may act in ''confusing, complicated, and occasionally difficult ways'' (Feld and Mendelson, 2016: 128). In our interviews, venture capitalists talked about the possibility of having fractures among investors. A venture capitalist commented that syndicates ''absolutely experience conflict'' in the following areas:

> Everything from recruiting management team members, who should be added to the team, option pool grants, when to go raise money, who to raise money from, how much money to raise, when to push for an acquisition, when to push for an IPO, pretty much everything.

Fourth, in an ideal context for this study, the tension between joint benefits and self-interest should influence the actions of the parties. If formal mechanisms and industry norms are so strong that all self-interested behavior is severely sanctioned, the consequences of conflict may be minimal. In spite of the importance of reputation in VC (Lee, Pollock, and Jin, 2011; Pollock et al., 2015; Zhelyazkov and Gulati, 2016) and the prevalence of complex contracts, not all VCs approach syndicates with a cooperative attitude. In a striking illustration of the lack of generalized trust in the industry, Jason Mendelson, the cofounder of Foundry Group and an active member of the National Venture Capital Association, stated,

> I am not saying all venture firms are bad, but in my opinion at least 50% of them hurt entrepreneurs and 25% of them don't do any good. There's only a quarter of the VC firms that I've worked with that really help the entrepreneurs. And frankly it's

[1] Syndicates may also lose members as some VC firms may withdraw (Zhelyazkov and Gulati, 2016).

> amazing . . . to me, with somewhat transparent information going on the Internet, that the opacity of reputation still exists. I would say just on the boards that I am on, a good half of the VCs that we share the board with, I don't respect them, I don't think they are transparent. They've got the right buzzwords, they've been coached up to say the right things, but they don't have the act. (Stebbings, 2017)

Recent studies have reported power considerations and political dynamics in VC syndicates' decision making (e.g., Guler, 2007; Ma, Rhee, and Yang, 2013). Our interviews with venture capitalists corroborate this. One VC partner told us that decision making in a syndicate can get very political and that firms often need to acquire support from other syndicate members. Another interviewee explained that when decisions are likely to be ''contentious or fractionated,'' venture capitalists may have concerns about legal liability. ''So you try to work on these things [offline] outside the realm of the board.''

In short, even in a collaborative industry like VC, the tension between the divergent goals of venture capitalists, the potential for conflict, and heterogeneity among VC firms in their approaches to collaboration make a study of group dynamics relevant.

Relational Embeddedness and Newcomer Additions

Relational embeddedness refers to the strength of the relationship between two organizations and represents a ''combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie'' (Granovetter, 1973: 1361). Trust generated through past interactions is perhaps the strongest safeguard against self-interested behavior in interorganizational collaborations (Blau, 1964; Granovetter, 1985; Gulati, 1995a). Moreover, repeated interactions allow firms to develop a shared set of norms (Simmel, 1950; Krackhardt, 1999), a higher level of coordination through a better understanding of one another's expectations and shared routines (Uzzi, 1996; Li and Rowley, 2002), and a more fine-grained information exchange (Gulati and Gargiulo, 1999). Finally, embeddedness creates positive emotions among participants (Homans, 1951; Granovetter, 1973; Lawler and Yoon, 1993), especially when past relationships have resulted in satisfactory outcomes (Labianca, Brass, and Gray, 1998; Lawler, 2001; Zhelyazkov and Gulati, 2016).

The VC industry is one characterized by embedded ties, as venture capitalists often prefer to work with past partners (Sorenson and Stuart, 2001; Hochberg, Ljungqvist, and Lu, 2007; Kogut, Urso, and Walker, 2007; Meuleman et al., 2010; Gompers, Mukharlyamov, and Xuan, 2016). A recent large-scale survey of VC investors reported that ''past shared success'' is one of the most important criteria in choosing a syndicate partner (Gompers et al., 2016). Our interviewees also pointed out the benefits of embeddedness, such as trust and a richer exchange of information.

Given the strong theoretical and empirical backing for the importance of relational embeddedness in tie formation, we expect new member additions to interorganizational collaborations to also follow a logic of embeddedness. But the embeddedness of a prospective newcomer with a multi-member interorganizational collaboration could occur in various patterns. We note two distinct patterns of relational embeddedness that might ensue between

members of a collaboration and a prospective newcomer. First, the newcomer may have embedded ties to the collaboration through strong ties with any one member. We label this the depth of embeddedness between the newcomer and the collaboration. Second, the newcomer may have a number of embedded ties with the collaboration because it has had prior ties with more than one member of the collaboration. We label this the breadth of embeddedness. These two patterns may appear similar on the surface but represent different social dynamics. While breadth represents a more dispersed pattern of embeddedness through familiarity with multiple members, depth represents a stronger relationship through repeated dyadic ties with a single member.

Because the literature does not distinguish between these different patterns, we start with the baseline expectation that, all else being equal, they will both facilitate the addition of a prospective newcomer to a collaboration. Our fieldwork in the VC industry corroborates a preference for partners with either type of embeddedness, both by the incumbents and prospective newcomers. An informant illustrated the advantages of depth as follows: ''[If] I've done deals with a guy that's coming into the next round, it would certainly make it easier. Because I can say, look, here is the guy who has done three deals with us, here is why I recommended them for you.'' Similarly, informants touched on the benefits of breadth in a syndicate. For example, a newcomer who knows the majority of the syndicate members ''is perceived better relative to somebody they don't know. You will see there is a kind of indirect advantage that can be given too. A lot of times, you may get an early introduction to the company from that syndicate.'' Based on prior work on embeddedness and the illustrations in our context, we expect,

Hypothesis 1a (H1a): The greater the depth of embeddedness between a prospective newcomer and the incumbent members of an interorganizational collaboration, the more likely that the prospective newcomer will participate in the collaboration.

Hypothesis 1b (H1b): The greater the breadth of embeddedness between a prospective newcomer and the incumbent members of an interorganizational collaboration, the more likely that the prospective newcomer will participate in the collaboration.

Network Faultlines in Interorganizational Collaborations

While the association between relational embeddedness and newcomer participation is often straightforward, group dynamics that form in the collaboration may complicate this relationship. When multiple organizations are part of the same collaborative structure, patterns of prior relationships among them could provide clues to the group dynamics in the collaboration. As noted earlier, collaborations may get fractured along past collaborative histories (Kapferer, 1969; Thoden van Velzen, 1973; Thurman, 1979; Doreian, 1982; Heidl, Steensma, and Phelps, 2014).

The relationship between patterns of past collaboration and group dynamics was manifest in the field interviews. Many informants suggested that they expect greater alignment with those they have worked with in the past and have concerns about misalignment with those they have not: ''Do I like to work with the same people again and again? Yeah, because we self-select into a

group. I would expect that means we have less conflicts. On average the people I have done business with before, I want to keep doing business with [them], because there will be way less conflict.'' It is conceivable that fractures may occur between subgroups of syndicate members that are strongly embedded in their subgroups but weakly embedded across the syndicate. An example shared by an informant clearly illustrates how alignment could occur along patterns of past ties:

> One of the companies . . . was doing really well, growing on target all the time. But two of the VCs on the board become friends even before the investment and they decide to start their own fund together. . . . So they ask the company to sell so that they can show that one on their track record. So I don't think they were aligned anymore with what was the best for the company.

VC syndicates provide an interesting demonstration of how collaborations with network faultlines emerge and continue to exist, despite adverse dynamics. Even though venture capitalists have a strong preference for embedded co-investment partners, they may find themselves in syndicates with a mix of embedded and non-embedded ties for a variety of reasons. For instance, they may at times be compelled to collaborate with partners without a shared history if new partners can provide complementary resources, such as access to distant investment opportunities, capital, or industry-specific expertise (Mitchell and Singh, 1996; Gulati and Gargiulo, 1999; Ahuja, 2000; Sorenson and Stuart, 2001; Polidoro, Ahuja, and Mitchell, 2011). In some cases, VCs may need to reach out to new partners if their preferred partners are not available as co-investors because, for instance, they have already invested in a competing deal (Pahnke et al., 2015). Moreover, partner selection decisions are made collectively, with the input of all VC investors and the entrepreneur (Wright and Lockett, 2003), and syndicate members may have to accept partners that other members bring in.[2] For instance, ''More often than not, say we're investing $15 million. Lead investor comes in and says, 'I'll do five. And we'll find another five through friends of mine. But I want the insiders to do five. Cause I'm not investing if you're not investing.''' In such cases, subgroups based on prior relationships could develop in the syndicate. Venture capitalists may not see eye to eye with all members of such a syndicate, experiencing the kinds of tensions documented above. One of our interviewees commented about undesirable syndicate partners, ''Sometimes you have to hold your nose and swallow hard and move on. 'Cause it's about that ultimate outcome.''

Network Faultlines and New Member Additions

New member additions are consequential decisions that may influence both the overall benefits to a collaboration and the distribution of those benefits to each member. We therefore expect fractures among subgroups to influence new member additions to the extent that a given newcomer has the perceived

[2] Because our theoretical framework is on the relationships among members of interorganizational collaborations, we chose not to focus on the entrepreneur. In the empirical study, the matched sample design allows us to keep the venture and entrepreneur constant and examine new partner additions as a function of VC characteristics.

potential to align with one or more of the subgroups in the collaboration. When group members are fractured along network faultlines, they are likely to evaluate a prospective newcomer from the perspective of how the distribution of power will change in the collaboration. In general, power imbalances tend to hurt weaker actors (Emerson, 1962; Blau, 1964; Casciaro and Piskorski, 2005), so actors move to limit or balance the power of their exchange partners (Emerson, 1962). Because the addition of a member to one of the subgroups has the potential to increase that subgroup's power to influence overall group outcomes in its favor (Lau and Murnighan, 1998; O'Leary and Mortensen, 2010), a newcomer that aligns with one subgroup could face skepticism from other subgroups due to concerns about the future distribution of power (Mizruchi and Stearns, 2001).

Our field work participants frequently stated that when there is misalignment in a syndicate, venture capitalists consider with whom a prospective newcomer will likely align upon joining. It was evident that past collaborative histories and the resultant expectations about power distribution shaped the choice of new partners, especially when there was conflict in the syndicate. For instance, an informant explained that if a co-investor with whom they had conflict tried to introduce a new investor to the syndicate, ''I would push back against that.'' Another commented:

> If you're raising another round of financing, and you don't see eye to eye with one of the syndicate members, you would certainly be very careful. You'd want to make sure you're more closely aligned with the new syndicate partner to the extent that's possible. Obviously, the counterparty is going to try to make sure the new partner is most aligned with them.

In other words, group dynamics may influence the choice of new partners due to concerns about the future distribution of power. To the extent that such dynamics follow patterns of past relationships, it may differentially affect the choice of newcomers with different patterns of embeddedness with the collaboration. We hereby expect that when network faultlines are present, depth and breadth may have different influences on a newcomer's likelihood to join.

Depth of embeddedness. Prospective newcomers with deep embeddedness with the collaboration may be adversely affected by the power struggle due to subgroup conflict. The logic of embeddedness suggests that a prospective newcomer that is deeply embedded with one member of a collaboration is more likely to align with that member or its subgroup upon joining. The newcomer is more likely to share information, collaborate, and generally agree more with that member and its subgroup. Therefore if the collaboration contains faultlines, the depth of a newcomer's embeddedness with a member may cause concerns among other members regarding the distribution of power and the alignment in perspectives. Our informants in the VC industry illustrated this as follows:

> What you don't want to have is have the minority investors get a majority vote of the class for their friends. Then they can force anything they want to. . . . even against the board. They could form an action for the company that's in their best interest and not the company's best interest if they have majority vote.

> They'll bring their buddy in, control the class, and then they'll ignore what your input is. If you have a change of control decision . . . then the last class in gets majority vote.

These concerns may mitigate or even offset the positive impact of depth of embeddedness in introducing a newcomer to the collaboration. Such newcomers are then less likely to gather support in a collaboration with stronger network faultlines than in one with weaker network faultlines. Moreover, these newcomers may be less willing to join the collaboration, because they may also understand the adverse implications of subgroup dynamics. We therefore predict,

> **Hypothesis 2 (H2):** As the strength of the network faultlines among the members of a collaboration increases, the positive relationship between the depth of a prospective newcomer's embeddedness with the members of the collaboration and the likelihood of the newcomer's participation will weaken.

Breadth of embeddedness. Conversely, a prospective newcomer with broad embeddedness is more likely to be accepted by the members of a collaboration with network faultlines because more members have positive dispositions toward this newcomer. They may perceive the newcomer to be less likely to bias the distribution of rewards against them as a result of shared past experiences. They may trust the newcomer more and have improved communication. In fact, a newcomer with ties to members across faultlines may help alleviate conflict on future issues, as common ties could help mediate between subgroups and play a unifying role (Simmel, 1950; Wall and Lynn, 1993; Krackhardt, 1999; Phillips and Cooney, 2005). In a study of two emergent networks, Human and Provan (2000) showed how mediating actors may increase the level of collaboration in partnerships with multiple members, especially when the networks are fragmented along prior ties. As a result, members may view the admission of a newcomer with broad embeddedness as a way to strengthen the collaboration and agree more easily on the newcomer. The breadth of a newcomer's embeddedness may also increase its willingness to join, since it is likely to enjoy stronger support from multiple subgroups.

In the VC industry, our respondents concurred that newcomer investors may fill a mediation role: ''sometimes you look for a neutral [newcomer], you know, both parties acknowledge that there are differences, and you choose someone more neutral.'' They also illustrated the impact of breadth as follows:

> If you've got that preexisting relationship, you've got a stronger ability to mediate . . . parties [in conflict], or you can have that kind of conversation . . . and say, ''Hey are you okay with this? [It] looks like you guys are misaligned here, and what do you think about this?'' Maybe there is more background to the story. Without that relationship, you may never get that background. Maybe that makes you comfortable as a newcomer coming in, and you get them comfortable as well.

> If the existing syndicate is two firms, firm A and firm B. And [you] have a preexisting relationship with firm A and firm B, but firm A and firm B are both misaligned. . . . [B]y having that preexisting relationship with both parties, you can serve as mediator and bring in value that way, where you are trying to say, okay, firm A feels disadvantaged, is there anything that you can do with your investment proposal that

somewhat brings the alignment back together? Because you have the existing relationships with both parties, you could serve as that person.

We therefore predict,

Hypothesis 3 (H3): As the strength of the network faultlines among the members of a collaboration increases, the positive relationship between the breadth of a prospective newcomer's embeddedness with the members of the collaboration and the likelihood of the prospective newcomer's participation will strengthen.

The preceding discussion assumes that the members of an interorganizational collaboration understand which subgroup a newcomer is likely to join based on the patterns of relationships between members and prospective newcomers. It is important to note that this does not require the members to carry out sophisticated calculations about the current or future distribution of ties or the level of future conflict. It merely requires knowledge of the prior experiences of a newcomer with each member of the collaboration. In contexts in which interorganizational collaborations are common and past collaborations are public knowledge and serve as a basis for reputations, this assumption is easily met. When we asked our informants whether they knew about each other's past ties, they invariably said they did. As one put it, ''that's homework.''

Organizational Attributes as Moderating Mechanisms

The prior discussion suggested power dynamics and potential for mediation of conflict as the main mechanisms influencing newcomers' participation in the presence of network faultlines. To further explore the plausibility of these mechanisms, we identified newcomer attributes that are likely to exacerbate a newcomer's power and potential for mediation. We argue that, in the case of depth, the status of a newcomer's strongest tie in the collaboration is likely to influence power dynamics, and in the case of breadth, the prior experience of the newcomer is likely to influence its ability to mediate.

Depth of embeddedness. We argued earlier that a prospective newcomer with deep embeddedness would be less likely to join a collaboration with strong network faultlines because the members are more likely to disagree on this newcomer. Under these conditions, however, the likelihood of joining for this prospective newcomer may also depend on the attributes of the member to which it is strongly tied—in particular, the power of that member in the collaboration. We expect that the negative impact of a newcomer's depth of embeddedness may be mitigated if the newcomer is strongly tied to a powerful player in the fractured collaboration because the powerful member may have a greater voice in newcomer selection.

We focus on status as a source of power in a collaboration. Status position is a well-understood source of power in groups (Skvoretz and Willer, 1993; Gould, 2002), as high-status firms control more resources and have more leverage than other firms (Emerson, 1962; Pfeffer and Salancik, 1978). When the collaboration faces conflict in terms of choosing a newcomer, a high-status member may exert power to influence the group's decision (Emerson, 1962; Gulati and Sytch, 2007; Anderson and Kilduff, 2009; Beckman et al., 2014). It follows that a prospective newcomer endorsed by a high-status member is

more likely to join than one endorsed by a low-status member, especially when there is conflict. As faultlines reduce the power of opposing members to coalesce against a powerful member (Cook and Gillmore, 1984; Cook, Cheshire, and Gerbasi, 2006), opposing members are more likely to defer to the high-status member and accept a newcomer that is deeply embedded with the high-status member, even though it may not be in their own best interests (Podolny and Phillips, 1996; Gould, 2002). At the same time, a prospective newcomer who enters the collaboration with strong ties to a powerful member may anticipate extracting more benefits from the collaboration. When this effect is strong enough to offset the downsides of joining a fractured collaboration, the newcomer may be more motivated to join.

This pattern was also corroborated in our context. Venture capitalists with high status are desirable partners because they can offer their ventures access to resources and confer status to their co-investment partners (Hochberg, Ljunqvist, and Lu, 2007; Lee, Pollock, and Jin, 2011). This increases their power to influence decisions such as the choice of new members in a syndicate. As Ma and colleagues (2013: 714) reported from an interview with a venture capitalist, ''[I]f you are Kleiner Perkins you speak, we listen. Period.''[3] Similarly, our respondents corroborated the importance of status. An informant explained,

> [I]f other VCs that are part of the syndication are also part of the other syndication with Kleiner Perkins . . . they could pull rank. It is not clean cut. It is sort of like, there is always a bigger picture, there is always a behind-the-scene issue. It is not just what's in front of you. So the decision isn't made by just what's in front of you, the decision is made on a broader scale of other investments you are in with that member of syndication. You might be persuaded because you are in three other investments with them—you don't want to create an issue that cools those other investments.

Conversely, when a prospective newcomer is deeply embedded with a low-status member of the collaboration, opposing members of the collaboration may exert more resistance against the newcomer to limit an increase in the power of the low-status member. Under those conditions, the newcomer in question may also be less motivated to join, because the rewards from joining are more limited. As a result, we expect the status of the prospective newcomer's strongest tie to mitigate the negative effect of depth in the presence of strong faultlines.

> **Hypothesis 4 (H4):** Depth of embeddedness will have a greater positive effect on a newcomer's likelihood of participating in a collaboration with strong network faultlines when the newcomer's strongest tie is with a higher-status member in the collaboration.

Breadth of embeddedness. We argued that a prospective newcomer would be more likely to join a collaboration with network faultlines when it has broader embeddedness, because breadth may help it mediate across subgroups in the collaboration. But not all newcomers are equal in their ability to mediate through broader connections (Kwon and Adler, 2014). While breadth

[3] Kleiner Perkins is one of the largest, oldest, and highest status venture capital firms in the Silicon Valley, having invested in ventures such as Amazon.com, Google, Netscape, Genentech, and Twitter.

provides the requisite communication and trust to mediate among opposing subgroups, the prospective newcomer's experience improves the capabilities to do so. In general, experience helps firms conduct effective negotiations, understand and reconcile potentially conflicting goals, and find compromise solutions (Thompson, 1990a, 1990b; Wall and Lynn, 1993; Nadler, Thompson, and Boven, 2003). As a result, we expect a prospective newcomer's experience and breadth to play complementary roles in mediation. Equipped with a better ability and structural position to navigate conflict in a collaboration with faultlines, a prospective newcomer with greater experience and broad embeddedness may be a more preferable partner.

A comment from Andy Weissman, a partner at the prominent VC firm Union Square Ventures, illustrates this in our context: ''I think that managing conflicts amongst board members . . . is the thing that takes more experience. . . . I think you just have to go through it enough times to be good at it'' (Stebbings, 2017). Our respondents also acknowledged experience as a key factor in managing political dynamics in syndicates. One stated:

> Group dynamics are relatively the norm. I think VCs being put in those positions more frequently have a learned way of dealing with group dynamics and probably get sharper over time in terms [of] how they have to manage that, particularly to their own preferred outcome. . . . When you're put in situations where people have different opinions or it's a very difficult situation where there's few good outcomes, the people who have seen it and have worked through those things have a little bit of, I'm going to use the expression muscle memory.

Conversely, a prospective newcomer with a low level of experience may be limited in its ability to mediate in the presence of subgroups, even when it has breadth. A low level of experience may also limit the prospective newcomer's motivation to join a fractured collaboration for the same reason. In other words, experience may enhance the impact of a prospective newcomer's breadth of embeddedness on its ability and motivation to tackle conflict and, in turn, its likelihood of participation in a collaboration with network faultlines:

> **Hypothesis 5 (H5):** Breadth of embeddedness will have a greater positive effect on a newcomer's likelihood of participating in a collaboration with strong network faultlines when the newcomer is more experienced.

DATA AND METHODS

In a large-sample study using VC investment data between 1985 and 2008 from the VentureXpert database, we examined the likelihood that a newcomer VC firm would participate in a follow-on syndicate.[4] Given the overreporting of financial rounds (Gompers and Lerner, 2004), we combined two rounds into one if the two consecutive rounds were less than 90 days apart (Guler, 2007). Follow-on syndicates are those after the first round, when the initial syndicate was formed. We defined a newcomer VC firm as one investing in a focal venture for the first time in a given follow-on round. Incumbent syndicate

[4] We focus on VC firms rather than VC funds for two reasons: (1) VC firms are the managers of VC funds; (2) VC firms may partner with each other across multiple funds, and often the same group of individuals manages different funds for the same VC.

members are the investors that had already invested in the venture and continued their investments in either the focal round or future rounds. A VC firm that invested in the previous round(s) but did not invest in the focal round or later was not counted as a syndicate member.[5]

We constructed a sample of VC syndicates using the following procedures. First, we excluded individual investors and focused on VC firms only. Second, we focused only on follow-on syndicates in which at least one newcomer VC firm joined the syndicate. Third, we excluded rounds with fewer than three incumbent members from previous round(s) due to our interest in group-level dynamics. Fourth, because international VC investment behaviors may be different, we focused on U.S.-based ventures with U.S.-based VC investors only. Fifth, we excluded follow-on syndicates with any undisclosed VC firms in their previous rounds because we would not have a complete picture of all syndicate members and their ties.

After identifying the subsequent rounds with newcomer firms, we created a matched sample of unrealized syndicate–newcomer VC pairings using coarsened exact matching (CEM). Following previous research adopting CEM (e.g., Rogan and Sorenson, 2014), we matched each actual newcomer with up to five hypothetical ones that are of the same investor type; invested in the same industry, state, year, and quarter; and are in the same bucket of geographic distance and industry distance from the focal venture as the actual newcomer.[6] These counterfactuals could have joined the focal syndicates but did not.

Using these procedures, we included 1,126 rounds in our analysis and identified 1,936 newcomer VC firms for 899 ventures.[7] Since some cases have fewer than five eligible counterfactuals, our final sample has 8,759 observations.[8] Following previous research (e.g., Greve, 2000; Sorenson and Stuart, 2008; Rogan and Sorenson, 2014) based on matched sampling, we tested our hypotheses using a conditional logit model (McFadden, 1973). By grouping on focal ventures and incumbent syndicate members, the conditional logit model controls for the attributes of ventures and syndicates and enables a direct comparison among newcomer alternatives in a choice set. Together, the CEM sampling approach and conditional logit used in this paper enable us to examine why a particular newcomer firm, rather than the corresponding counterfactuals, joins a round with a particular group of incumbent members for a particular venture. We tested our hypotheses using two-way or three-way interactions of depth or breadth of embeddedness, network faultlines, and newcomer attributes. For ease of interpretation, we mean-centered the variables before generating the interaction terms.

[5] The underlying assumption is that VC firms that stopped investing before a focal round were not active in the decisions about who would join the syndicate. Robustness tests of this assumption are reported in Online Appendix B.

[6] Hypothetical newcomers were matched without replacement in the same round with multiple newcomers. The main results presented are based on matching according to four investor types—independent VC, corporate VC, bank-affiliated VC, and other type—and four buckets of geographic distance and industry distance. We also conducted coarser and finer-grained matching and found robust results (see Online Appendix B for more details).

[7] Based on our interviews, we considered all syndicate members as defined above, rather than just the lead VC, as decision makers. Robustness tests for the role of lead VCs are reported in Online Appendix B.

[8] We find consistent results with all available counterfactuals based on CEM, as reported in the robustness tests.

Measures

Dependent variable. *VC firm participation* is a dummy variable indicating whether a focal VC firm participates in a syndicate in a given round. A focal VC firm refers to a prospective newcomer VC firm at risk of joining a syndicate.

Independent variables. *Depth of embeddedness* captures the maximum tie strength between a prospective newcomer VC and incumbent syndicate members. We first calculated the dyadic tie strength between the prospective newcomer and each syndicate member based on past co-investments. Combining prior literature studying co-investment tie strength (Sorenson and Stuart, 2001, 2008; Hallen, 2008) and recent research that has emphasized the importance of the outcomes of prior relationships (Zhelyazkov and Gulati, 2016; Zhelyazkov, 2018), we focused on ''good-quality'' ties, calculated as the number of co-investments between two firms in the same round for the same company in the past five years, excluding those in which either VC one-sidedly withdrew from the syndicate.[9] Withdrawal of a VC from a syndicate is often damaging to the other participating VCs and is normatively sanctioned in the VC industry (Guler, 2007; Zhelyazkov and Gulati, 2016). Following Zhelyazkov and Gulati (2016), we defined withdrawal as permanent disappearance of a VC firm from a syndicate. Thus skipping one round, complete change in syndicate composition, or non-participation in syndicates following a successful exit event were not considered withdrawals. After calculating the number of good-quality ties between a prospective newcomer VC and each member of the syndicate, we took the maximum of these dyadic tie strength values to arrive at the depth of embeddedness for the prospective newcomer VC and syndicate.

Breadth of embeddedness captures the extent to which a prospective newcomer is familiar with incumbent syndicate members. We calculated this as the number of syndicate members with whom the focal newcomer has had at least one good-quality co-investment tie in the past five years, divided by the total number of syndicate members. To avoid double-counting ties, we excluded the prospective newcomer's strongest tie that was used to measure depth of embeddedness from both the numerator and the denominator. Breadth of embeddedness ranges from zero (a prospective newcomer VC has no prior ties with any of the syndicate members) to one (a prospective newcomer VC has worked with all of the syndicate members in the past five years). This density measure is correlated with the newcomer average tie strength of relevant ties ($\rho = .71$), which is the average strength of a newcomer's ties with syndicate members excluding its strongest tie. To identify the unique effect of breadth of embeddedness, we orthogonalized breadth against the newcomer average tie strength of relevant ties using the Gram–Schmidt procedure and included the latter as a control variable.[10] The results stay robust with or without controlling for the newcomer's average tie strength excluding the strongest tie.

[9] For syndicates formed in 1985, we used data from years 1980–1984 to construct tie-based variables.

[10] Previous research has used orthogonalization to handle variables with high multicollinearity concerns such that the generated variables represent the variance that cannot be explained by the highly correlated factors (Pollock and Rindova, 2003; Sine, David, and Mitsuhashi, 2007; Hiatt, Sine, and Tolbert, 2009; Galunic, Ertug, and Gargiulo, 2012; Zhang, Gupta, and Hallen, 2017). We computed orthogonalized variables using the Stata command *orthog*. Alternative orthogonalization schemes and removing orthogonalization yielded similar results, as reported in the robustness tests below.

Prior researchers have adopted measures of within-group dispersion of tie strength in their estimation of subgroup strength and risk of coalitions (Heidl, Steensma, and Phelps, 2014; Zhang, Gupta, and Hallen, 2017). Following these studies, we measured *network faultlines* as the standard deviation of the tie strength between each dyad of members within the syndicate, using good-quality ties for the past five years. We also orthogonalized network faultlines relative to average tie strength of incumbent members. Because the network faultlines variable is invariant in syndicates at each round, its main effect dropped out of the regressions. We tested our hypotheses using the interactions of network faultlines with other independent variables.[11]

To measure the *status of the strongest tie in the syndicate*, we first measured the status of each incumbent member with Bonacich's (1987) eigenvector centrality in the co-investment network of all VC firms: $c_i(\alpha,\beta) = \sum_{j=1}^{n} (\alpha + \beta c_j) R_{ij}$, where c_i is the centrality score of firm i, R_{ij} measures the relationship between firm i and j, α scales the measure, and β is set as equal to three-quarters of the reciprocal of the largest eigenvalue (Podolny, 1993; Sorenson and Stuart, 2001). We then identified a prospective newcomer's strongest tie with the syndicate as the member with the highest number of good-quality ties to the prospective newcomer and used its centrality. When two or more VC firms were equally identified as strongest ties, we used the one with the highest centrality. When the maximum tie strength of a newcomer with syndicate members is zero, we assigned the status of the strongest tie in the syndicate to be zero. We added the three-way interaction among this variable, network faultlines, and depth of embeddedness to test H4.

We measured *newcomer experience* as the total number of companies it invested in prior to the focal investment year (Lerner, 1994).[12] We used the three-way interaction among this variable, network faultlines, and breadth of embeddedness to test H5.

Control variables. Because conditional logit regression on a matched sample design effectively incorporates fixed effects at the syndicate level, the characteristics of the syndicate, round, or venture do not vary across actual or hypothetical cases. We therefore controlled only for the characteristics of the syndicate–newcomer or venture–newcomer pairings that could influence the likelihood of participation. We controlled for the *newcomer VC type dissimilarity*, as resource complementarity may drive interorganizational partnership formation (Gulati, 1999), and task and information heterogeneity may increase group performance (e.g., Bezrukova et al., 2009). Using the 14 investor types designated in VentureXpert, *newcomer VC type dissimilarity* was calculated as the proportion of syndicate members that are of different types from the prospective newcomer VC. We also controlled for *newcomer geographic distance to syndicate members*, because VC firms prefer proximate partners (Sorenson and Stuart,

[11] Exclusion of the main effect of network faultlines will not affect the interpretation of results, as our focus is on the conditional effects of newcomer depth and breadth of embeddedness (Sorenson and Stuart, 2008; Zhang, Gupta, and Hallen, 2017).

[12] In a robustness test, we used total number of deals (rounds of investments) until the focal year of investment to measure newcomer experience and obtained consistent results.

2001). We extracted the latitudes and longitudes of each VC office from the zip codes of VC firm offices and calculated the average of the distances between a prospective newcomer VC and each syndicate member using spherical geometry. We similarly calculated *newcomer geographic distance to venture* (Sorenson and Stuart, 2001). Following Sorenson and Stuart (2008), we also controlled for the *newcomer industry distance to syndicate members*. We first computed the industry specialization of each VC firm across 10 industry segments provided in VentureXpert as the percentage of the firm's investment volume in each industry segment in the prior five years. We then calculated the sum of the squared deviations across these segments between a prospective newcomer VC and each syndicate member (Sorenson and Stuart, 2008). Thereafter, we took an average of all industry distances between the prospective newcomer VC and syndicate members. Similarly, we controlled for the *newcomer industry distance to venture*, which is the newcomer's percentage of investment volume that is not in the industry of the focal venture (Sorenson and Stuart, 2008). Because status similarity influences tie formation (Shipilov, Rowley, and Aharonson, 2006), we controlled for the *newcomer status similarity* with syndicate members. We first calculated the ratio of the status of a prospective newcomer VC firm to that of each syndicate member by dividing the smaller of the centrality scores by the larger one for each dyad. Then we took the average of all dyads between the focal newcomer and syndicate members.[13] Next, we controlled for a newcomer VC firm's indirect ties to syndicate members, because they may facilitate tie formation (e.g., Gulati and Gargiulo, 1999; Li and Rowley, 2002). An indirect tie exists when two firms have not collaborated in the past five years but have each collaborated with a common third party (a geodesic distance of two). To calculate the *newcomer indirect tie density*, we counted the number of syndicate members at a geodesic distance of two to the newcomer VC and divided this number by the total number of syndicate members. Last, to ensure we fully consider the effect of tie strength and capture the independent effect of breadth, we also controlled for the *newcomer average tie strength*, measured as the average tie strength between a newcomer and syndicate members excluding the strongest tie.

RESULTS

We first compare the variables being matched in the realized and hypothetical subsamples and present the results before and after CEM matching in table 4. As shown in the table, despite the significant differences between realized and hypothetical subsamples before matching, our matched hypothetical sample is comparable to the realized sample.[14]

Table 5 shows the overall descriptive statistics and the correlation matrix. As expected, both depth and breadth of embeddedness are positively correlated with participation in the syndicate. Because our network faultlines variable does

[13] We also calculated this measure as (1) the average of the absolute differences between the centrality scores of each syndicate member and a prospective newcomer VC and (2) the absolute difference between the centrality score of the newcomer VC and the average centrality score of all syndicate members. The results remain robust.

[14] Please note that the categorical variables (year, quarter, industry, state) were matched exactly even though they do not appear in table 4. It is either meaningless or impossible to calculate their means.

Table 4. Comparison of Realized and Hypothetical Subsamples*

	Before Matching Realized/Hypothetical		After Matching Realized/Hypothetical	
	Mean	S.D.	Mean	S.D.
Newcomer VC type dissimilarity	.504/.216•••	(.408)/(.733)	.429/.429	(.395)/(.688)
Newcomer geographic distance to syndicate members	1.152/.603•••	(.721)/(1.533)	1.133/1.148	(.719)/(1.261)
Newcomer geographic distance to venture	1.050/.488•••	(1.066)/(1.465)	1.011/1.012	(1.077)/(1.580)
Newcomer industry distance to syndicate members	.250/.125•••	(.231)/(.403)	.236/.226	(.223)/(.307)
Newcomer industry distance to venture	.719/.379•••	(.291)/(.976)	.752/.739	(.259)/(.562)
Newcomer status similarity	.390/.205•••	(.236)/(.536)	.413/.403	(.230)/(.372)
Observations	2,523/84,399		1,936/6,823	

••• $p < .001$.

* Appropriate weight applied.

Table 5. Descriptive Statistics and Correlations

Variable	Mean	S.D.	Min.	Max.	1	2	3	4	5
1. Firm participation	.22	.41	.00	1.00					
2. Newcomer VC type dissimilarity	.37	.38	.00	1.00	.08•				
3. Newcomer geographic distance to syndicate members	1.11	.72	.00	3.24	.01	.15•			
4. Newcomer geographic distance to venture	.96	1.08	.00	2.71	.02•	.17•	.62•		
5. Newcomer industry distance to syndicate members	.22	.21	.01	1.61	.03•	.07•	.03•	.02•	
6. Newcomer industry distance to venture	.76	.24	.00	1.00	–.01	–.03•	.01	.02•	.02
7. Newcomer status similarity	.41	.22	.00	.98	–.00	–.11•	.01	.02	–.48•
8. Newcomer indirect tie density	.57	.32	.00	1.00	–.07•	.02	.01	.02	–.08•
9. Newcomer average tie strength	.56	1.54	.00	31.75	.02	–.07•	–.01	–.01	–.22•
10. Newcomer depth of embeddedness	3.15	5.89	.00	7.00	.04•	–.07•	–.00	–.00	–.26•
11. Newcomer breadth of embeddedness	.00	1.00	–16.70	3.44	.06•	–.05•	.00	–.00	–.22•
12. Network faultlines	.00	1.00	–7.07	8.44	.01	.11•	.06•	.05•	–.01
13. Newcomer strongest tie status	2.36	2.48	.00	1.09	.03•	–.02	.05•	.03•	–.33•
14. Newcomer experience	85.08	119.31	.00	1172.00	–.03•	–.02	.03•	.05•	–.24•

Variable	6	7	8	9	10	11	12	13
7. Newcomer status similarity	.25•							
8. Newcomer indirect tie density	.16•	–.02						
9. Newcomer average tie strength	.08•	.34•	–.44•					
10. Newcomer depth of embeddedness	.11•	.35•	–.36•	.71•				
11. Newcomer breadth of embeddedness	.07•	.33•	–.46•	.00	.13•			
12. Network faultlines	.04•	–.02	.00	.02	.07•	.01		
13. Newcomer strongest tie status	.13•	.38•	–.25•	.27•	.42•	.35•	.09•	
14. Newcomer experience	.17•	.21•	–.15•	.29•	.33•	.23•	–.01	.28•

• $p < .05$

not vary across actual or hypothetical cases, it is normal that it is not correlated with firm participation. The newcomer geographic distance to syndicate members and to the venture are highly correlated (r = .62), and average tie strength is highly correlated with depth of embeddedness (r = .71). We tested for multicollinearity and found that the condition index is 13.87 and the maximum variance inflation factor (VIF) of all variables including interaction terms is about 4.89 with an average VIF of 2.17. As these statistics are well below the thresholds (30 for condition index and 10 for VIF), we conclude that multicollinearity is not a concern in our model. We also reran analyses by dropping newcomer geographic distance to the venture and/or average tie strength. The results of our hypothesis tests remain unchanged.

The results of the conditional logit models are presented in table 6. Model 1 shows the results with control variables, while model 2 includes the main effects of independent variables. Next, we added interaction terms one at a time, with models 5 and 8 including all relevant two- or three-way interactions, respectively.

We first examine the impact of control variables on VC firms' participation. As expected, we find that a newcomer VC firm's geographic distance from syndicate members reduces its likelihood of joining the syndicate. Having a strong tie with a higher-status member in a syndicate or higher average tie strength with syndicate members increases a newcomer's likelihood of participation. We also find, however, that a newcomer VC that mostly invested outside of the industry of the focal venture or one that is less experienced is more likely to join the syndicate, suggesting that VC firms may extend their networks in follow-on rounds.

Model 2 includes our independent variables. We proposed in the baseline hypotheses 1a and 1b that a prospective newcomer would be more likely to join a collaboration when it had deeper or broader embeddedness. We find support for both hypotheses.

H2 proposed that when network faultlines among incumbent members are stronger, a prospective newcomer's depth of embeddedness would have a weaker effect on its probability to participate in a follow-on round. Models 3 and 5 in table 6 show a negative and significant interaction between a newcomer's depth of embeddedness and network faultlines among syndicate members. Given that significance levels may be misleading in nonlinear models, we plotted the marginal effects in figure 1.[15] Based on model 5, the marginal effect of a newcomer's depth of embeddedness at its mean is 45.88 percent lower when network faultlines among syndicate members are strong (at one S.D. above the mean) than when they are weak (at one S.D. below the mean).[16] We therefore find support for H2.

H3 proposed that when network faultlines among syndicate members were stronger, a prospective newcomer's breadth of embeddedness would have a greater positive impact on its participation in the syndicate. The interaction terms in models 4 and 5 are negative and not significant, and the plot of the

[15] Because the fixed effects of conditional logit regressions are not estimated, we generated graphs of interaction terms based on logit regressions, which show consistent results for all hypotheses despite including the main effect of network faultlines.

[16] All interpretations of effect magnitudes are based on setting other variables at their mean level and assuming the fixed effect to be zero. We computed the effect magnitudes using the Stata command *margins*.

Table 6. Hypothesis Testing Using Conditional Logit Regressions (N = 8,759)*

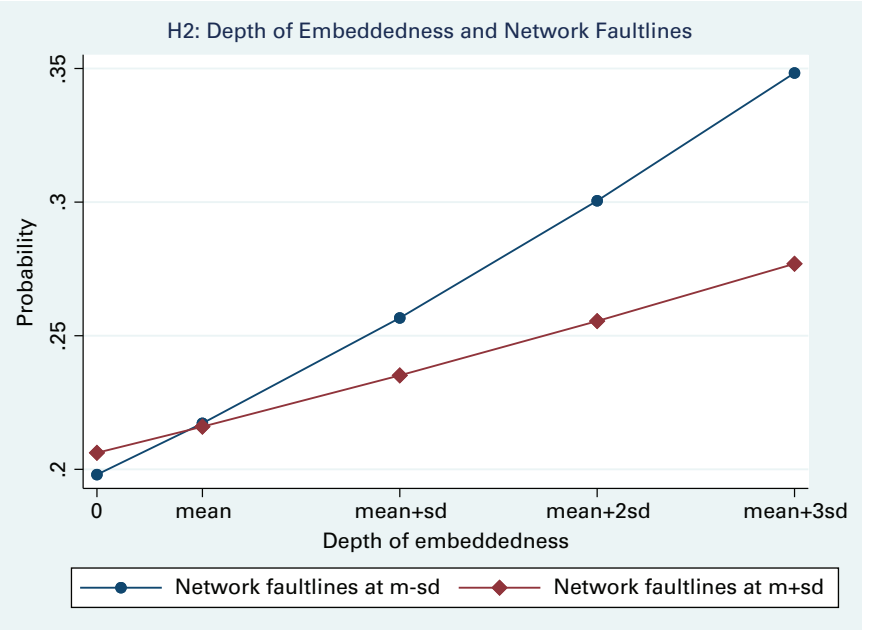
DV: Firm participation	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Newcomer VC type dissimilarity	.376	.021	−.188	.011	−.187	−.328	−.082	−.327
	(2.440)	(2.426)	(2.426)	(2.426)	(2.426)	(2.430)	(2.424)	(2.425)
Newcomer geographic distance to syndicate members	−.372••	−.380••	−.383••	−.380••	−.383••	−.369••	−.381••	−.371••
	(.141)	(.141)	(.142)	(.141)	(.142)	(.142)	(.142)	(.142)
Newcomer geographic distance to venture	.142	.169+	.172+	.169+	.172+	.174+	.175+	.177+
	(.095)	(.096)	(.096)	(.096)	(.096)	(.096)	(.096)	(.096)
Newcomer industry distance to syndicate members	−.048	.132	.124	.132	.123	.175	.091	.140
	(.184)	(.185)	(.186)	(.185)	(.186)	(.186)	(.187)	(.187)
Newcomer industry distance to venture	1.928•••	1.847•••	1.823•••	1.848•••	1.823•••	1.786•••	1.829•••	1.781•••
	(.342)	(.343)	(.343)	(.343)	(.343)	(.344)	(.343)	(.344)
Newcomer status similarity	.156	−.129	−.147	−.132	−.146	−.162	−.104	−.119
	(.170)	(.180)	(.180)	(.180)	(.180)	(.181)	(.181)	(.182)
Newcomer indirect tie density	−.532•••	−.083	−.080	−.082	−.080	−.054	−.075	−.053
	(.106)	(.140)	(.140)	(.140)	(.140)	(.141)	(.140)	(.142)
Newcomer average tie strength	.035	.033	.029	.033	.030	.017	.043	.024
	(.022)	(.033)	(.033)	(.033)	(.033)	(.034)	(.034)	(.035)
Newcomer strongest tie status	.067•••	.049••	.049••	.049••	.049••	.026	.055••	.029
	(.016)	(.017)	(.017)	(.017)	(.017)	(.018)	(.017)	(.018)
Newcomer experience	−.001•••	−.002•••	−.002•••	−.002•••	−.002•••	−.002•••	−.002•••	−.002•••
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
H1a: Depth of embeddedness		.033•••	.037•••	.033•••	.037•••	.060•••	.036•••	.064•••
		(.007)	(.007)	(.007)	(.007)	(.010)	(.007)	(.011)
H1b: Breadth of embeddedness		.193•••	.190•••	.194•••	.190•••	.190•••	.172•••	.168•••
		(.040)	(.040)	(.040)	(.041)	(.040)	(.042)	(.042)
H2: Depth of embeddedness × Network faultlines			−.011••		−.011••	−.026•••		−.020•
			(.004)		(.004)	(.008)		(.008)
H3: Breadth of embeddedness × Network faultlines				.008	−.002		−.012	−.022
				(.020)	(.020)		(.021)	(.023)
Network faultlines × Strongest tie status						.008		.020
						(.016)		(.017)
Depth of embeddedness × Strongest tie status						−.012•••		−.013•••
						(.004)		(.004)
H4: Depth of embeddedness × Network faultlines × Strongest tie status						.008••		.007•
						(.003)		(.003)
Network faultlines × Newcomer experience							−.001•••	−.001•
							(.000)	(.000)
Breadth of embeddedness × Newcomer experience							.001•	.001•
							(.000)	(.000)
H5: Breadth of embeddedness × Network faultlines × Newcomer experience							.001•••	.001•••
							(.000)	(.000)
Chi square	125.412	171.166	180.072	171.325	180.085	196.648	196.026	213.966
Log likelihood	−2694.251	−2671.374	−2666.921	−2671.294	−2666.914	−2658.633	−2658.944	−2649.974
Pseudo R square	.023	.031	.033	.031	.033	.036	.036	.039

$^{+}$ $p < .10$; •$p < .05$; ••$p < .01$; •••$p < .001$; two-tailed tests.

* Standard errors are in parentheses. All results stay robust with or without controlling for newcomer average tie strength excluding the strongest tie.

interaction effect corroborates this (available on request). So we do not find support for H3. This result may indicate opposing mechanisms at work: while incumbent members may prefer a prospective newcomer with tie breadth,

Figure 1. Two-way interaction plot between depth of newcomer embeddedness and network faultlines (H2).



the newcomer may prefer not to join due to its understanding of group dynamics.

H4 predicted that a prospective newcomer's strongest tie status would weaken the negative moderation effect of network faultlines on depth of embeddedness. The coefficients for the three-way interactions of depth of embeddedness, network faultlines, and strongest tie status are positive and significant in models 6 and 8.[17] Based on model 8, in the scenario in which the status of a newcomer's strongest tie is low (at minimum), the marginal effect of newcomer depth of embeddedness at its mean is 54.25 percent smaller when network faultlines are strong than when they are weak.[18] The difference is only 21.04 percent and not significant when the status of the newcomer's strongest tie is high (at one S.D. above the mean).[19] Accordingly, although a newcomer's depth of embeddedness dampens its likelihood of participating in a syndicate with network faultlines, the reduction in the likelihood of participation is about 89.59 percent smaller if it is embedded with a member that has higher status. Consistently, panel A in figure 2 shows that the difference in the slopes of depth of embeddedness between high and low network-faultline conditions is much smaller for newcomers strongly tied to higher-status members

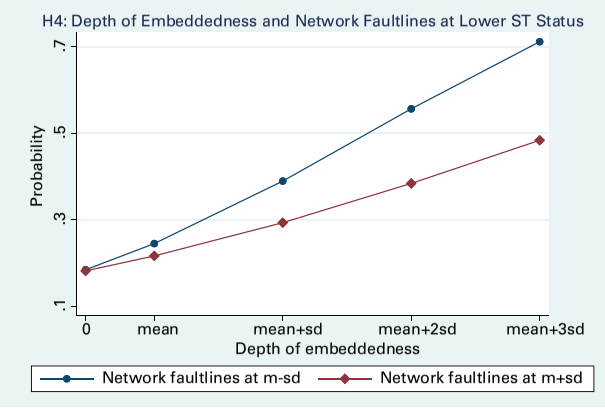
[17] We also tested the three-way hypotheses using split samples based on the mean of network faultlines and found qualitatively similar results.

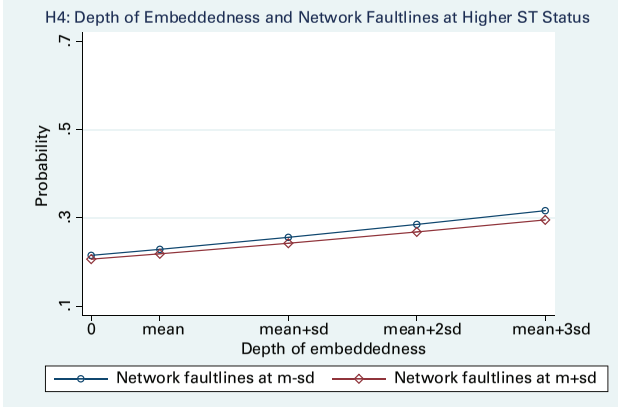
[18] We report magnitudes at the minimum value when mean minus standard deviation is outside the observed range of a variable. The magnitudes at mean minus standard deviation are similar.

[19] Since we are interested in the marginal effect of the depth and breadth of embeddedness, we interpret only the slopes of the curves. This is consistent with our use of conditional logit models, which do not estimate the intercept.

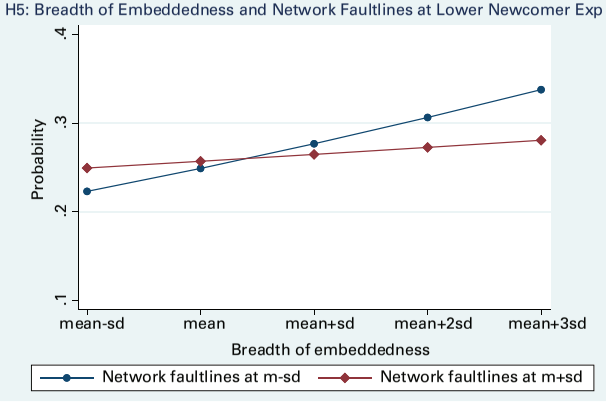
Figure 2. Three-way interaction plots.

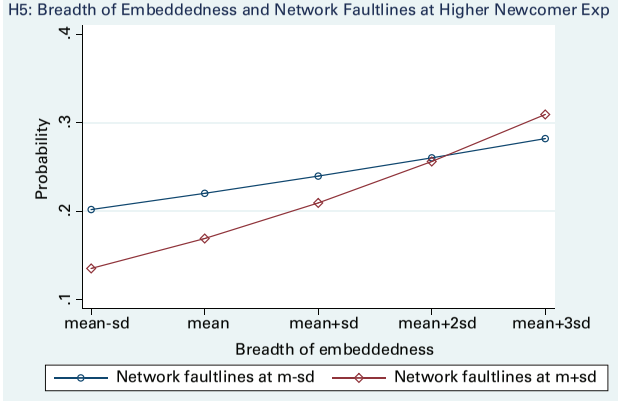
Panel A. Depth of embeddedness, network faultlines, and strongest tie (ST) status (H4)





Panel B. Breadth of embeddedness, network faultlines, and newcomer experience (H5)





(righthand-side plot) than for those strongly tied to lower-status members (lefthand-side plot). We therefore find support for H4.

H5 predicted that a newcomer's experience would strengthen the positive moderation effect of network faultlines on breadth of embeddedness. To test this, we computed the interaction of breadth of embeddedness, network faultlines, and newcomer VC experience. In models 7 and 8, we find a positive and significant coefficient for the three-way interaction. Based on model 8, for a prospective newcomer with a low level of experience (i.e., at minimum), the marginal effect of newcomer breadth of embeddedness at its mean is 85.56 percent smaller when network faultlines are strong than when they are weak. For a prospective newcomer with a high level of experience (i.e., at one S.D. above the mean), the marginal effect of newcomer breadth at its mean is 105.61 percent greater in the newcomer's participation in strong-faultline syndicates than in weak-faultline syndicates. A comparison of slopes of the curves in panel B in figure 2 also suggests that breadth of embeddedness is less helpful for newcomers with a low level of experience in joining syndicates with strong network faultlines (lefthand-side plot), while it has a greater positive impact on joining such syndicates for newcomers with a high level of experience (righthand-side plot). We therefore find support for H5. Combined with the finding for H3, this suggests that broader embeddedness has a positive impact on a newcomer's likelihood of joining a syndicate with strong network faultlines only when the newcomer has a high level of experience.

Even though we did not hypothesize about the two-way interactions underlying our models, an examination of these effects yields some intriguing insights.[20] For instance, when network faultlines are at an average value, status of the prospective newcomer's strongest tie and its depth of embeddedness appear to substitute for one another. When network faultlines increase, however, the status of the strongest tie reduces the negative effect of depth of embeddedness on participation. In addition, even though breadth and experience act as complements when faultlines are at an average level, we find that the complementarity is much stronger and neither one is sufficient on its own to influence participation when faultlines are strong. In fact, the negative coefficient for the interaction of experience and faultlines suggests that experienced investors tend to avoid collaborations with conflict unless they are broadly embedded with the members.

Post-hoc Analyses and Robustness Tests

Because our measures of newcomers' network faultlines rely on past relational histories, there is a risk of endogeneity. Although the conditional logit regression is essentially a fixed effects model that controls for unobserved features of a particular syndicate at a round of financing, we conducted additional tests to check and control for endogeneity. We first calculated the residuals of models 5 and 8. The correlations of these residuals with network faultlines and its interactions are close to zero (between –.0066 and .0064) and not significant ($p > .534$), suggesting that endogeneity is not a concern in our models (Hamilton and Nickerson, 2003; Bascle, 2008; Bednar, Boivie, and Prince,

[20] The coefficients of two-way interactions act similarly when three-way interactions are not included.

2013). Regardless, we used two-stage residual inclusion (2SRI) regressions with bootstrapped standard errors to account for possible endogeneity, with first-stage models predicting network faultlines among syndicate members (Wooldridge, 2010). We used maximum geographic distance among syndicate members as the instrumental variable. While geographic distance among syndicate members could influence faultlines (Polzer et al., 2006; O'Leary and Mortensen, 2010), there is no reason to expect maximum geographic distance among syndicate members to be related to the choice of newcomers, especially when we control for the average geographic distance between syndicate members and newcomers. Consistent with our expectations, the instrumental variable is correlated with the endogenous variable (network faultlines) at .19 ($p < .001$), but its correlations with the residuals of models 5 and 8 are almost zero (.0017 and .0019, respectively) and nonsignificant ($p = .874$ and .859, respectively), suggesting this is a valid instrument.

In the first stage of 2SRI, we predicted the endogenous variable (network faultlines) as a function of the instrumental variable, interactions of the instrumental variable with the corresponding independent variables, and all control variables from the main model (Wooldridge, 2010). Then we inserted the residual predicted from the first-stage regression in the second-stage model. The results from the second-stage models (table 7, models 9 and 10) are consistent with our findings in the main analyses. We also performed a Durbin–Wu–Hausman test to check for endogeneity. The corresponding residuals generated from first-stage regressions are not significant in either model 9 ($p = .768$) or model 10 ($p = .211$). We also used a second instrumental variable that measures the maximum geographic distance between syndicate members in the round prior to the focal round and found consistent results.[21]

Next, we ran linear probability models with fixed effects to corroborate our interpretation of the interaction effects in nonlinear models (Wiersema and Bowen, 2009). As shown in table 7, the results are consistent. Only about 6.14 percent and 6.52 percent predicted probabilities fall out of the range of zero and one for models 11 and 12, respectively.

Third, we verified the robustness of our findings to the matching procedure by using (1) all hypothetical newcomers available from the CEM matching, (2) up to three matched hypothetical newcomers, and (3) one matched hypothetical newcomer. All results based on these alternative matching schemes are consistent. Findings using all hypothetical newcomers matched based on CEM methodology are shown in table 7.

Fourth, we calculated depth and breadth in alternative ways to ensure robustness. For instance, a newcomer who has a strong maximum tie (depth of embeddedness) with one member of a syndicate could also have strong ties with other syndicate members. We created an alternative measure for depth of embeddedness using the difference between the maximum tie strength and second strongest tie strength. Next, we calculated breadth of embeddedness in alternative ways: (1) without orthogonalization, (2) orthogonalized against depth of embeddedness, (3) orthogonalized against the newcomer's second strongest tie, and (4) using all dyads between a prospective newcomer and

[21] We lost 1,006 observations using the second instrumental variable, because some previous rounds had only one incumbent member, which made it impossible to calculate maximum geographic distance between members.

Table 7. Selected Robustness Tests*

	2SRI		LPM		All hypotheticals		Alt. depth measure		Alt. breadth measure	
	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Newcomer VC type dissimilarity	−.074	−.462	.001	−.029	−.171	−.320	−.193	−.438	−.170	−.309
	(9.970)	(2.095)	(.650)	(.650)	(2.424)	(2.423)	(2.428)	(2.437)	(2.425)	(2.429)
Newcomer geographic distance to syndicate members	−.390•	−.354•	−.080••	−.077••	−.323•	−.315•	−.382••	−.373••	−.384••	−.365•
	(.191)	(.154)	(.029)	(.029)	(.137)	(.137)	(.142)	(.142)	(.142)	(.142)
Newcomer geographic distance to venture	.181	.159+	.039+	.040•	.130	.136	.171+	.176+	.173+	.170+
	(.169)	(.093)	(.020)	(.020)	(.092)	(.092)	(.096)	(.096)	(.096)	(.096)
Newcomer industry distance to syndicate members	.104	.174	.025	.035	.075	.081	.129	.131	.120	.146
	(.261)	(.203)	(.040)	(.040)	(.182)	(.183)	(.186)	(.187)	(.186)	(.187)
Newcomer industry distance to venture	1.890•••	1.656•••	.378•••	.369•••	1.811•••	1.783•••	1.825•••	1.785•••	1.820•••	1.791•••
	(.521)	(.400)	(.070)	(.070)	(.335)	(.335)	(.343)	(.344)	(.343)	(.344)
Newcomer status similarity	−.277	.115	−.031	−.032	−.138	−.113	−.133	−.122	−.143	−.098
	(.470)	(.236)	(.036)	(.036)	(.176)	(.177)	(.180)	(.182)	(.180)	(.183)
Newcomer indirect tie density	−.035	−.131	−.010	−.001	−.077	−.051	−.079	−.052	−.085	−.064
	(.229)	(.138)	(.029)	(.029)	(.136)	(.138)	(.140)	(.142)	(.140)	(.142)
Newcomer average tie strength	.026	.031	.005	.006	.042	.047	.086••	.095••	−.088••	−.110•••
	(.057)	(.034)	(.007)	(.007)	(.033)	(.034)	(.029)	(.030)	(.031)	(.033)
Strongest tie status	.060	.007	.009••	.004	.057•••	.044•	.047••	.032+	.050••	.028
	(.048)	(.028)	(.003)	(.004)	(.016)	(.017)	(.017)	(.018)	(.017)	(.018)
Newcomer experience	−.002••	−.002•••	−.000•••	−.000•••	−.002•••	−.002•••	−.002•••	−.002•••	−.002•••	−.002•••
	(.001)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
H1a: Depth of embeddedness	.043+	.056•••	.008•••	.014•••	.037•••	.055•••	.039•••	.071•••	.037•••	.062•••
	(.023)	(.012)	(.002)	(.002)	(.006)	(.009)	(.007)	(.012)	(.007)	(.011)
H1b: Breadth of embeddedness	.198••	.149•••	.040•••	.035•••	.183•••	.165•••	.188•••	.165•••	.853•••	.857•••
	(.061)	(.043)	(.008)	(.009)	(.037)	(.038)	(.040)	(.042)	(.184)	(.186)
H2: Depth of embeddedness × Network faultlines	−.011+	−.020•	−.002••	−.004••	−.009•	−.020••	−.011•	−.039••	−.008+	−.024••
	(.006)	(.009)	(.001)	(.002)	(.004)	(.007)	(.005)	(.013)	(.004)	(.008)
H3: Breadth of embeddedness × Network faultlines	−.003	−.021	.000	−.004	−.009	−.022	.004	−.018	−.111	−.015
	(.030)	(.023)	(.004)	(.005)	(.017)	(.020)	(.020)	(.023)	(.094)	(.113)
Network faultlines × Strongest tie status		.016		.003		.011		.024		.025
		(.019)		(.003)		(.016)		(.018)		(.017)
Depth of embeddedness × Strongest tie status		-.014•••		−.003•••		−.010••		−.016•••		−.012•••
		(.003)		(.001)		(.003)		(.004)		(.004)
H4: Depth of embeddedness × Network faultlines × Strongest tie status		.006+		.001•		.008••		.013••		.008••
		(.004)		(.001)		(.003)		(.004)		(.003)
Network faultlines × Newcomer experience		−.001•		−.000		−.000		−.001•		−.002••
		(.000)		(.000)		(.000)		(.000)		(.001)

(continued)

Table 7. (continued)

	2SRI		LPM		All hypotheticals		Alt. depth measure		Alt. breadth measure	
	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Breadth of embeddedness × Newcomer experience		.001+ (.000)		.000 (.000)		.000• (.000)		.001• (.000)		.001+ (.001)
H5: Breadth of embeddedness × Network faultlines × Newcomer experience		.001••• (.000)		.000* (.000)		.000•• (.000)		.001•• (.000)		.003••• (.001)
Residual/Constant	.378 (1.282)	–.700 (.559)	–.002 (.250)	.019 (.250)						
Chi square	168.710	239.120			193.794	217.137	178.303	216.622	181.473	211.103
N	8759	8759	8759	8759	21564	21564	8759	8759	8759	8759
Log likelihood	–2666.744	–2648.803	–4339.331	–4321.514	–3539.956	–3528.285	–2667.805	–2648.646	–2666.220	–2651.405
Pseudo R square (or R squared)	.033	.039	.027	.031	.027	.030	.032	.039	.033	.038

$^{+}$ $p < 0.1$; $^{\bullet}p < .05$; $^{\bullet\bullet}p < .01$; $^{\bullet\bullet\bullet}p < .001$; two-tailed tests.

* Standard errors are in parentheses. In the Stage 1 regressions in 2SRI, the endogenous variable (network faultlines) is predicted by the instrumental variable, interactions of the instrumental variable with the corresponding independent variables, and all control variables from the main model.

syndicate members, including the strongest tie, orthogonalized against the average tie strength. All tests using these alternative measures yield consistent results. The findings with the alternative depth measure and the first alternative breadth measure are included in table 7.

As we detail in Online Appendix B (http://journals.sagepub.com/doi/suppl/10.1177/0001839219834011), we conducted further tests by (1) varying the definition of syndicate membership, (2) controlling for ties with lead investor(s), (3) varying the CEM matching criteria, (4) changing the weighting on negative ties, (5) examining the impact of the syndicate size on hypothesized relationships, and (6) examining the impact of the number of newcomers. All tests yielded robust results in general. We also examined the first-order effect of network faultlines on adding any newcomer firms and found that network faultlines had a weak negative effect on the addition of new members. This effect disappeared when we controlled for the investment amount. Finally, we examined the additional explanatory power of our models compared with standard dyadic models by reconstructing the sample and decomposing a prospective newcomer's participation in a syndicate into its dyadic relationships with each existing member. The results confirmed that the inclusion of group-level variables significantly improves the model fit. The results are available upon request.

DISCUSSION

Examining changes to the composition of interorganizational collaborations is important because the evolution of a collaboration may not be driven by the same factors as its formation in the first place. We focus on a unique aspect of the evolution of collaborations by examining group dynamics in collaborations, a process that is likely to be less salient at inception. Studying the growth of collaborations enables us to decompose embeddedness in a way that allows us to delve into group dynamics.

The key contribution of this study is to extend the research on new tie formation from the dyadic level to a group level. Unlike prior research that has focused on the question of when a focal firm forms dyadic ties with a new partner, this study examined new partner addition as tie formation between a newcomer firm and the members of a multi-firm partnership. This perspective allowed us to distinguish between the depth and breadth of a newcomer's embeddedness with members of a collaboration and explore the implications of both. While depth and breadth similarly influence the likelihood of joining a collaboration, the two patterns exert distinct effects when the collaboration is characterized by network faultlines.

Integrating the interorganizational collaboration literature with a group perspective provides novel insights. For instance, our findings suggest that depth of embeddedness has a weaker influence on the likelihood of a prospective newcomer's participation in a collaboration with strong network faultlines. This finding diverges from the commonly observed function of indirect ties as conduits of information: if a prospective newcomer's deeply embedded ties served solely as sources of information about the newcomer, we would not observe a change in the impact of depth based on network faultlines. The decline in the impact of depth suggests that network faultlines lead to a concern for power distribution, offering a more nuanced understanding of tie formation. In addition, we find that the status position of a newcomer's strongest tie influences the likelihood of a deeply embedded newcomer participating in a collaboration with network faultlines. This finding further underlines that an understanding of the impact of patterns of embeddedness on tie formation may be incomplete without considering power dynamics.

Our findings also point to the importance of mediating roles in collaborations. Prior literature has suggested that coordination and mediation are among the key roles that boundary spanners play in organizations (Gould and Fernandez, 1989; Obstfeld, 2005). At the same time, boundary-spanning roles present challenges, as firms may view partners holding brokerage positions as untrustworthy and avoid them (Xiao and Tsui, 2007; Jensen, 2008). Our study complements these findings and explores the conditions under which boundary spanners between subgroups in interorganizational collaborations could play effective mediating roles. We find that a newcomer's prior experience increases its ability to mediate between subgroups when it has broad embeddedness in collaborations with strong faultlines. This shows that breadth and experience play complementary roles in new member additions to collaborations such that the presence of one is not enough to overcome the challenges of mediation.

Our study joins a small number of recent studies that examine group dynamics in interorganizational collaborations. Prior work has shown the impact of group dynamics on partnership formation (Zhang, Gupta, and Hallen, 2017),

alliance dissolution (Heidl, Steensma, and Phelps, 2014), and collaboration performance (Ma, Rhee, and Yang, 2013; Davis, 2016). This paper extends this body of work by examining their role in the growth of collaborations. By integrating insights from literatures on exchange theory, groups, and interorganizational collaborations, it delves into the microfoundations of network structures.

Finally, the study has implications for the broader literature on network evolution. This literature has focused either on changes in dyadic relationships, e.g., through formation of multiplex ties (e.g., Gulati and Westphal, 1999; Shipilov et al., 2014), or changes to the overall structure of ego or global networks through tie formation (Gulati and Gargiulo, 1999; Powell et al., 2005; Zaheer and Soda, 2009; Ahuja, Soda, and Zaheer, 2012). In contrast, we are able to track and examine how each collaboration grows over time. The group perspective of network growth complements the relational and structural perspectives of network evolution.

The study has a number of limitations, which invite future research. First, future studies could generate more insights using research designs that allow for more in-depth observations of group dynamics. Quantitative evidence presented here is consistent with an explanation based on exchange theory and group dynamics, and our qualitative work illustrates the processes. Given the limitations of large-sample data analysis, however, further research is needed to disentangle the mechanisms put forth in this paper. Second, in future studies, it would be helpful to more systematically examine the underlying dynamics of when and under what conditions network faultlines come about. Third, we examined only network faultlines and did not examine other sources of potential faultlines, such as demographic dissimilarity among members. Our assumption is that patterns of prior ties would adequately reflect such sources of heterogeneity due to homophily in collaboration formation. Future work may look more closely into the relationship between network faultlines and other sources of fractures in interorganizational collaborations.

Our context, VC syndicates, has some unique characteristics such as the staging of investments and changing composition of the syndicate across rounds. While these characteristics provide a unique opportunity to observe the growth of interorganizational collaborations, they may limit the generalizability of the results. At the same time, venture capital is a context in which embedded ties are common and reputation is important. When there are such strong sanctions against self-interested behavior, it is somewhat surprising that group dynamics could influence decision making and the choice of partners as much as we observed. We therefore believe our study generates interesting insights that are likely to be relevant for other types of interorganizational collaborations. More work on multilateral alliances in varied contexts, including technology ecosystems, transportation, telecommunications, and financial systems, is needed.

Linking the interorganizational partnership literature with power and coalition-building perspectives promises some fruitful avenues for future research. For instance, future work may further explore the implications of these group-level dynamics on other aspects of macro-level network structures, such as the emergence and persistence of structural holes. It may also be fruitful to explore how these dynamics influence partnership decision making and outcomes. Specifically, U.S. venture capital is a 130 billion-dollar

industry that plays an important role in funding entrepreneurship and innovation.[22] Investment patterns in the industry have an important bearing on the fate of startups that are VC-funded. Given the potentially critical role of syndicates in supporting entrepreneurial startups, our findings may have substantial implications for entrepreneurial outcomes that are yet to be explored.

Acknowledgments

We thank Associate Editor Chris Marquis and the three anonymous reviewers, as well as Elisa Alvarez-Garrido, Waverly Ding, Henrich Greve, Ozgecan Kocak, Atul Nerkar, Michelle Rogan, Patrick Vernon, participants of seminars or conferences at INSEAD, Rutgers University, Singapore Management University, UNC at Chapel Hill, University of Maryland Entrepreneurship Conference, and Academy of Management Annual Conference, as well as the VC informants who participated in the field work. Remaining errors are our own.

Supplemental Material

Supplemental material for this article can be found in the Online Appendix at http://journals.sagepub.com/doi/suppl/10.1177/0001839219834011.

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REFERENCES

Ahuja, G.
2000 ''Collaboration networks, structural holes, and innovation: A longitudinal study.'' Administrative Science Quarterly, 45: 425–455.

Ahuja, G., G. Soda, and A. Zaheer
2012 ''Introduction to the special issue: The genesis and dynamics of organizational networks.'' Organization Science, 23: 434–448.

Anderson, C., and G. J. Kilduff
2009 ''The pursuit of status in social groups.'' Current Directions in Psychological Science, 18: 295–298.

Barkema, H. G., and O. Shvyrkov
2007 ''Does top management team diversity promote or hamper foreign expansion?'' Strategic Management Journal, 28: 663–680.

Barrot, J.-N.
2016 ''Investor horizon and the life cycle of innovative firms: Evidence from venture capital.'' Management Science, 63: 2773–3145.

Bascle, G.
2008 ''Controlling for endogeneity with instrumental variables in strategic management research.'' Strategic Organization, 6: 285–327.

Beckman, C. M., C. B. Schoonhoven, R. M. Rottner, and S.-J. Kim
2014 ''Relational pluralism in de novo organizations: Boards of directors as bridges or barriers to diverse alliance portfolios?'' Academy of Management Journal, 57: 460–483.

[22] https://www.prnewswire.com/news-releases/us-venture-capital-investment-reached-130-9-billion-in-2018—surpassing-dot-com-era-300776071.html.

Bednar, M. K., S. Boivie, and N. R. Prince
2013 ''Burr under the saddle: How media coverage influences strategic change.'' Organization Science, 24: 910–925.
Bezrukova, K., K. A. Jehn, E. L. Zanutto, and S. M. B. Thatcher
2009 ''Do workgroup faultlines help or hurt? A moderated model of faultlines, team identification, and group performance.'' Organization Science, 20: 35–50.
Blau, P. M.
1964 Exchange and Power in Social Life. New Brunswick, NJ: Transaction.
Blau, P. M.
1977 Inequality and Composition: A Primitive Theory of Social Structure. New York: Free Press.
Bonacich, P.
1987 ''Power and centrality.'' American Sociological Review, 92: 1170–1182.
Brander, J. A., R. Amit, and W. Antweiler
2002 ''Venture-capital syndication: Improved venture selection vs. the value-added hypothesis.'' Journal of Economics and Management Strategy, 11: 423–452.
Casciaro, T., and M. J. Piskorski
2005 ''Power imbalance, mutual dependence, and constraint absorption: A closer look at resource dependence theory.'' Administrative Science Quarterly, 50: 167–199.
Chung, S., H. Singh, and K. Lee
2000 ''Complementarity, status similarity and social capital as drivers of alliance formation.'' Strategic Management Journal, 21: 1–22.
Cook, K. S., C. Cheshire, and A. Gerbasi
2006 Power, Dependence, and Social Exchange. Stanford, CA: Stanford University Press.
Cook, K. S., and M. R. Gillmore
1984 ''Power, dependence, and coalitions.'' Advances in Group Processes, 1: 27–58.
Cook, K. S., and J. M. Whitmeyer
1992 ''Two approaches to social structure: Exchange theory and network analysis.'' Annual Review of Sociology, 18: 109–127.
Davis, J. P.
2016 ''The group dynamics of interorganizational relationships: Collaborating with multiple partners in innovation ecosystems.'' Administrative Science Quarterly, 61: 621–661.
Doreian, P.
1982 ''Leveling coalitions as network phenomena.'' Social Networks, 4: 27–45.
Eisenhardt, K. M., and L. J. I. Bourgeois
1988 ''Politics of strategic decision making in high velocity environments: Toward a midrange theory.'' Academy of Management Journal, 31: 737–770.
Emerson, R. M.
1962 ''Power-dependence relations.'' American Sociological Review, 27: 31–41.
Feld, B., and J. Mendelson
2016 Venture Deals: Be Smarter Than Your Lawyer and Venture Capitalist. New York: Wiley.
Galunic, C., G. Ertug, and M. Gargiulo
2012 ''The positive externalities of social capital: Benefiting from senior brokers.'' Academy of Management Journal, 55: 1213–1231.
Garg, S.
2013 ''Venture boards: Distinctive monitoring and implications for firm performance.'' Academy of Management Review, 38: 90–108.
Gompers, P., W. Gornall, S. N. Kaplan, and I. A. Strebulaev
2016 ''How do venture capitalists make decisions?'' National Bureau of Economic Research Working Paper No. 22587.

Gompers, P., and J. Lerner
2004 The Venture Capital Cycle, 2d ed. Cambridge MA: MIT Press.
Gompers, P. A., V. Mukharlyamov, and Y. Xuan
2016 ''The cost of friendship.'' Journal of Financial Economics, 119: 626–644.
Gould, R. V.
2002 ''The origins of status hierarchies: A formal theory and empirical test.'' American Journal of Sociology, 107: 1143–1178.
Gould, R. V., and R. M. Fernandez
1989 ''Structures of mediation: A formal approach to brokerage in transaction networks.'' Sociological Methodology, 19: 89–126.
Granovetter, M.
1973 ''The strength of weak ties.'' American Journal of Sociology, 78: 1360–1380.
Granovetter, M.
1985 ''Economic action and social structure: The problem of embeddedness.'' American Journal of Sociology, 91: 481–510.
Greve, H. R.
2000 ''Market niche entry decisions: Competition, learning, and strategy in Tokyo banking, 1894–1936.'' Academy of Management Journal, 43: 816–836.
Greve, H. R., J. A. C. Baum, H. Mitsuhashi, and T. J. Rowley
2010 ''Built to last but falling apart: Cohesion, friction, and withdrawal from interfirm alliances.'' Academy of Management Journal, 53: 302–322.
Greve, H. R., H. Mitsuhashi, and J. A. Baum
2013 ''Greener pastures: Outside options and strategic alliance withdrawal.'' Organization Science, 24: 79–98.
Gulati, R.
1995a ''Does familiarity breed trust? The implications of repeated ties for contractual choices in alliances.'' Academy of Management Journal, 38: 85–112.
Gulati, R.
1995b ''Social structure and alliance formation patterns: A longitudinal analysis.'' Administrative Science Quarterly, 40: 619–652.
Gulati, R.
1999 ''Network location and learning: The influence of network resources and firm capabilities on alliance formation.'' Strategic Management Journal, 20: 397–420.
Gulati, R., and M. Gargiulo
1999 ''Where do interorganizational networks come from?'' American Journal of Sociology, 104: 1439–1493.
Gulati, R., and M. Sytch
2007 ''Dependence asymmetry and joint dependence in interorganizational relationships: Effects of embeddedness on a manufacturer's performance in procurement relationships.'' Administrative Science Quarterly, 52: 32–69.
Gulati, R., and J. D. Westphal
1999 ''Cooperative or controlling? The effects of CEO–board relations and the content of interlocks on the formation of joint ventures.'' Administrative Science Quarterly, 44: 473–506.
Guler, I.
2007 ''Throwing good money after bad? Political and institutional influences on sequential decision making in the venture capital industry.'' Administrative Science Quarterly, 52: 248–285.
Hallen, B. L.
2008 ''The causes and consequences of the initial network positions of new organizations: From whom do entrepreneurs receive investments?'' Administrative Science Quarterly, 53: 685–718.

Hamilton, B. H., and J. A. Nickerson
2003 ''Correcting for endogeneity in strategic management research.'' Strategic Organization, 1: 51–78.
Heidl, R. A., H. K. Steensma, and C. Phelps
2014 ''Divisive faultlines and the unplanned dissolutions of multipartner alliances.'' Organization Science, 25: 1351–1371.
Hiatt, S. R., W. D. Sine, and P. S. Tolbert
2009 ''From Pabst to Pepsi: The deinstitutionalization of social practices and the creation of entrepreneurial opportunities.'' Administrative Science Quarterly, 54: 635–667.
Hochberg, Y., A. P. Ljungqvist, and Y. Lu
2007 ''Whom you know matters: Venture capital networks and investment performance.'' Journal of Finance, 62: 251–301.
Homans, G. C.
1951 The Human Group. New York: Routledge.
Human, S. E., and K. G. Provan
2000 ''Legitimacy building in the evolution of small-firm multilateral networks: A comparative study of success and demise.'' Administrative Science Quarterly, 45: 327–365.
Jensen, M.
2008 ''The use of relational discrimination to manage market entry: When do social status and structural holes work against you?'' Academy of Management Journal, 51: 723–743.
Kapferer, B.
1969 ''Norms and the manipulation of relationships in a work context.'' In J. C. Mitchell (ed.), Social Networks in Urban Situations: 181–244. Manchester: Manchester University Press.
Kogut, B., P. Urso, and G. Walker
2007 ''Emergent properties of a new financial market: American venture capital syndication, 1960–2005.'' Management Science, 53: 1181–1198.
Krackhardt, D.
1999 ''The ties that torture: Simmelian tie analysis in organizations.'' Research in the Sociology of Organizations, 16: 183–210.
Kwon, S.-W., and P. S. Adler
2014 ''Social capital: Maturation of a field of research.'' Academy of Management Review, 39: 412–422.
Labianca, G., D. J. Brass, and B. Gray
1998 ''Social networks and perceptions of intergroup conflict: The role of negative relationships and third parties.'' Academy of Management Journal, 41: 55–67.
Lau, D. C., and J. K. Murnighan
1998 ''Demographic diversity and faultlines: The compositional dynamics of organizational groups.'' Academy of Management Review, 23: 325–340.
Lau, D. C., and J. K. Murnighan
2005 ''Interactions within groups and subgroups: The effects of demographic faultlines.'' Academy of Management Journal, 48: 645–659.
Lavie, D., C. Lechner, and H. Singh
2007 ''The performance implications of timing of entry and involvement in multipartner alliances.'' Academy of Management Journal, 50: 578–604.
Lawler, E. J.
2001 ''An affect theory of social exchange.'' American Journal of Sociology, 107: 321–352.
Lawler, E. J., and J. Yoon
1993 ''Power and the emergence of commitment behavior in negotiated exchange.'' American Sociological Review, 58: 465–481.

Lee, P. M., T. G. Pollock, and K. Jin
2011 ''The contingent value of venture capitalist reputation.'' Strategic Organization, 9: 33–69.
Lerner, J.
1994 ''The syndication of venture capital investments.'' Financial Management, 23: 16–27.
Li, J. T., and D. C. Hambrick
2005 ''Factional groups: A new vantage on demographic faultlines, conflict, and disintegration in work teams.'' Academy of Management Journal, 48: 794–813.
Li, S. X., and T. J. Rowley
2002 ''Inertia and evaluation mechanisms in interorganizational partner selection: Syndicate formation among US investment banks.'' Academy of Management Journal, 45: 1104–1119.
Ma, D., M. Rhee, and D. Yang
2013 ''Power source mismatch and the effectiveness of interorganizational relations: The case of venture capital syndication.'' Academy of Management Journal, 56: 711–734.
McFadden, D.
1973 ''Conditional logit analysis of qualitative choice behavior.'' In P. Zarembka (ed.), Frontiers in Econometrics: 105–142. New York: Academic Press.
Meuleman, M., A. Lockett, S. Manigart, and M. Wright
2010 ''Partner selection decisions in interfirm collaborations: The paradox of relational embeddedness.'' Journal of Management Studies, 47: 995–1019.
Mitchell, W., and K. Singh
1996 ''Survival of businesses using collaborative relationships to commercialize complex goods.'' Strategic Management Journal, 17: 169–195.
Mizruchi, M. S., and L. B. Stearns
2001 ''Getting deals done: The use of social networks in bank decision-making.'' American Sociological Review, 66: 647–671.
Molm, L. D.
2006 ''The social exchange framework.'' In P. J. Burke (ed.), Contemporary Social Psychological Theories: 24–45. Stanford, CA: Stanford Social Sciences.
Nadler, J., L. Thompson, and L. V. Boven
2003 ''Learning negotiation skills: Four models of knowledge creation and transfer.'' Management Science, 49: 529–540.
Nelson, R. E.
1989 ''The strength of strong ties: Social networks and intergroup conflict in organizations.'' Academy of Management Journal, 32: 377–401.
Obstfeld, D.
2005 ''Social networks, the *tertius iungens* orientation, and involvement in innovation.'' Administrative Science Quarterly, 50: 100–130.
O'Leary, M. B., and M. Mortensen
2010 ''Go (con)figure: Subgroups, imbalance, and isolates in geographically dispersed teams.'' Organization Science, 21: 115–131.
Ozmel, U., and I. Guler
2015 ''Small fish, big fish: The performance effects of the relative standing in partners' affiliate portfolios.'' Strategic Management Journal, 36: 2039–2057.
Pahnke, E. C., R. McDonald, D. Wang, and B. Hallen
2015 ''Exposed: Venture capital, competitor ties, and entrepreneurial innovation.'' Academy of Management Journal, 58: 1334–1360.
Pfeffer, J., and G. R. Salancik
1978 External Control of Organizations: A Resource Dependence Perspective. New York: Harper & Row.

Phillips, S., and M. Cooney
2005 ''Aiding peace, abetting violence: Third parties and the management of conflict.'' American Sociological Review, 70: 334–354.
Podolny, J. M.
1993 ''A status-based model of market competition.'' American Journal of Sociology, 98: 829–872.
Podolny, J. M.
1994 ''Market uncertainty and the social character of economic exchange.'' Administrative Science Quarterly, 39: 458–483.
Podolny, J. M.
2001 ''Networks as the pipes and prisms of the market.'' American Journal of Sociology, 107: 33–60.
Podolny, J. M., and D. J. Phillips
1996 ''The dynamics of organizational status.'' Industrial and Corporate Change, 5: 453–471.
Polidoro, F., G. Ahuja, and W. Mitchell
2011 ''When the social structure overshadows competitive incentives: The effects of network embeddedness on joint venture dissolution.'' Academy of Management Journal, 54: 203–223.
Pollock, T. G., P. M. Lee, K. Jin, and K. Lashley
2015 ''(Un)tangled: Exploring the asymmetric coevolution of new venture capital firms' reputation and status.'' Administrative Science Quarterly, 60: 482–517.
Pollock, T. G., and V. P. Rindova
2003 ''Media legitimation effects in the market for initial public offerings.'' Academy of Management Journal, 46: 631–642.
Polzer, J. T., C. B. Crisp, S. L. Jarvenpaa, and J. W. Kim
2006 ''Extending the faultline model to geographically dispersed teams: How colocated subgroups can impair group functioning.'' Academy of Management Journal, 49: 679–692.
Powell, W. W., K. W. Koput, and L. Smith-Doerr
1996 ''Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology.'' Administrative Science Quarterly, 41: 116–145.
Powell, W. W., K. W. Koput, D. J. White, and J. Owen-Smith
2005 ''Network dynamics and field evolution: The growth of interorganizational collaboration in the life sciences.'' American Journal of Sociology, 110: 1132–1205.
Rogan, M., and O. Sorenson
2014 ''Picking a (poor) partner: A relational perspective on acquisitions.'' Administrative Science Quarterly, 59: 301–329.
Rowley, T. J., H. R. Greve, H. Rao, J. A. C. Baum, and A. V. Shipilov
2005 ''Time to break up: Social and instrumental antecedents of firm exits from exchange cliques.'' Academy of Management Journal, 48: 499–520.
Sherif, M., O. Harvey, B. J. White, W. R. Hood, and C. W. Sherif
1961 Intergroup Cooperation and Competition: The Robbers Cave Experiment. Norman, OK: University Book Exchange.
Shipilov, A., R. Gulati, M. Kilduff, S. Li, and W. Tsai
2014 ''Relational pluralism within and between organizations.'' Academy of Management Journal, 57: 449–459.
Shipilov, A., T. Rowley, and B. Aharonson
2006 ''When do networks matter? A study of tie formation and decay.'' In J. A. C. Baum, S. D. Dobrev, and A. Van Witteloostuijn (eds.), Advances in Strategic Management, 23: 481–519. Bingley, UK: Emerald Group.
Shipilov, A. V., S. X. Li, and H. R. Greve
2011 ''The prince and the pauper: Search and brokerage in the initiation of status-heterophilous ties.'' Organization Science, 22: 1418–1434.

Simmel, G.
1950 The Sociology of Georg Simmel. New York: Free Press.
Simmel, G.
1955 Conflict and the Web of Group Affiliations. New York: Free Press.
Sine, W. D., R. J. David, and H. Mitsuhashi
2007 ''From plan to plant: Effects of certification on operational start-up in the emergent independent power sector.'' Organization Science, 18: 578–594.
Skvoretz, J., and D. Willer
1993 ''Exclusion and power: A test of four theories of power in exchange networks.'' American Sociological Review, 58: 801–818.
Sorenson, O., and T. E. Stuart
2001 ''Syndication networks and the spatial distribution of venture capital investments.'' American Journal of Sociology, 106: 1546–1588.
Sorenson, O., and T. E. Stuart
2008 ''Bringing the context back in: Settings and the search for syndicate partners in venture capital investment networks.'' Administrative Science Quarterly, 53: 266–294.
Sorenson, O., and D. M. Waguespack
2006 ''Social structure and exchange: Self-confirming dynamics in Hollywood.'' Administrative Science Quarterly, 51: 560–589.
Stebbings, H.
2017 ''The 20-minute VC.''www.thetwentyminutevc.com.
Stevenson, W. B., and D. Greenberg
2000 ''Agency and social networks: Strategies of action in a social structure of position, opposition, and opportunity.'' Administrative Science Quarterly, 45: 651–678.
Sytch, M., and R. Gulati
2013 ''Markets as networks: The dynamics and implications of interorganizational network structures.'' In D. Teece and M. Augier (eds.), Palgrave Encyclopedia of Strategic Management: 1–8. Basingstoke, UK: Palgrave Macmillan.
Sytch, M., and A. Tatarynowicz
2014 ''Friends and foes: The dynamics of dual social structures.'' Academy of Management Journal, 57: 585–613.
Ter Wal, A. L., O. Alexy, J. Block, and P. G. Sandner
2016 ''The best of both worlds: The benefits of open-specialized and closed-diverse syndication networks for new ventures' success.'' Administrative Science Quarterly, 61: 393–432.
Thatcher, S. M., and P. C. Patel
2012 ''Group faultlines: A review, integration, and guide to future research.'' Journal of Management, 38: 969–1009.
Thoden van Velzen, H.
1973 ''Coalitions and network analysis.'' In J. Boissevain and J. C. Mitchell (eds.), Network Analysis: Studies in Human Interaction: 219–250. Den Haag, Netherlands: Mouton.
Thompson, L.
1990a ''An examination of naive and experienced negotiators.'' Journal of Personality and Social Psychology, 59: 82–90.
Thompson, L.
1990b ''The influence of experience on negotiation performance.'' Journal of Experimental Social Psychology, 26: 528–544.
Thurman, B.
1979 ''In the office: Networks and coalitions.'' Social Networks, 2: 47–63.

Uzzi, B.
1996 ''The sources and consequences of embeddedness for the economic performance of organizations: The network effect.'' American Sociological Review, 61: 674–698.
Wall, J. A. J., and A. Lynn
1993 ''Mediation: A current review.'' Journal of Conflict Resolution, 37: 160–194.
Wiersema, M. F., and H. P. Bowen
2009 ''The use of limited dependent variable techniques in strategy research: Issues and methods.'' Strategic Management Journal, 30: 679–692.
Wooldridge, J. M.
2010 Econometric Analysis of Cross Section and Panel Data. Cambridge, MA: MIT Press.
Wright, M., and A. Lockett
2003 ''The structure and management of alliances: Syndication in the venture capital industry.'' Journal of Management Studies, 40: 2073–2102.
Xiao, Z. X., and A. S. Tsui
2007 ''When brokers may not work: The cultural contingency of social capital in Chinese high-tech firms.'' Administrative Science Quarterly, 52: 1–31.
Zaheer, A., and G. Soda
2009 ''Network evolution: The origins of structural holes.'' Administrative Science Quarterly, 54: 1–31.
Zhang, L., A. K. Gupta, and B. L. Hallen
2017 ''The conditional importance of prior ties: A group-level analysis of venture capital syndication.'' Academy of Management Journal, 60: 1360–1386.
Zhelyazkov, P. I.
2018 ''Interactions and interests: Collaboration outcomes, competitive concerns, and the limits to triadic closure.'' Administrative Science Quarterly, 63: 210–247.
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2016 ''After the break-up: The relational and reputational consequences of withdrawals from venture capital syndicates.'' Academy of Management Journal, 59: 277–301.

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