

# Connecting content and structure: A review of mechanisms in entrepreneurs' social networks

Elco van Burg<sup>1</sup>  | Tom Elfring<sup>2</sup>  | Joep P. Cornelissen<sup>3</sup> 

<sup>1</sup> Department of Management and Organization, School of Business and Economics, Vrije Universiteit Amsterdam, De Boelelaan, Amsterdam, The Netherlands

<sup>2</sup> Nijmegen School of Management, Radboud University, Nijmegen, The Netherlands

<sup>3</sup> Corporate Communication Centre, Department of Business-Society Management, Rotterdam School of Management, Erasmus University, Rotterdam, The Netherlands

## Correspondence

Elco van Burg, Department of Management and Organization, School of Business and Economics, Vrije Universiteit Amsterdam, De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands.  
Email: [j.c.van.burg@vu.nl](mailto:j.c.van.burg@vu.nl)

Network studies in the entrepreneurship domain suffer from an incomplete theorization of how the content of social capital relates to network relationships and structures in which entrepreneurs are embedded or embed themselves. This study presents a systematic review of the various ways in which the interaction between content (e.g. cognition and resources) and social structure has been studied within entrepreneurship. Based on this review, we develop a more integrative account of the underlying action mechanisms that link the content and structure of social capital. These mechanisms cut across different research traditions and align areas of entrepreneurship research. In this way, we contribute an integrative review of prior work and a formative set of directions for further theorizing and research on social capital, networks and entrepreneurship.

## INTRODUCTION

Social capital is key to entrepreneurs as they often turn to their social connections to access and acquire resources. As a result, on average, social capital is significantly and positively related to small firm performance (Stam et al., 2014). Broadly defined, social capital refers here to value embedded in entrepreneurs' social relationships and social networks (Adler & Kwon, 2002; Gedajlovic et al., 2013). Often, entrepreneurs build on their personal social capital and carry that over to their venture, for instance by transforming friends into customers (e.g. Baker & Nelson, 2005) and family and colleagues into financiers and teammates (Gomez-Mejia et al., 2011). Studies explain the effect of social capital on entrepreneurial ventures by distinguishing between resources, knowledge, support and legit-

imacy (i.e. the 'content') and the structural and relational dimensions of networks such as tie strength, bridging ties and tie centrality (i.e. the 'structure') (Elfring et al., 2021; Gedajlovic et al., 2013; Ma et al., 2011; Martinez & Aldrich, 2011). The richness of social capital and social network perspectives is visible in the multiple definitions of foundational work, which for instance stress assistance, obligation and trust (Putnam et al., 1994), socially embedded forms of cognition and recognition (Bourdieu, 1986), or rather the more structural side of networks (Coleman, 1988; see Lin, 2001). Building on these different social capital traditions, the literature has provided rich insights into the role of social capital for entrepreneurship, such that it has become a foundational theory for entrepreneurship (Engel et al., 2017).

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2021 The Authors. *International Journal of Management Reviews* published by British Academy of Management and John Wiley & Sons Ltd

At the same time, the increasing complexity and diversity of the literature and the multiple aspects being studied (Hoang & Yi, 2015) suggest there is scope for an integrative review and literature synthesis (see Post et al., 2020). In particular, the entrepreneurship literature manifests inconsistent findings regarding social capital. For example, network size has been found to have positive performance effects (e.g. Hansen et al., 2005; Raz & Gloor, 2007), whereas other studies reported no consistent significant results (e.g. Batjargal, 2003; Lechner et al., 2006). Such findings do not provide clear directions to entrepreneurs (Martinez & Aldrich, 2011), and fuel the search for an ever-expanding set of contingencies to explain such different effects (Ozdemir et al., 2016; Stuart & Sorenson, 2007).

Instead of just exploring additional contingencies, we argue that these inconsistent findings reflect theoretical issues in the conceptualization of the relationship between social capital and entrepreneurial outcomes. In particular, we point to an underlying, broader theoretical challenge, which is the 'ongoing problem with conceptually and empirically differentiating between social capital in terms of resources and the nature of the relationship that endow those resources' (Gedajlovic et al., 2013, p. 459; see also Hoang & Antoncic, 2003; Hsueh & Gomez-Solorzano, 2019; Patel & Terjesen, 2011; Zaheer & Bell, 2005). In other words, a key issue is how 'content' and 'structure' can be distinguished (Gulati et al., 2011). 'Content' is here considered to include both cognitive and affective as well as 'hard' resources (e.g. finance, space, machinery). 'Structure' refers to both relational characteristics of dyadic relationships (e.g. tie strength, trust; bonding social capital) and structural dimensions of the overall pattern of direct and indirect relations among a set of actors (e.g. structural holes, network size; bridging social capital) (Davidsson & Honig, 2003; Gulati & Gargiulo, 1999). We argue that by linking content and structure, and by bridging across associated streams of research, we can synthesize and identify general mechanisms of social capital in the context of entrepreneurship.

Therefore, our research question is: What are the underlying mechanisms through which entrepreneurs develop and use their social capital? Mechanisms are here defined as analytical templates that describe patterns of entrepreneurial action resulting in changes in network relationships and structures as well as network content (see Gross, 2009; Van Burg & Romme, 2014). Mechanism-based theorizations facilitate the synthesis of insights from separate research traditions and paradigms (Post et al., 2020; Van Burg & Romme, 2014) and thus help to integrate structure-focused and content-focused research streams.

Our paper contributes to the literature in three ways. First, we draw together different streams of entrepreneurial research on networks and social capital, ranging from qualitative studies on entrepreneurial net-

working as a process to macro-level quantitative analyses of network structure. Second, we derive five distinct action mechanisms (accessing, acquiring, diversifying, embedding and associating) from our synthesis of the literature, with explicit attention to their positive and negative aspects. These mechanisms contribute new insight in the evolution and dynamics of entrepreneurs' networks. Third, this study furthers the action component of social capital theory (see Lin, 2001) in the context of entrepreneurship. This action component is underdeveloped, which hampers the development of a comprehensive social capital theory (Baker, 2014). Though some studies assume merely stable network structures (Adler & Kwon, 2002; Burt et al., 2013), networks are not stable. In fact, they are quite dynamic (Burt & Merluzzi, 2016; Vissa & Bhagavatula, 2012) and evolve as a result of differences in motivation and (cognitive) abilities that drive the actions of entrepreneurs (Newbert et al., 2013). Here, our five action mechanisms put content-driven entrepreneurial action at the centre, and show how entrepreneurs may shape their networks in an interaction of content and structure.

The next section describes our methodology and then provides an integrative review of content and structure in studies on networks in entrepreneurship. After discussing the methods, measures and levels used in the reviewed studies, we categorize different dimensions of content and structure and give an overview of three different research traditions in connecting content and structure. Then, we theorize five fundamental action mechanisms that cut across these traditions and provide coherent process explanations that provide useful pointers and directions for further research. The effects of these mechanisms depend on four contextual conditions, which are subsequently introduced. Finally, we discuss the implications of this review and the emerging theoretical synthesis for future research.

## METHODOLOGY

We selected articles for this review through a literature search of entrepreneurship studies with a focus on both network and content aspects. These articles predominantly had a focus on the personal networks of entrepreneurs, but also a substantial part of the studies attended to venture-level networks. Based on the broad scope of the review, we first of all selected field-specific entrepreneurship journals as well as general management journals covering entrepreneurship-related research. Furthermore, because of the substantive content, we also in turn decided to survey four leading psychological and sociological journals. We identified relevant articles in each of these journals through a keyword search in ABI/Inform and by directly searching the journal's databases (see

TABLE 1 Literature search criteria

	Criteria	Relevant articles
Initial search criteria	In Abstract OR Title OR Keywords: (“social capital” OR network OR tie* OR contact*) AND (entrepreneur* OR venture*) AND (opportunity OR opportunities OR information OR knowledge OR resource* OR capital OR finance OR advice OR support)	229
Snowball sampling	Article should explicitly focus on entrepreneurs, networks and cognitive or resource aspects	6
Entrepreneurship journals	<i>Entrepreneurship Theory and Practice</i>	37
	<i>Journal of Business Venturing</i>	35
	<i>Journal of Small Business Management</i>	26
	<i>Small Business Economics</i>	44
	<i>Strategic Entrepreneurship Journal</i>	20
Management journals	<i>Academy of Management Journal</i>	8
	<i>Academy of Management Review</i>	0
	<i>Administrative Science Quarterly</i>	6
	<i>Journal of Management</i>	5
	<i>Journal of Management Studies</i>	7
	<i>Management Science</i>	6
	<i>Organization Science</i>	1
	<i>Organization Studies</i>	5
	<i>Research Policy</i>	15
<i>Strategic Management Journal</i>	13	
Psychology journals	<i>Journal of Applied Psychology</i>	0
	<i>Journal of Organizational Behavior</i>	0
	<i>Organizational Behavior and Human Decision Processes</i>	0
	<i>Personnel Psychology</i>	0
Sociology journals	<i>American Journal of Sociology</i>	6
	<i>American Sociological Review</i>	0
	<i>Annual Review of Sociology</i>	0
	<i>Sociological Theory</i>	0
	<i>Social Forces</i>	1

Table 1). As a next step, we identified a couple of additional studies through a snowballing method, using the references in the collected articles. In this way, we attempted to produce a comprehensive overview of relevant network research on entrepreneurship published in these journals. Table 1 presents the journal selection and the results. Using this collection method, executed in September 2019, we collected 235 relevant articles since 1984, with most of the articles published in recent years.

## FINDINGS

### Levels of analysis

Many entrepreneurship studies consider entrepreneurial networks at the level of individual entrepreneurs or at

the level of the venture or the network; the latter, in the case of venturing teams, combining the networks of individual team members (Maurer & Ebers, 2006). Yet, networks as well as interactions between structural/relational aspects and content, and between these different levels, can be rather different and should thus be accounted for. We categorized the independent and dependent variables in all studies on three levels: individual (i.e. the entrepreneur), collective (i.e. the team or firm) and network (i.e. the overall network). The individual level also covers dyads, as these are typically also measured at the individual level at one side of the dyad, with the exception of Qureshi et al. (2016), who measure both sides. In our characterization of the different levels, the network level indicates that the study uses some proxy for the network as a whole. Regularly, dependent and independent variables are measured on a different level. Table 2 shows

TABLE 2 Methods, timeframes and measurement levels

Measure	Number of articles using the measure	Period		
		1984–1995	1996–2007	2008–2019
<i>Methods</i>				
Quantitative	144	57%	49%	66%
- Survey	100 (10× PSED)			
- Existing data/objective data	25			
- Other, including experiments	19			
Qualitative	43	36%	27%	14%
Conceptual	34	7%	18%	13%
Mixed methods	14	0%	6%	7%
<i>Timeframe</i>				
Cross-sectional	89	77%	40%	41%
Longitudinal (real time)	78	23%	35%	44%
Longitudinal (retrospective)	30	0%	25%	12%
Experimental	4	0%	0%	2%
<i>Measurement level (independent–dependent variable)</i>				
Individual–individual	56	23%	13%	33%
Individual–collective (firm or team)	43	23%	18%	22%
Individual–network	0	0%	0%	0%
Ego-network–individual	4	8%	2%	2%
Ego-network–collective (firm or team)	8	8%	0%	5%
Ego-network–network	0	0%	0%	0%
Collective (firm or team)–individual	2	0%	0%	2%
Collective (firm or team)–collective (firm or team)	68	38%	42%	26%
Collective (firm or team)–network	6	0%	8%	1%
Network–individual	7	0%	7%	2%
Network–collective (firm or team)	16	0%	10%	8%
Network–network	0	0%	0%	0%

that the collective and individual levels are most frequently studied and that many studies also employ individual-level measures of network ties as independent variables, whereas the dependent variable is measured at the venture level (e.g. performance). We separately counted the studies that use ego-network measures, as this is a popular measure that has a different interpretation than other individual-level measures (as it intends to give information on one's network, although measured at the individual level).

We only identified two studies that measure whole networks (i.e. Jiang et al., 2019; Rank & Strenge, 2018)—others rather rely on network-level indicators such as national exchange patterns (Audia et al., 2006) or the number of firms in a particular cluster (McCann & Folta, 2011). Cross-level interactions are also covered—although most of the time not really conceptualized—yet, there is an interesting research opportunity in researching the cross-level effects of the collective (venture) on the individual's network, which is for instance relevant to

understand serial entrepreneurship, where the individual network may become the very basis for the next venture.

## Measures

Although the last decades witnessed many new techniques that improved the measurement of networks and the content forming and flowing through these networks, there are still significant challenges to match network and social capital theory with the methods being used (Berthod et al., 2017; Gedajlovic et al., 2013; Hoang & Yi, 2015). Therefore, we provide an overview of methods and measures being used (see Tables 2 and 3). Table 2 shows that most of the studies employ quantitative survey techniques, and that the majority of these studies use cross-sectional designs. Over the years, the proportion of qualitative studies decreases. Given this trend, it is worth highlighting the problems associated with cross-sectional designs and specifically the fact that they cannot deal with the

TABLE 3 Frequently used measures

Measure	Number of articles			Total
	Structure→Content	Content→Structure	Structure↔Content	
<i>Structural network measures</i>				
Structural holes/network constraint	8	2	0	10
Network size	31	18	3	52
Diversity	6	4	1	11
Density	10	0	1	11
Closure or cohesion	4	2	0	6
Centrality	7	4	1	12
Brokerage	6	3	3	12
Name or position generator	9	3	1	13
<i>Relational network measures</i>				
Networking intensity	3	4	2	9
Type of contact (e.g. advisor, friend)	18	13	0	31
Tie strength	29	10	1	40
Proximity	12	2	0	14
Participation in or membership of a network	13	8	1	22
Network goal (e.g. advisor network)	10	2	0	12
Contact frequency	9	8	0	17
Direct ties with particular contact	11	5	2	18
No direct network measure	5	3	2	10
<i>Cognition and resource measures</i>				
Affective content (i.e. emotional support)	3	5	0	8
Cognitive content (i.e. knowledge sharing)	77	43	9	129
Material content (i.e. finance)	30	23	5	58
Reputational content (i.e. reputation)	9	7	1	17
No direct content measure	17	5	3	25

endogeneity problem of network studies. The endogeneity problem refers to the impossibility of determining whether the outcome variable of, for instance, performance leads to the observed network structure or the other way around. Partly in response to this problem, more and more longitudinal designs are being used (see Table 2), such as articles using data from the panel study of entrepreneurial dynamics (PSED).

In terms of measures being used, Table 3 shows that ego- or firm-centred measures like network size and tie strength are measured in many studies. Interestingly, measures that capture more of the network structure—such as density (the number of ties among the entrepreneur's network contacts relative to the maximum possible number of ties), diversity (connections to persons with different backgrounds and social positions), centrality (the importance of an actor in the network), closure (one actor having many strong ties) and structural holes (often measured by network constraint, i.e. contacts who are also indirectly connected to the entrepreneur via other contacts)—are used to a lesser extent, whereas only a few studies explic-

itly measure actions like networking (nine studies). The same applies for explicit measures of network change, like growth (two studies), churn (one study), sequence of tie formation (two studies) and tie decay (two studies). Table 3 also shows that multiple studies do not explicitly measure the content that is formative for network action, or even the content that is acquired from the network (see Rawhouser et al., 2017). Most network measures assume the content (as implied) and thus measure content and network at the same time, for instance by asking about an advisor-network.

## Research domains

To create a comprehensive overview for the descriptive part of this article, next to coding network, social capital and content measures, we coded actions by entrepreneurs in relation to the network or as a result of the network. Subsequently, we systematically spelled out the relationships and mutual interactions between content and

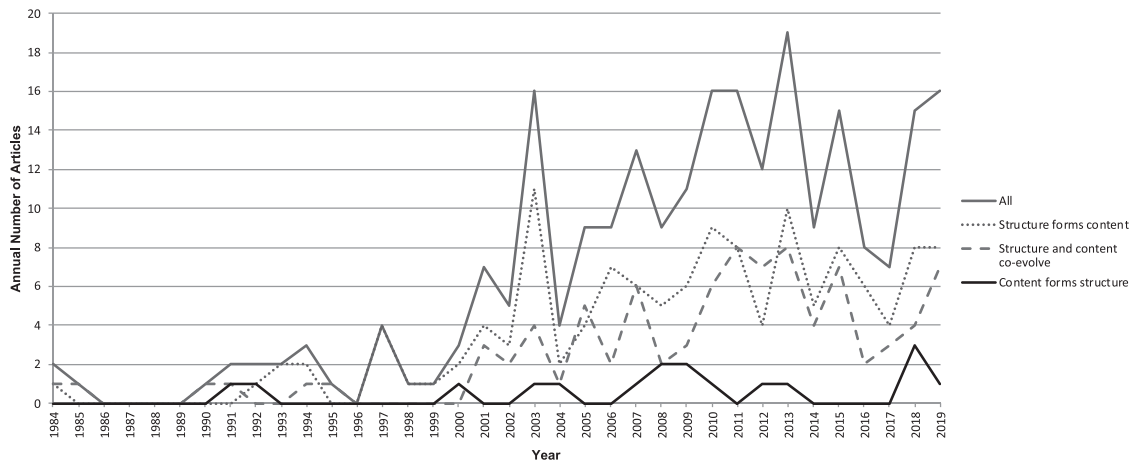


FIGURE 1 Growth in studies on social networks, content and entrepreneurs

structural/relational dimensions, as well as the consequences of those interactions and the mechanisms underlying those interactions. Codes were inductively developed, driven by the aspects and measures found in the studies. The coders iteratively went back and forth before agreeing on three, inductively developed, broad categories representing distinct research traditions (along the lines suggested by guidelines for thematic analysis; e.g. Braun & Clarke, 2006).

These three categories depict the relationships between content and structural/relational properties of social networks in fundamentally different ways: (1) structure forms content (i.e. a structural/relational tradition); (2) content forms structure (i.e. a constructive tradition); and (3) content and structure co-evolve (i.e. an evolutionary or dialectic tradition). We then further developed a coding protocol based on this simple analytical template that allowed us to assign a particular article to a specific category. Figure 1 shows the distribution of articles over the years in each of these traditions.

To be able to fruitfully theorize the interaction between structural-relational and content dimensions of social capital, we first need to further categorize these dimensions. As structural-relational dimensions have received most attention in the social capital and social network literature, these dimensions are relatively easy to categorize. Most scholars agree that structural aspects include size, density, structural holes and centrality, whereas relational aspects include tie strength and diversity (e.g. Kilduff & Tsai, 2003; Lin, 2001; Scott, 2000). These structural-relational aspects are captured with a multitude of measures, each with their own advantages and disadvantages.

Content dimensions of networks are, however, to a lesser extent categorized and sufficiently distinguished. Therefore, we propose four different content categories. First, we distinguish tangible *material* content, such as

finance, technology or workspace, that can be accessed and acquired through specific relationships (e.g. Bhagavatula et al., 2010; Davidsson & Honig, 2003; Zhang et al., 2010). Next to such tangible content, there are different types of intangible content. As a second category, we distinguish *cognitive* content, such as tacit and explicit knowledge, new ideas, information about opportunities and develop shared meaning structures, norms and identities (e.g. Fuhse, 2009; Gulati & Srivastava, 2014; Nahapiet & Ghoshal, 1998). Third, *affective* content is important to reinforce and stimulate entrepreneurs in their actions, as well as to provide emotional feedback (e.g. Casciaro et al., 2015; Klyver et al., 2018; Martinez & Aldrich, 2011). Finally, *reputational* content relates to reputation and legitimacy, which are signalled by and produced through affiliating with particular network connections (e.g. Baker, 2014; Khoury et al., 2013; Shane & Cable, 2002).

We identified three traditions in how studies relate content to relational-structural dimensions of social capital (for a similar typology, see Tasselli et al., 2015). We offer a broad synthesis of these three traditions, before we draw them together in the specification of an integrative set of action mechanisms.

## Structure forms content

In the most popular tradition (see Figure 1), structure is dominant in explaining content and action. In this perspective, social network ties are appropriable, in the sense that specific ties may be used for different purposes. For example, a friendship tie may be used to acquire financial resources or advice regarding the emerging venture. Thus, the tie itself represents value as it is flexible to carry different types of content. As a result, tie content forms only a contingency factor (Burt, 1997). This type of reasoning is

dominant in the entrepreneurship field, as indicated by the fact that most studies follow a structure forms content line of reasoning (128 out of the 235 articles). For instance, studies state that the structure of the network, being open with structure holes (Burt, 1992a), or rather cohesive (Coleman, 1988), is important in explaining outcomes.

Hence, structure forms content generally implies that entrepreneurs' network structures determine what material, cognitive, affective and reputational content they get (e.g. Bhagavatula et al., 2010; De Carolis & Saporito, 2006). For instance, geographic clusters and industrial networks are treated as opportunity structures that determine whether and how entrepreneurs can identify and exploit entrepreneurial opportunities (Sorenson & Audia, 2000; Stuart & Sorenson, 2003). Thus, the structural and relational network dimensions determine content and shape or imply entrepreneurial action. Recent work on people's knowledge about networks even gives preliminary evidence that to some extent social networks influence brain structure and resulting cognition and action (for a review, see Smith et al., 2020). Although many studies in this category do not explicitly study action, the studies in this tradition that actually focus on entrepreneurial actions see them typically as a *result* of the network, such as starting a firm (e.g. Bastié et al., 2013; Fini et al., 2011) or choosing a particular strategy (e.g. Ostgaard & Birley, 1994; Tsui-Auch, 2005).

Most of these articles use quantitative methodologies (78%), whereas only 12% use qualitative research procedures. Two studies (2%) combine qualitative and quantitative methods, and 9% of the articles are conceptual in nature. Considering the time frame of the research designs, 50% of the studies employ a single-point measurement using a cross-sectional design, 40% of the studies follow the network over at least two time points (of which about one-fifth use the PSED dataset) and 9% of the studies use a retrospective reconstruction of the network. In this tradition, most studies focus on the collective–collective level (31%), analysing how firm networks for instance influence firm performance, whereas individual–individual (28%) and individual–collective (25%) level interactions are also well represented.

## Content forms structure

In this tradition, the perspective veers in the direction of content, which then, in effect, becomes the driving force for network dynamics. Work in this tradition reflects and indeed often connects with the strong cognitive tradition in entrepreneurship (e.g. Grégoire et al., 2015), and studies how cognitive content and entrepreneurs' cognitive

processes actively shape structural and relational dimensions of social networks. This tradition centres on individual (nodal) differences in motivation, prior experience and abilities, which are considered to drive network dynamics (Hallen & Eisenhardt, 2012). Yet, only a minority of all articles explicitly study how content directly drives the formation of relationships and network structure (17 out of 235 articles), which in most cases is implied but not elaborated in explicit detail. Of these articles, 18% use qualitative methods, 53% employ quantitative techniques, 24% use mixed methods and one study (6%) is conceptual. A longitudinal research design is used in 56% of the articles, 31% have a cross-sectional design and, interestingly, 13% are experimental. Typical for this category is that most studies analyse the interaction between individual-level content and individual-level networks (44%), whereas collective–collective interactions are also well covered (38%).

Studies that pay, in particular, attention to the structure- and relation-forming aspect of content highlight how entrepreneurs form new network ties. Typically driven by a broad image of the future, entrepreneurs engage in collaborations and exchanges, which subsequently—via a trial period—can evolve into a network tie (Larson, 1991). Thus, the pursuit of opportunity (Bygrave & Minniti, 2000), or entrepreneurial orientation in general (Rank & Strenge, 2018), creates new network relationships and structures. These studies thus highlight entrepreneurial agency; that is, entrepreneurs are not fully determined by their existing network, but can actively establish new network ties and change existing ties. One important finding in this respect is that networking goals matter, as people with explicit networking goals are more likely to extend rather than just maintain their network (Shea et al., 2015). Here, recent work on people's knowledge informs us that such knowledge is largely situational, depending on the context, power differences and available stimuli, as well as individual features such as emotions and expectations (Smith et al., 2020). Thus, networking actions will also be situational; that is, people will behave differently in different situations. In general, the social ties that are created subsequently impact the entrepreneur and the venture itself, and thus have some overlap with the next tradition—that of the co-evolution of network structure and content.

## Content and structure co-evolve

Studies in this tradition (90 out of 235 articles) assess how ties and content mutually influence the creation of opportunities, the acquisition of resources and ultimately the forming of new ventures, such that 'both the music and the dancers shift over time' (Powell et al., 2005,

p. 1188). This category has relatively many conceptual articles (24%), whereas the number of studies using qualitative (28%) or quantitative procedures (39%), or combinations of these (9%), is well balanced. Although co-evolution suggests that a study needs to be longitudinal to be able to capture evolution, still 38% of the empirical papers more or less assume co-evolution, instead of observing how this process unfolds, as they employ a cross-sectional measurement. In contrast, 62% of the studies engage in some form of longitudinal data collection, 24% of which use partly retrospective data. Co-evolution between firm-level actions or content and networks measured from the perspective of the firm is the focus of most of the studies (38%), followed by interactions between individual–individual (24%) and individual–collective (19%) levels. Yet, interestingly, others study the co-evolution between firm-level and network-level contents or structures (6%), or vice versa (6%).

Co-evolution of content and structure deals with how entrepreneurs create opportunities based on who they know and what these potential partners could bring to the (emerging) venture, or what the entrepreneur could provide to these contacts (Kerr & Coviello, 2019, 2020; Sarasvathy & Dew, 2005). Over time, and in interaction with initial contacts, entrepreneurs create ideas and together with their emerging network commit themselves to goals (Engel et al., 2017), and some of these open-ended collaborations turn into committed partners (e.g. Hite, 2005). Next, these collaborations form the basis for follow-up interactions and referrals, which provide new opportunities and help to build the network, but also constrain future actions (Van Burg et al., 2014; Vissa & Bhagavatula, 2012). Importantly, the co-evolutionary perspective is not just suggesting that content and structure are interlinked (as the other traditions do), but that theoretically both have causal force in affecting each other, with the resulting interaction bringing about an emergent pattern and outcome (see Amburgey & Dacin, 1994). Work on people's knowledge about networks provides an important foundation for the co-evolutionary view, as networks and cognition are not separate nor have a one-directional dictating influence; instead, the human brain is flexible and adaptive to social circumstances (Smith et al., 2020). Thus, entrepreneurs encode their social situation and shape it using their context as both a given as well as a means of action.

In sum, these three traditions are relatively separated, and also linked to different research strategies and methods. Yet each of these traditions has its own unique contributions and therefore the next section points to five action mechanisms that cut through these traditions and have the power to enrich the foundation of social capital theory.

## NETWORK MECHANISMS CONNECTING CONTENT AND STRUCTURE

In this section, we build on the overview of the three traditions of content–structure interactions, and we elaborate in turn a set of integrative network mechanisms that relate content and structure. The discussion of these mechanisms is based on our review, yet goes beyond only describing what we found, as many studies did not explicate the underlying theoretical mechanisms. As such, the mechanisms are inspired by the review, rather than a direct result of coding the reviewed studies, and aim to further theorize the review findings. In this way, we show how these mechanisms synthesize and deepen our understanding of past research, whilst also offering coordinates for further research.

Generally speaking, a theoretical mechanism explains why a certain outcome pattern is produced in a particular context (Hedström & Ylikoski, 2010), and thus action mechanisms regarding social capital explain how content is produced by entrepreneurs through their network, or how network relationships and structure can be the outcome of content that is imputed. It is this combination of structure and content that represents social capital to the entrepreneur and thereby affects outcomes. A focus on broad and fundamental action mechanisms is helpful, we argue, considering that mechanisms are a powerful analytical tool to synthesize studies from very different backgrounds (Van Burg & Romme, 2014), and recommended as a form of meta-analysis in review articles (Post et al., 2020). Mechanisms provide analytical templates of processes (Hedström & Ylikoski, 2010), without a prior commitment to assumptions of the three different traditions (Gross, 2009). As such, mechanisms have great value in synthesizing different research traditions. Of course, even though analytically separate, for instance by measuring different networking aspects, these mechanisms join forces in actual entrepreneurial networking processes.

The notion of mechanisms is of course already well established in social capital studies, which often refer to specific network-related principles or mechanisms such as information access, brokerage (i.e. bridging structural holes), cohesion and embeddedness (Borgatti & Foster, 2003; Burt & Merluzzi, 2014; Gulati et al., 2011; Kerr & Coviello, 2019; Stuart & Sorenson, 2007), or processes and effects such as legitimacy and overload (Lechner et al., 2010; Slotte-Kock & Coviello, 2010). We build on such existing mechanisms and draw them together as part of broader action mechanisms for theory development and research. As mechanisms explain outcome patterns in certain contexts (Van Burg & Romme, 2014), we in turn also address important (contextual) conditions for the



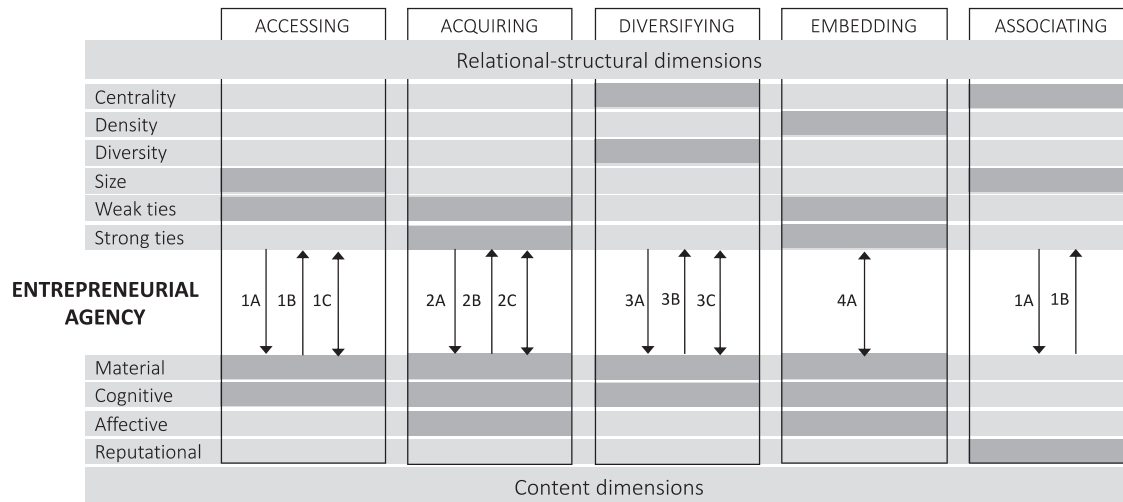


FIGURE 2 Action mechanisms related to the relational–structural and content dimensions

five mechanisms. In other words, we move from a more descriptive account of specific mechanisms within particular research traditions to a ‘theoretical model that show[s] the abstract logic of the process being analyzed’ (Hedström & Swedberg, 1998, p. 17). Figure 2 illustrates how the mechanisms link the actions of entrepreneurs to particular ways in which relational–structural dimensions and content dimensions are combined. Table 4 links existing studies to the stylized relationships displayed in Figure 2.

### Mechanism 1: Accessing

The accessing mechanism typically takes the following form (see Figure 2, 1A): an entrepreneur acts to use or add a particular network tie, leading to improved access to information and resources. Kaandorp et al.’s (2020) detailed diary study on entrepreneurs’ initial networking processes stresses the importance of accessing as a foundation for other networking mechanisms. Accessing is a key mechanism discussed in the literature on the consequences of entrepreneurs’ network ties (Stuart & Sorenson, 2007) and is facilitated particularly by weak ties, referring to ties with infrequent interaction (Granovetter, 1973). Weak ties lead to improved access to people more distant from the focal entrepreneur, thus increasing the likelihood of accessing novel cognitive content (e.g. Jack, 2005). Relatedly, the causal reasoning in the network success hypothesis (Witt, 2004) argues that the number of ties has a direct positive impact on access to material content. A large network also provides the entrepreneur with speed and flexibility in searching cognitive and material content; that is, when one tie cannot give access to resources, other contacts may provide access. Through a large network an entrepreneur can also access novel cognitive content, which is highly

relevant to discovering new opportunities (e.g. Arenius & Clercq, 2005).

Most studies that refer to the accessing mechanism are rooted in structure–forms–content reasoning; partly influenced by the available quantitative measurement tools (Fuhse & Mützel, 2011). One of the most popular ways of measuring ties in network studies is by asking about who provided resources, information, and so on. Similarly, studies have measured access through a position generator by asking respondents who they know in particular positions, such as advisors or public administration officials, and subsequently determining the tie strength with that position (e.g. Batjargal, 2003; Lin & Dumin, 1986). Yet, these ways of measuring lump together network relationships and content and as such make it hard to differentiate between accessing and acquiring. Yet, separating these different mechanisms is essential to inform entrepreneurs about how to form network ties driven by the need to access particular resources (e.g. Hallen & Eisenhardt, 2012) and upgrade weak ties to strong ties (Elfring & Hulsink, 2007) (see Figure 2, 1B).

In fact, accessing plays an important role in the co-evolution of content and structure, although most studies do not theorize and study accessing in a co-evolutionary fashion. In particular, for entrepreneurs with many weak ties, the flexible access provided by this network structure enables co-creating new ideas. Entrepreneurs may manoeuvre their way through their connections; moving from one tie to the next may lead to the joint creation of new business opportunities (see Figure 2, 1C) and shifting alliances help to pursue different opportunities (e.g. Berends et al., 2011).

Mechanisms often also have a dark, negative side, which is as well the case for the accessing mechanism (see also Elfring et al., 2021). Only a few studies have focused on

TABLE 4 Network mechanisms and interactions between relational–structural and content dimensions

Mechanism	Structure→Content	Content→Structure	Structure↔Content
Accessing	1A: Adding network ties, which subsequently improves quick and flexible access to knowledge and resources (e.g. Kaandorp et al., 2020).	1B: Intentionally searching for content (i.e. resources) leads to network change (e.g. Hallen & Eisenhardt, 2012).	1C: Co-evolution of content (e.g. ideas) and network structure/relationships (e.g. Berends et al., 2011).
Acquiring	2A: Developing strong and trusted network ties gives the possibility to acquire content from these ties, such as tacit knowledge which is only available through strong ties (e.g. Elfring & Hulsink, 2007).	2B: Searching to acquire content and using referrals to add strong ties that provide that content (e.g. Vissa, 2012).	2C: Joint problem solving, referrals, and exchange of tacit knowledge through the co-evolution of structure/relationships and content (e.g. Uzzi, 1996).
Diversifying	3A: Creation and diversification of network relationships, and seeking brokerage positions, to recombine new content with existing content (e.g. Rank & Strenge, 2018).	3B: Diversifying information and resources driven by the need for external resources, next (re)combining existing content with others' content (e.g. Maurer & Ebers, 2006).	3C: Co-evolution of content and structure/relationships to create new combinations, involving an interactive process to build common ground to (re)assess value of recombination (e.g. Vedres & Stark, 2010).
Embedding			4A: Embedding through invoking weak ties via referrals of existing strong ties, leading to new or complementary resources in a process of co-evolution of structure/relationships and content (e.g. Jack, 2005).
Associating	5A: Linking to prominent players which subsequently can increase reputation (e.g. Stuart et al., 1999).	5B: Establishing reputation facilitates efficient referral process when adding new ties (e.g. Shane & Cable, 2002).	

such harmful consequences of particular network structures (e.g. Anderson & Jap, 2005; Gargiulo & Benassi, 2000; Soda & Usai, 1999). First, access to others most likely also gives others access to the focal entrepreneur or firm, with the risk of unintended leakage of, for instance, knowledge (Cox Pahnke et al., 2015). Moreover, abundant access to ties might lead to network overload, with potentially detrimental consequences (see Mariotti & Delbridge, 2012; Uzzi, 1997). In general, more ties are better, as these ties improve access; however, at a certain point the abundance of relationships gives access to too much cognitive and material content.

We conceptually distinguish two sub-mechanisms associated with the negative side of the accessing mechanism. The first sub-mechanism, which we call *capacity overload*, is that people simply do not have the capacity to manage many ties effectively. Moreover, large networks are likely to be redundant, providing access to similar content. These many connections eat up time and effort needed for other (network) tasks, such as actually acquiring resources and diversifying the network. The few studies that explicitly

addressed network overload (e.g. Burt, 1992b; Mariotti & Delbridge, 2012; Steier & Greenwood, 2000; Uzzi, 1997), sometimes by modelling the curvilinear effects of network size (e.g. Ferriani et al., 2009; Semrau & Werner, 2014), mostly refer to network overload as capacity overload.

Second, we distinguish *cognitive overload*, which points to the effect that knowing *A* (cognitive content related to partner a) prevents seeing *B* (cognitive content related to partner b), because the entrepreneur does not have the cognitive space to process even more content (Hansen & Allen, 1992), or the entrepreneur is so much committed to the material and cognitive content of existing ties that (s)he does not want to look any further. Such overload tends to tie entrepreneurs to established ways of knowing; a sub-mechanism that is not yet explicitly investigated.

In sum, the focus with accessing, as a mechanism, rather than access as a noun is that access is not simply a property or outcome of network configurations, but a process that is shaped by conscious acts, cognitions and communication of the entrepreneur—thus, the active steps towards creating content as illustrated in Figure 2. As a process,

content and structure are mutually implicated in accessing cognitive and material content from ties, and accessing is not only dependent on network size; content and cognition shape the possibilities for forming and then accessing certain networks in the first place. Conceiving of accessing as a process also highlights that it may have beneficial or detrimental consequences for an entrepreneur.

## Mechanism 2: Acquiring

The action mechanism of acquiring refers to the process of the actual transfer or use of material, cognitive and affective content through network ties (see Figure 2, 2A). This mechanism is one of the most studied mechanisms and is theoretically different—although often not separated—from accessing (see Klyver & Schenkel, 2013), which only refers to getting access to and establishing the potential to acquire resources. The main difference between accessing and acquiring is that acquiring requires stronger ties, which involve frequent interactions, direct contact and proximity, thus serving to build trusted relationships (Granovetter, 1973; Jack, 2005). Tie strength is an important relational dimension that allows for resource acquisition, as more complex and tacit content require strong ties (Hansen, 1999). For instance, Elfring and Hulsink (2007) distinguish, in an in-depth cross-case analysis, a networking pattern where entrepreneurs without existing strong ties first work on accessing relevant connections and next gradually upgrade a number of these connections to strong ties to acquire resources.

Some scholars explicitly examine how entrepreneurs are motivated by their access to material, cognitive and reputational content of potential connections to subsequently form strong as well as indirect ties (see Figure 2, 2B), thus leading to the formation of particular network structures (e.g. Grossman et al., 2012; Kim & Aldrich, 2005). Hallen and Eisenhardt (2012) show, in a longitudinal study of nine ventures, that one of the efficient strategies entrepreneurs use to acquire resources is by intentionally moving from accessing potential contacts to building strong and trusted relationships by using a number of tactics that signal quality, scrutinize interest and indicate scarcity. Similarly, Vissa's (2012) longitudinal study differentiates between network-broadening and network-deepening actions, where the latter is needed to build stronger ties that enable acquiring relevant content an entrepreneur is looking for. Thus, content of indirect ties can be an important driver of change in network structure, following the content-forms-structure tradition. At the same time, these processes have a strong co-evolutionary aspect, because these processes often happen more or less simultaneously and interactively. For instance, in joint

problem solving (e.g. Elfring & Hulsink, 2003; Uzzi, 1996), tacit knowledge is transferred back and forth between the entrepreneur and network contacts, through which content and structure co-evolve (see Figure 2, 2C). Such interactions serve to build multiplexity, in which multiple types of content are shared and different actions are performed with the same contact. Newbert et al. (2013) indeed show that successful nascent entrepreneurs leverage existing ties to acquire multiple types of resources and support.

Somewhat similar to the accessing mechanism, we stipulate that also the acquiring mechanism harbours potential for cognitive overload. Strong tie networks may have a bearing on the search process of entrepreneurs, and may lead them to acquire content and leverage only certain ties, at the expense of a broader search space and a more diversified set of ties. Yet, awareness of the risk of cognitive overload may lead entrepreneurs to act strategically to forge ties that constitute more diverse social capital.

Again, content and structure are mutually implied in this process. Depending on the shape that this process might take as a result of co-evolution, the acquiring mechanism may, similar to the accessing mechanism, have beneficial or detrimental consequences for an entrepreneur.

## Mechanism 3: Diversifying

Innovative business opportunities often integrate a diversity of inputs and therefore entrepreneurs create new network relationships that provide a diversity of novel content that can be recombined with their own material and cognitive content (see Figure 2, 3A). Diversifying refers to creating a mixture of connections to people with different backgrounds, affiliations and experiences, and seeking brokerage positions (e.g. Rank & Strenge, 2018), which expose entrepreneurs to a broader content repertoire that helps them grow their business (Hite & Hesterly, 2001). Following the structure-forms-content tradition, several studies argue that network diversity has a favourable effect on performance (e.g. Martinez & Aldrich, 2011; Renzulli et al., 2000; Stam et al., 2014) and Newbert et al. (2013) show, based on longitudinal PSED data, that diversifying also has a positive influence on actual venture emergence; nevertheless, only a few studies measure diversity explicitly. Relatedly, measurement of structural holes is related to the mechanism of diversifying, as a network structure rich in structural holes offers brokering opportunities between disconnected contacts (Burt, 1992a), which can be used to recombine material and cognitive content into novel solutions (Rodan & Galunic, 2004).

Entrepreneurs can search for relevant complementary material and cognitive content that enables new (re)combinations, and they may change their network in

order to get this content (see Figure 2, 3B). Maurer and Ebers (2006) narrate how entrepreneurial teams intentionally consider the need to create other, more diverse relationships to access relevant content for the next phase of their venture. Entrepreneurs can pool cognitive content to form new ideas for products, services or the organization of the venture itself. This recombination process is a firm-level process, whereas the network interactions are at the individual level; therefore, this provides a good illustration of multi-level network effects (e.g. Gedajlovic et al., 2013). The diversifying mechanism shows how the content–structure interaction—or more precisely, the interaction between material and cognitive content and the diversity of network ties—can have higher-level outcomes.

Yet, the step from diversifying to ultimately integrating and combining the content with the entrepreneur's own content does not happen instantaneously (i.e. it requires cognition and effort at the firm level). Implicit in the recombination process is the ability of an entrepreneur or entrepreneurial team to recombine different bits of information into a coherent representation or frame (Cornelissen & Clarke, 2010), which may then form the basis for a new opportunity or venture. This process of combining knowledge involves building up shared meaning structures as 'common ground' through different ties, such as through shared narratives, language and codes, as argued in the intellectual or cognitive dimension of social capital (Nahapiet & Ghoshal, 1998). Thus, firms need 'combinative capabilities' to (re)combine external sources and the firm's existing knowledge stock. At the same time, if entrepreneurs focus too much on fostering shared meaning that facilitates integration, the diversity of cognitive content from different network ties might collapse through the pressure to develop shared meaning.

Thus, individual network ties may have beneficial firm-level performance effects as the individual network interactions enable (re)combining internal and external resources (Foss et al., 2007). This may involve scaling up between levels, as an individual entrepreneur's network interactions and associated bits of knowledge and created joint understandings are recombined within the firm. This co-evolutionary process (see Figure 2, 3C) involves going back and forth between the individual and the firm level as the conceptual pacts that are created for the firm subsequently lay a strong claim on mutual understanding and subsequent interactions between individuals within and across firm boundaries—and thus on any network interactions that emerge at the micro level (see Vedres & Stark, 2010). It is therefore an advantage if network diversity can be complemented by diversity at the venture level, such as in the venture team (Aven & Hillmann, 2018; Vissa & Chacar, 2009).

## Mechanism 4: Embedding

Structurally embedding through invoking weak ties via referrals will bring entrepreneurs benefits from their social contacts and interactions (see Figure 2, 4A) (Hite, 2005; Jack & Anderson, 2002). Embeddedness as a *condition* refers to the way a set of ties affects not only the perception of opportunities, but also the extent to which resources can be accessed, mobilized and exploited. This condition is distinct from the mechanism of *embedding*, as it concerns a system of social relations instead of a mechanism linked to establishing a set of particular ties which deliver embeddedness as an outcome. Embeddedness as a temporary *outcome* of the process of embedding can be defined as the extent to which entrepreneurs are part of an ongoing system of social relations (Granovetter, 1985). Most studies capture embeddedness as a temporary outcome or state that involves structure and content, although the co-evolutionary *process* (see Figure 2, 4B) of embedding is only scarcely captured.

Many entrepreneurs start out with accessing, next strengthen initially weak ties to acquire content and subsequently make them embedded in multiple connected relationships. Jack (2005) shows, in a 4-year study of 14 entrepreneurs, that this distinct mechanism of embedding is instrumental in connecting entrepreneurs to more distant indirect contacts, which ultimately leads to a balance of relationally embedded (i.e. strong) ties and structurally embedded (i.e. bridging) ties (see also Elfring & Hulsink, 2007; Ozdemir et al., 2016). Embedding also benefits decision-making by entrepreneurs. For instance, feedback from one contact may be potentially biased, despite the honest intentions of a strong tie, but receiving feedback from multiple sources, including how they value each other's perceptions, is an interactive process that improves the value of the content along the way. This interactive process contains a type of relational governance or control that ensures some quality to the feedback (Hite, 2005). The co-evolutionary nature of embeddedness is shown in the role of referrals to gain access to resources. Well-embedded entrepreneurs may reach new weak ties through referrals and quickly turn them into strong ties, because of their joint contacts (e.g. Uzzi, 1996). For starting entrepreneurs, developing multiplexity by using existing connections for new roles—such as referrals—helps to increase trust and network embeddedness, with ultimately a positive effect on venture emergence (Newbert & Tornikoski, 2012).

The co-evolutionary interaction between structure and content strengthens the degree of embeddedness through different processes, leading to improved ability to get emotional support (affective content), discover opportunities (cognitive content) and acquire material content (Hite, 2005). However, at some point the benefits of

being embedded are outdone by the costs related to over-embeddedness. Over-embeddedness is the result of an over-abundance of embedded, strong ties, which leads to rigidity. This structural rigidity is shown by the difficulty in contacting new parties, partly fuelled by contractual or moral obligations to existing network partners.

This rigidity in network structure may be influenced by two sub-mechanisms. First, as we already identified when dealing with the accessing mechanism, there is a *cognitive* component, as individuals with similar ideas are strongly connected to each other and, as a consequence, such shared beliefs serve as a filter for new or dissenting pieces of information (De Carolis & Saporito, 2006). Second, an increased pressure to reciprocate causes non-productive time and resource commitments, leading to a third type of network over-embeddedness (besides the already identified sub-mechanisms of capacity overload (i.e. *structural* over-embeddedness) and cognitive overload). This additional type of *relational* over-embeddedness describes the situation where having a relationship with partners *a*, *b* and *c* prevents a relationship with partner *d*, due to perceived or contractual bonds (see Aldrich & Kim, 2007; Uzzi, 1997). Gargiulo and Benassi (2000) describe closed networks in which shared organizational history prevents actors looking for other, more fruitful, collaborations. On an organizational level, contractual agreements can explicitly bind people together and prevent the establishment of new—or the re-invigorating of old—relationships, as Berends et al. (2011) show in the aircraft industry. Such social obligations in embedded networks may result in the risk of getting a tainted reputation when cutting or losing ties (Gargiulo & Benassi, 2000). Thus, over-embeddedness is not only a result of the number of ties, but also of the *type* of strong ties.

In sum, the general mechanism of embedding thus foregrounds the overall process of an entrepreneur investing him/herself in a certain set of ties which, depending on the process, context and stage of the venture, may harness either positive or negative entrepreneurial outcomes.

## Mechanism 5: Associating

Starting entrepreneurs are confronted with the liability of newness (Stinchcombe, 1965) and at the outset, lack status and legitimacy. The mechanism of associating emphasizes that connecting to prominent players may help entrepreneurs to build reputation and gain legitimacy (see Figure 2, 5A), as the association provides a cue concerning entrepreneurs' operations as being in line with prevailing norms and values (Aldrich & Fiol, 1994). For instance, Stuart et al. (1999) show that young technology companies can build their reputation from endorse-

ments by respected organizations in the field, and Armanios et al. (2017) show how associating with incubators helps to build entrepreneurs' reputation. Associating is in particular related to legitimacy and is in particular important for emerging ventures, yet barely measured explicitly (only 17 studies out of 239).

Some studies, however, follow the reverse logic of content–forms–structure. It has been observed, for example, that entrepreneurs can purposefully try to connect to high-status, prominent players in the field as they expect substantial benefits from such relationships, such as in the acquisition of content (for empirical evidence, see Hallen & Eisenhardt, 2012; Kaandorp et al., 2020; Shane & Cable, 2002). A connection to a high-status contact has many benefits. Once someone has established a good reputation, it increases the efficiency of the search for new contacts that are relevant to the venture's development (see Figure 2, 5B). Thus, legitimacy and reputation provided by a link to a network tie spill over into changes in the network structure, pointing at co-evolutionary aspects of this process.

The mechanism of associating highlights symbolic associations; that is, images or reputations that entrepreneurs aim to establish with others. Those associations may, as lean signals, be directly conferred as a nodal property of the existing connections of an entrepreneur. Yet, such associations may also be more symbolic and broader in content, and may be actively created or established through the networking activities of entrepreneurs. This difference is actually important, as a signalling approach—compared to an approach of associating—would account for how entrepreneurs cast off signals by aligning themselves with already established conventions or actors (e.g. Gulati & Higgins, 2003), and thus with the status quo in a particular market or industry. The associating mechanism acknowledges that symbolic content in the form of legitimizing associations that an entrepreneur makes, or rather creates, may lead to an acceptance for—and understanding of—new undertakings. As such, the ties that an entrepreneur forms, and the broadening of support, may co-evolve with the symbolic associations that he or she actively makes.

As the outcomes of these five mechanisms depend not only on particular actions by entrepreneurs, but also on the context of these actions, we now turn to important contextual conditions for these mechanisms.

## CONDITIONS OF NETWORK MECHANISMS

Action mechanisms explain why particular outcome patterns occur in a certain context (Van Burg & Romme, 2014). Thus, to complete the overview of action mechanisms, we describe triggering or enabling of contextual

conditions, based on our reflection of the five action mechanisms. To find these conditions, we focus on contingencies that likely turn the five action mechanisms from having a positive effect towards negative outcomes. An important ‘dark side’ of a mechanism is network overload and over-embeddedness, which consists of three variants, as we spelled out: capacity overload, cognitive overload and relational over-embeddedness (e.g. contractual lock-in) (for a more detailed discussion on these dark sides, see Elfring et al., 2021). As our review indicates, there is no clear tipping point indicating when otherwise positive mechanisms start to deliver negative effects (see Borgatti et al., 2014). Therefore, based on the identified set of mechanisms, we propose four conditions that influence when and whether these mechanisms start to exert negative influence on content provided and created through the network.

### Phase of the venturing process

Entrepreneurship is a dynamic process, and each phase of the venturing process has different requirements and as a consequence also needs different network structures (Batjargal, 2010; Hite & Hesterly, 2001; Martinez & Aldrich, 2011). Nevertheless, most studies on entrepreneurial networks focus on post-startup firms and do not differentiate the different configurations needed in other phases of the entrepreneurial process. In the initial, emergent phase, weak ties might be more important than strong ties to garner ideas, whereas in phases that require expensive and scarce resources, accessing resources through strong ties is crucial (Stam et al., 2014). At the same time, at the start a few committed strong ties are helpful to engage in creative co-creation processes (Sarasvathy & Dew, 2005), as well as to provide affective support (Klyver et al., 2018). However, when it comes to attracting customers and innovating, instrumental support gains importance (Klyver et al., 2018), and also accessing new types of information—and diversifying the network—again become very important (Hayter, 2016; Martinez & Aldrich, 2011). The phase of the venture is also important for the order in which mechanisms are put to work. For instance, there is some evidence that for nascent entrepreneurs it is important to start with accessing and not with acquiring and associating, as both Kaandorp et al. (2020) and Vissa (2012) showed—in longitudinal analyses of networking strategies—that initially relying on referrals and strong ties leads to the establishment of fewer economic exchanges later on. This need to adjust the network over time points to the role of network management skills of the entrepreneur or entrepreneurial team.

### Relationship management skills

Studies have started to explore the entrepreneur’s or venture team’s networking skills, attending to individual differences in networking style (Borgatti et al., 2014; Gulati & Srivastava, 2014) and the role of cognitive–evaluative reflections (Kaandorp et al., 2020). When entrepreneurs are aware of the fact that they need to manage the size and composition of their network, and to create new and alternative ties, they can avoid over-embeddedness and overload effects by turning existing ties (temporarily) into latent ties and developing potential ties into effective connections that provide the information and resources needed at a certain moment. In line with these findings, it is likely that some individuals are better able to maintain and use a large network, alongside running a business, whereas others can barely manage a smaller network. Multiple levels are involved, as many ventures are a team effort and the internal organization of the team also influences how they deal with their network (Vissa & Chacar, 2009). Individual behavioural limits and cognitive inaccuracies (e.g. Ertan et al., 2019) can be compensated at the team or organization level if a team has sufficient specialization and the maintenance of relationships is divided over the team members (Aven & Hillmann, 2018). Yet, in contrast, with limited specialization, all team members have to deal with the same actors and are prone to experience relational and cognitive lock-in (Maurer & Ebers, 2006). Our conjecture is that a lack of specialization leads to multiplying the workload, as every novel tie is a new tie for everyone in the team, and thus the team size multiplies the number of interactions.

### Networking aim and venture type

The aim of networking activities and the type of venture also determine whether and when a negative side of a mechanism manifests itself—although only a few studies explicitly account for such networking goals (e.g. Hmieleski et al., 2015; Ravasi & Marchisio, 2003). For instance, networking in search of investors for a high-tech venture will focus on acquiring capital, maybe through associating with well-reputed actors; such a focus on intensive connections cannot handle many ties effectively, and thus risks network overload when developing too many connections. Moreover, through closely affiliating with others, there is also a risk of the spill-over of negative reputations if one of these parties develops such a reputation. In contrast, entrepreneurial networking focused on trading consumer products requires accessing and maybe diversifying. As these connections are less intensive, individuals

can easily handle many of them, and such loose connections have small reputation effects, both positive and negative.

Similarly, the type of venture impacts whether a certain network mechanism is positive or negative. For instance, a business-to-business venture in a mature industry which is dominated by a few large players with an embedded network may harbour relational lock-in, whereas a venture with fast-moving consumer products may rather face cognitive network overload. As a result of the intensity of interactions required in a particular setting, the point where negative aspects start to play out is contingent on the type of venture and on changes in the identity of the venture (Fisher et al., 2016).

### Level and type of uncertainty

Finally, uncertainty is a cornerstone for many theories of entrepreneurship (McMullen & Shepherd, 2006), as entrepreneurs have to deal with uncertainty. As types and levels of uncertainty differ among entrepreneurs—some trajectories are much harder to predict than others—this also influences the effect of different action mechanisms and related networking strategies (Engel et al., 2017; Hmieleski et al., 2015; Kerr & Coviello, 2019). For instance, as the venture and product may change over time, the material content that is accessible through strong ties might not be so helpful and can actually lead to a situation where entrepreneurs are trapped in their own set of ties. Here, we conjecture that a networking strategy that builds on associating by developing reputational content, and subsequent embedding, provides a shortcut to a better network position that facilitates quick and flexible adjustment of the network according to the entrepreneur's shifting needs. Yet, not only good reputations spill over to the entrepreneur and affect network structure and embeddedness. Connections with partners with bad reputations, or with partners that develop a bad reputation over time, likely harm reputation (Jonsson et al., 2009), which could in turn destroy embeddedness. Moreover, the market signals of different associations are situationally dependent, as Gulati and Higgins (2003) showed in their study of initial public offering success of young biotech firms: ties with prominent venture capital firms were important in 'cold' markets, ties with investment banks helped in 'hot' markets and alliances with care institutions did not have an effect. Others have shown similar effects (e.g. Khoury et al., 2013; Ko & McKelvie, 2018), thus confirming that industry conditions, and probably in particular the level and type of uncertainty, influence whether associating with a particular partner will cast a valuable signal or not.

## DISCUSSION

The accumulation of insights in this review, and in particular the set of action mechanisms explaining the role and effect of social capital in entrepreneurship, informs the entrepreneurship literature by detailing how network evolution and dynamics are driven by the actions of entrepreneurs that activate the combination of network ties and content. In this section, we discuss the key insights of this study and identify promising avenues for future research.

First, this study contributes by addressing the challenge posed by Ahuja et al. (2012, p. 446) 'to discover the mechanisms and processes that drive network outcomes'. Our overview of mechanisms elaborates how interactions between the different types of content and networks of individual entrepreneurs impact not only the entrepreneurial venture, but also network composition. Taken together, these action mechanisms highlight 'the role tie content plays as both locus and driver of network change' (Ferriani et al., 2013, p. 26). Of course, even though analytically separate (e.g. measuring different networking aspects), these mechanisms interact in daily networking processes. In their networking practices, entrepreneurs enact these mechanisms, typically in combination, to access, acquire and create content in social networks and thereby create value.

The mechanisms of accessing, acquiring and embedding are regularly touched upon in research, but still require further study, in particular to understand how these mechanisms turn from having positive effects to negative outcomes. As these negative effects are the flip side of the positive outcomes of action mechanisms, they require more attention in network studies. For instance, the negative effect of structural and relational overload can at least be proxied by using a squared term for network size—although there is not yet such a solution for ego-network studies. We listed four conditions (phase in the venturing process, relationship management skills, networking aim/venture type and level/type of uncertainty) that influence the manifestation of negative effects or the 'dark side' of social capital (e.g. Bizzi, 2013; Elfring et al., 2021; Kilduff & Tsai, 2003; Klyver et al., 2011) as counterparts of the same mechanisms having beneficial effects. Further exploring these four conditions in relationship to networking mechanisms will offer new insights into the underlying processes leading to, for instance, constrained action and tunnelled imagination, and a subsequent inhibiting impact on value generation.

Whereas the mechanisms of accessing, acquiring and embedding are regularly researched, diversifying and associating are to a lesser extent explored. Regarding the

mechanism of diversifying, in particular the development of ‘combinative capabilities’ at the venture level and ‘shared meaning’ at the network level are topics that warrant further investigation. At the outset, an entrepreneur and others do not need to share or even have access to the same knowledge. Instead, in ongoing processes of interaction and communication, they establish and in turn exploit the developed ‘common ground’ as a resource for understanding and for deriving pragmatic inferences (e.g. Cornelissen & Clarke, 2010; Nahapiet & Ghoshal, 1998). Such common ground, and the ties that it forges, is built up iteratively and hence involves a gradual process (akin to stakeholder inclusion in effectuation; see Engel et al., 2017; Kerr & Coviello, 2020) that needs more study.

Through associating, entrepreneurs first of all search for reputational content, which next spills over to strengthening their network. Yet, associating runs the risk of entrepreneurs getting tainted by the negative reputation of embedded ties. Although this effect is to some extent captured in studies on reputation loss (e.g. Jonsson et al., 2009) and social network studies in general (e.g. Brass et al., 1998), it is largely neglected in the entrepreneurship literature. Regarding the contextual conditions, in particular the phase of the venturing process needs further inquiry for the mechanism of associating, as there is some evidence that entrepreneurs should start with accessing and acquiring and turn to associating later in the process (see Kaandorp et al., 2020; Vissa, 2012).

This study furthermore contributes by developing the action component of social capital theory in the context of entrepreneurship. Only by taking a comprehensive perspective on social capital, including relational, structural, as well as content dimensions, are we able to draw a picture of network effects on entrepreneurial behaviour and of how entrepreneurs shape their networks. Existing studies have started to attend to the crucial role of network agency, and this study adds a comprehensive overview of action mechanisms that link entrepreneurial networking actions to outcomes that impact the entrepreneur, the venture and the network. These action mechanisms connect content and structural–relational dimensions and explain when and how social capital has a positive or negative effect in specific contexts.

In many current studies, following the overall tendency in network studies (e.g. Borgatti et al., 2014; Fuhse & Mützel, 2011; Gulati & Srivastava, 2014; Vissa, 2012), structure is cast as dominant. Many of the conclusions in network studies in the entrepreneurship setting assume that network structure precedes the content flowing through ties, which is in part the result of the method and measures being used, such as the use of ego-network measures that make it easy to assess the effect of the number of relationships on firm-level outcomes but do not directly facilitate

measuring content. Partly as a result of the focus on structural and relational aspects, the role of content and action in shaping social networks has been less emphasized and thus less understood.

Therefore, our focus on the interaction between different content and structural–relational dimensions is important. Our five action mechanisms incorporate key insights from cognitive views on entrepreneurial processes (see Grégoire et al., 2015). The network perspective has devoted limited attention to the cognitive view, despite repeated attempts to incorporate cognitive aspects (e.g. Gulati & Srivastava, 2014; Nahapiet & Ghoshal, 1998) and the considerable overlap with the contents of social capital. Here, entrepreneurship researchers can also benefit from the recent advances in understanding people’s knowledge *about* networks, including the heuristics to encode network information, and its influences on network action (for a recent review, see Smith et al., 2020). This work consistently finds that cognition and action are situational, and that social proximity is important. This, for instance, emphasizes that it is hard for entrepreneurs to build relationships in new and more distant settings, raising the question of how some entrepreneurs are actually able to build new networks effectively (e.g. Kaandorp et al., 2020). Moreover, as it is known that in organizational settings accurate knowledge about networks has important outcomes (e.g. Marineau et al., 2018), another important question is how important such knowledge about a network is at different levels (e.g. individual, team, stakeholders) given the fundamental uncertainty in many entrepreneurship processes, and whether instead an accurate perception of trustworthy ties is crucial as effectuation theory would suggest (see Engel et al., 2017; Kerr & Coviello, 2020). Another question relates to the role of people’s knowledge about networks in cognitive overload and relational over-embeddedness as the negative side of multiple mechanisms. To what extent are entrepreneurs aware of overload and what can they do, at multiple levels to prevent or manage it?

At the same time, it is fair to say that the cognitive perspective in entrepreneurship, as a field, for its part hardly addressed the potential of including network dimensions, even in the notion of socially situated cognition (see Dew et al., 2015). As this study shows, combining content and structural–relational dimensions leads to new insights and questions, which can only be answered in studies that address content and structure together. For instance, one new question regards how cognitive studies deal with network structure. Many cognitive studies of entrepreneurial processes deal in an implicit way with notions of networks and network structures, but these structures are often weakly operationalized. For instance, the imaginative or inductive reasoning of entrepreneurs (e.g.



Cornelissen & Clarke, 2010) is at its core a socialized but individual-level analysis, explaining how individual entrepreneurs form ties through their reasoning and gain in doing so support for their burgeoning ventures. By theorizing and empirically examining the role of these ties, using the repertoire of social network analysis (e.g. tie strength, centrality, diversity, brokerage), the understanding of how entrepreneurs make sense of their entrepreneurial process and their environment can be enriched.

Moreover, even though some studies use a co-evolutionary lens to study the interaction between content and structure, very often the co-evolutionary process itself is still underspecified. In such studies, the focus is on describing the entrepreneurship context in which the co-evolutionary process took place, rather than depicting the processes through which content—such as opportunity perception and resources—interacts with the pre-existing, created and resulting network structures. Promising ways to measure such content in interaction with structural and relational variables are by analysing big (online) datasets in which people interact and where the content as well as the networks can be analysed (e.g. Dahlander & Frederiksen, 2012), or by examining combinations of archival and real-time data (Williams & Shepherd, 2017). Also, network ethnography yields a promising way to overcome some methodological constraints that led to overly structural pictures of social capital. Berthod et al. (2017) give detailed guidelines for such an approach, and suggest four ways to collect network data: following boundary objects, capturing network enactments, multiplying investigators and interviewing repeatedly. Moreover, studies that combine quantitative measures with qualitative data in a longitudinal fashion, such as diary and archival studies—alongside more advanced longitudinal modelling tools—are promising (see Berthod et al., 2017; Williams & Shepherd, 2017).

As this review illustrates, the entrepreneurship context is particularly suited to researching action mechanisms of social capital. This context is distinct from the organizational context (e.g. Ibarra et al., 2005) due to the explicit role of affective, material, cognitive and reputational content, as well as entrepreneurial action and resulting network emergence and change. As ventures typically are smaller than the organizations in other studies, the effects of social capital mechanisms are more directly observable. These characteristics allow researchers to examine in detail important issues in social capital and social network studies, in particular how the interaction between network structure and content plays out. The accumulation of insights in this review, and in particular the set of action mechanisms explaining the role and effect of social capital in entrepreneurship, thus informs not only the

entrepreneurship literature, but also by extension the literature on social capital in organizational settings. For organizational settings, the mechanisms and their contextual conditions have implications for both intra- and interorganizational networks. For intraorganizational networks, for instance, studying cognitive overload as the ‘dark side’ of accessing and acquiring could lead to insightful findings. Similarly, for instance, for interorganizational networks, studying the effects of lock-in, sometimes formalized through contracts, is an area that is worth further inquiry.

## Practical implications

A key question, both theoretically and practically, is how these five different mechanisms relate to each other and how they jointly create value for the entrepreneur. Expli- cating the order and combinations of mechanisms sheds light on ways in which entrepreneurs create value through particular network and content combinations. Practically, such combinations relate to different mechanism-based actionable strategies to access, acquire and create content in social networks, leading to distinctive trajectories of network development and value creation. Therefore, we briefly speculate about three different, but probably not exhaustive, mechanism-based strategies: resourcing, consolidating and modifying.

First, the combination of accessing and acquiring content is researched by many as a key resourcing strategy (cf. Rawhouser et al., 2017). The combination of accessing and acquiring represents a mechanism-based strategy to look for complementary, external content to seize opportunities. To get from access to acquisition, ties need to become stronger, referring to building trust, engaging in more frequent and reciprocal interactions (e.g. Elfring & Hulsink, 2007; Jack, 2005). Second, consolidating—through the combination of accessing, associating and embedding—focuses on gaining reputational content through association with relevant stakeholders, leading to further structural embeddedness, which in particular is relevant in very uncertain situations in which reputations are important yet not easily established. Through associating with highly reputable players, existing ties might also be more interested in becoming more involved in the venture. This leads to increased structural embeddedness, which eventually also increases efficiency in acquiring material and cognitive content (Ozdemir et al., 2016; Steier & Greenwood, 2000). Third, modifying is a strategy in which a diversity of network ties gives access to and enables acquisition of different sources of cognitive content, forging modified and novel solutions. This strategy leverages internal content to be (re)combined with novel external

content to capture and create opportunities. In particular, access to diverse material and cognitive content through network ties facilitates the development of novel combinations, which in turn creates opportunities by extending and leveraging internal content into new domains.


## CONCLUSION

In this study, we have identified the root perspectives on the content and structure of entrepreneurial networks, and how these indicate or disclose social capital, and described the main foci, methods and findings of research within each of these perspectives to date. We build on these perspectives as the foundation for theory building, extending the review into a broader set of theorized mechanisms that, we suggest, deepen our understanding of past research and offer, as broad propositions, a number of opportunities and directions for further research. Moving research in these directions will, we believe, strengthen network analysis in entrepreneurship and offer more robust theoretical explanations of how the content and structure of networks interact and shape entrepreneurial outcomes.

## ORCID

Elco van Burg  <https://orcid.org/0000-0002-4174-1118>

Tom Elfring  <https://orcid.org/0000-0003-3084-9278>

Joep P. Cornelissen  <https://orcid.org/0000-0003-2500-3876>

## REFERENCES

Articles included in the systematic review are marked with an asterisk.

- Adler, P.S. & Kwon, S.-W. (2002) Social capital: Prospects for a new concept. *Academy of Management Review*, 27, pp. 17–40.
- Ahuja, G., Soda, G. & Zaheer, A. (2012) The genesis and dynamics of organizational networks. *Organization Science*, 23, pp. 434–448.
- Aldrich, H.E. & Fiol, C.M. (1994) Fools rush in? The institutional context of industry creation. *Academy of Management Review*, 19, pp. 645–670.
- \*Aldrich, H.E. & Kim, P.H. (2007) Small worlds, infinite possibilities? How social networks affect entrepreneurial team formation and search. *Strategic Entrepreneurship Journal*, 1, pp. 147–165.
- Amburgey, T.L. & Dacin, T. (1994) As the left foot follows the right? The dynamics of strategic and structural change. *Academy of Management Journal*, 37, pp. 1427–1452.
- Anderson, E. & Jap, S. (2005) The dark side of close relationships. *Sloan Management Review*, 46, pp. 75–82.
- \*Arenius, P. & Clercq, D.D. (2005) A network-based approach on opportunity recognition. *Small Business Economics*, 24, pp. 249–265.
- \*Armanios, D.E., Eesley, C.E., Li, J. & Eisenhardt, K.M. (2017) How entrepreneurs leverage institutional intermediaries in emerging economies to acquire public resources. *Strategic Management Journal*, 38, pp. 1373–1390.

- \*Audia, P.G., Freeman, J.H. & Reynolds, P.D. (2006) Organizational foundations in community context: Instruments manufacturers and their interrelationship with other organizations. *Administrative Science Quarterly*, 51, pp. 381–419.
- \*Aven, B. & Hillmann, H. (2018) Structural role complementarity in entrepreneurial teams. *Management Science*, 64, pp. 5688–5704.
- Baker, T. & Nelson, R.E. (2005) Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, 50, pp. 329–366.
- Baker, W. (2014) Making pipes, using pipes: How tie initiation, reciprocity, positive emotions, and reputation create new organizational social capital. In Brass, D.J., Labianca, G.(J.), Mehra, A., Halgin, D.S. & Borgatti, S.P. (eds), *Research in the Sociology of Organizations*. Bradford: Emerald Publishing, pp. 57–71.
- \*Bastié, F., Cieply, S. & Cussy, P. (2013) The entrepreneur's mode of entry: The effect of social and financial capital. *Small Business Economics*, 40, pp. 865–877.
- \*Batjargal, B. (2003) Social capital and entrepreneurial performance in Russia: A longitudinal study. *Organization Studies*, 24, pp. 535–556.
- \*Batjargal, B. (2010) The effects of network's structural holes: Polycentric institutions, product portfolio, and new venture growth in China and Russia. *Strategic Entrepreneurship Journal*, 4, pp. 146–163.
- Berends, H., Van Burg, E. & Van Raaij, E.M. (2011) Contacts and contracts: Cross-level network dynamics in the development of an aircraft material. *Organization Science*, 22, pp. 940–960.
- Berthod, O., Grothe-Hammer, M. & Sydow, J. (2017) Network ethnography: A mixed-method approach for the study of practices in interorganizational settings. *Organizational Research Methods*, 20, pp. 299–323.
- \*Bhagavatula, S., Elfring, T., van Tilburg, A. & van de Bunt, G.G. (2010) How social and human capital influence opportunity recognition and resource mobilization in India's handloom industry. *Journal of Business Venturing*, 25, pp. 245–260.
- Bizzi, L. (2013) The dark side of structural holes: A multilevel investigation. *Journal of Management*, 39, pp. 1554–1578.
- Borgatti, S.P., Brass, D.J. & Halgin, D.S. (2014) Social network research: Confusions, criticisms, and controversies. In Brass, D.J., Labianca, G.(J.), Mehra, A., Halgin, D.S. & Borgatti, S.P. (eds), *Research in the Sociology of Organizations*. Bradford: Emerald Publishing, pp. 1–29.
- Borgatti, S.P. & Foster, P.C. (2003) The network paradigm in organizational research: A review and typology. *Journal of Management*, 29, pp. 991–1013.
- Bourdieu, P. (1986) The forms of capital. In Richardson, J. (ed.), *Handbook of Theory and Research for the Sociology of Education*. Westport, CT: Greenwood, pp. 241–58.
- Brass, D.J., Butterfield, K.D. & Skaggs, B.C. (1998) Relationships and unethical behavior: A social network perspective. *Academy of Management Review*, 23, pp. 14–31.
- Braun, V. & Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, pp. 77–101.
- Burt, R.S. (1992a) *Structural Holes: The Social Structure of Competition*. Cambridge, MA: Harvard University Press.
- Burt, R.S. (1992b) The social structure of competition. In Nohria, N. & Eccles, R. (eds), *Networks and Organizations: Structure, Form, and Action*. Boston, MA: Harvard Business School Press, pp. 57–91.

- Burt, R.S. (1997) The contingent value of social capital. *Administrative Science Quarterly*, 42, pp. 339–365.
- Burt, R.S., Kilduff, M. & Tasselli, S. (2013) Social network analysis: Foundations and frontiers on advantage. *Annual Review of Psychology*, 64, pp. 527–547.
- Burt, R.S. & Merluzzi, J. (2014) Embedded brokerage: Hubs versus locals. In Brass, D.J., Labianca, G.(J.), Mehra, A., Halgin, D.S. & Borgatti, S.P. (eds), *Research in the Sociology of Organizations*. Bradford: Emerald Publishing, pp. 161–177.
- Burt, R.S. & Merluzzi, J. (2016) Network oscillation. *Academy of Management Discoveries*, 2, pp. 368–391.
- \*Bygrave, W. & Minniti, M. (2000) The social dynamics of entrepreneurship. *Entrepreneurship: Theory & Practice*, 24, pp. 29–40.
- Casciaro, T., Barsade, S.G., Edmondson, A.C., Gibson, C.B., Krackhardt, D. & Labianca, G.(J.) (2015) The integration of psychological and network perspectives in organizational scholarship. *Organization Science*, 26, pp. 1162–1176.
- Coleman, J.S. (1988) Social capital in the creation of human capital. *American Journal of Sociology*, 94, pp. S95–S120.
- Cornelissen, J.P. & Clarke, J.S. (2010) Imagining and rationalizing opportunities: Inductive reasoning and the creation and justification of new ventures. *Academy of Management Review*, 35, pp. 539–557.
- \*Cox Pahnke, E., McDonald, R., Wang, D. & Hallen, B. (2015) Exposed: Venture capital, competitor ties, and entrepreneurial innovation. *Academy of Management Journal*, 58, pp. 1334–1360.
- Dahlander, L. & Frederiksen, L. (2012) The core and cosmopolitans: A relational view of innovation in user communities. *Organization Science*, 23, pp. 988–1007.
- \*Davidsson, P. & Honig, B. (2003) The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18, pp. 301–331.
- \*De Carolis, D.M. & Saporito, P. (2006) Social capital, cognition, and entrepreneurial opportunities: A theoretical framework. *Entrepreneurship Theory and Practice*, 30, pp. 41–56.
- \*Dew, N., Grichnik, D., Mayer-Haug, K., Read, S. & Brinckmann, J. (2015) Situated entrepreneurial cognition. *International Journal of Management Reviews*, 17, pp. 143–164.
- \*Elfring, T. & Hulsink, W. (2003) Networks in entrepreneurship: The case of high-technology firms. *Small Business Economics*, 21, pp. 409–422.
- Elfring, T. & Hulsink, W. (2007) Networking by entrepreneurs: Patterns of tie formation in emerging organizations. *Organization Studies*, 28, pp. 1849–1872.
- Elfring, T., Klyver, K. & Van Burg, E. (2021) *Entrepreneurship as Networking: Mechanisms, Dynamics, Practices, and Strategies*. Oxford, UK: Oxford University Press.
- Engel, Y., Kaandorp, M. & Elfring, T. (2017) Toward a dynamic process model of entrepreneurial networking under uncertainty. *Journal of Business Venturing*, 32, pp. 35–51.
- Ertan, G., Siciliano, M.D. & Yenigün, D. (2019) Perception accuracy, biases and path dependency in longitudinal social networks. *PLoS ONE*, 14, art. e0218607.
- \*Ferriani, S., Cattani, G. & Baden-Fuller, C. (2009) The relational antecedents of project-entrepreneurship: Network centrality, team composition and project performance. *Research Policy*, 38, 1545–1558.
- Ferriani, S., Fonti, F. & Corrado, R. (2013) The social and economic bases of network multiplexity: Exploring the emergence of multiplex ties. *Strategic Organization*, 11, pp. 7–34.
- \*Fini, R., Grimaldi, R., Santoni, S. & Sobrero, M. (2011) Complements or substitutes? The role of universities and local context in supporting the creation of academic spin-offs. *Research Policy*, 40, pp. 1113–1127.
- Fisher, G., Kotha, S. & Lahiri, A. (2016) Changing with the times: An integrated view of identity, legitimacy, and new venture life cycles. *Academy of Management Review*, 41, pp. 383–409.
- Foss, K., Foss, N.J. & Klein, P.G. (2007) Original and derived judgment: An entrepreneurial theory of economic organization. *Organization Studies*, 28, pp. 1893–1912.
- Fuhse, J.A. (2009) The meaning structure of social networks. *Sociological Theory*, 27, pp. 51–73.
- Fuhse, J.A. & Mützel, S. (2011) Tackling connections, structure, and meaning in networks: Quantitative and qualitative methods in sociological network research. *Quality and Quantity*, 45, pp. 1067–1089.
- Gargiulo, M. & Benassi, M. (2000) Trapped in your own net? Network cohesion, structural holes, and the adaptation of social capital. *Organization Science*, 11, pp. 183–196.
- Gedajlovic, E., Honig, B., Moore, C.B., Payne, G.T. & Wright, M. (2013) Social capital and entrepreneurship: A schema and research agenda. *Entrepreneurship Theory and Practice*, 37, pp. 455–478.
- Gomez-Mejia, L.R., Cruz, C., Berrone, P. & De Castro, J. (2011) The bind that ties: Socioemotional wealth preservation in family firms. *Academy of Management Annals*, 5, pp. 653–707.
- Granovetter, M.S. (1973) The strength of weak ties. *American Journal of Sociology*, 78, pp. 1360–1380.
- Granovetter, M.S. (1985) Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, 91, pp. 481–510.
- Grégoire, D.A., Cornelissen, J., Dimov, D. & Van Burg, E. (2015) The mind in the middle: Taking stock of affect and cognition research in entrepreneurship. *International Journal of Management Reviews*, 17, pp. 125–142.
- Gross, N. (2009) A pragmatist theory of social mechanisms. *American Sociological Review*, 74, pp. 358–379.
- \*Grossman, E.B., Yli-Renko, H. & Janakiraman, R. (2012) Resource search, interpersonal similarity, and network tie valuation in nascent entrepreneurs' emerging networks. *Journal of Management*, 38, pp. 1760–1787.
- Gulati, R. & Gargiulo, M. (1999) Where do interorganizational networks come from? *American Journal of Sociology*, 104, pp. 1439–1493.
- \*Gulati, R. & Higgins, M.C. (2003) Which ties matter when? The contingent effects of interorganizational partnerships on IPO success. *Strategic Management Journal*, 24, pp. 127–144.
- Gulati, R., Lavie, D. & Madhavan, R. (2011) How do networks matter? The performance effects of interorganizational networks. *Research in Organizational Behavior*, 31, pp. 207–224.
- Gulati, R. & Srivastava, S.B. (2014) Bringing agency back into network research: Constrained agency and network action. In Brass, D.J., Labianca, G.(J.), Mehra, A., Halgin, D.S. & Borgatti, S.P. (eds), *Research in the Sociology of Organizations*. Bradford: Emerald Publishing, pp. 73–93.

- \*Hallen, B.L. & Eisenhardt, K.M. (2012) Catalyzing strategies and efficient tie formation: How entrepreneurial firms obtain investment ties. *Academy of Management Journal*, 55, pp. 35–70.
- \*Hansen, E.L. & Allen, K.R. (1992) The creation corridor: Environmental load and pre-organization information-processing ability. *Entrepreneurship: Theory & Practice*, 17, pp. 57–65.
- Hansen, M.T. (1999) The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly*, 44, pp. 82–111.
- Hansen, M.T., Mors, M.L. & Løvås, B. (2005) Knowledge sharing in organizations: Multiple networks, multiple phases. *Academy of Management Journal*, 48, pp. 776–793.
- \*Hayter, C.S. (2016) Constraining entrepreneurial development: A knowledge-based view of social networks among academic entrepreneurs. *Research Policy*, 45, pp. 475–490.
- Hedström, P. & Swedberg, R. (1998) *Social Mechanisms: An Analytical Approach to Social Theory*. Cambridge: Cambridge University Press.
- Hedström, P. & Ylikoski, P. (2010) Causal mechanisms in the social sciences. *Annual Review of Sociology*, 36, pp. 49–67.
- \*Hite, J.M. (2005) Evolutionary processes and paths of relationally embedded network ties in emerging entrepreneurial firms. *Entrepreneurship Theory and Practice*, 29, pp. 113–144.
- Hite, J.M. & Hesterly, W.S. (2001) The evolution of firm networks: From emergence to early growth of the firm. *Strategic Management Journal*, 22, pp. 275–286.
- \*Hmieleski, K.M., Carr, J.C. & Baron, R.A. (2015) Integrating discovery and creation perspectives of entrepreneurial action: The relative roles of founding CEO human capital, social capital, and psychological capital in contexts of risk versus uncertainty. *Strategic Entrepreneurship Journal*, 9, pp. 289–312.
- Hoang, H. & Antoncic, B. (2003) Network-based research in entrepreneurship: A critical review. *Journal of Business Venturing*, 18, pp. 165–187.
- Hoang, H. & Yi, A. (2015) Network-based research in entrepreneurship: A decade in review. *Foundations and Trends in Entrepreneurship*, 11, pp. 1–54.
- \*Hsueh, J.W.-J. & Gomez-Solorzano, M. (2019) Social tie heterogeneity and firms' networking strategy. *Entrepreneurship Theory and Practice*, 43, pp. 352–359.
- Ibarra, H., Kilduff, M. & Tsai, W. (2005) Zooming in and out: Connecting individuals and collectivities at the frontiers of organizational network research. *Organization Science*, 16, pp. 359–371.
- Jack, S.L. (2005) The role, use and activation of strong and weak network ties: A qualitative analysis. *Journal of Management Studies*, 42, pp. 1233–1259.
- \*Jack, S.L. & Anderson, A.R. (2002) The effects of embeddedness on the entrepreneurial process. *Journal of Business Venturing*, 17, pp. 467–487.
- \*Jiang, H., Cannella, A.A. & Jiao, J. (2019) Does desperation breed deceiver? A behavioral model of new venture opportunism. *Entrepreneurship Theory and Practice*, 42, pp. 769–796.
- \*Jonsson, S., Greve, H.R. & Fujiwara-Greve, T. (2009) Undeserved loss: The spread of legitimacy loss to innocent organizations in response to reported corporate deviance. *Administrative Science Quarterly*, 54, pp. 195–228.
- \*Kaandorp, M., Van Burg, E. & Karlsson, T. (2020) Initial networking processes of student entrepreneurs: The role of action and evaluation. *Entrepreneurship Theory and Practice*, 44, pp. 527–556.
- \*Kerr, J. & Coviello, N. (2019) Formation and constitution of effectual networks: A systematic review and synthesis. *International Journal of Management Reviews*, 21, pp. 370–397.
- Kerr, J. & Coviello, N. (2020) Weaving network theory into effectuation: A multi-level reconceptualization of effectual dynamics. *Journal of Business Venturing*, 35, art. 105937.
- \*Khoury, T.A., Junkunc, M. & Deeds, D.L. (2013) The social construction of legitimacy through signaling social capital: Exploring the conditional value of alliances and underwriters at IPO. *Entrepreneurship Theory and Practice*, 37, pp. 569–601.
- Kilduff, M. & Tsai, W. (2003) *Social Networks and Organizations*. London: Sage.
- Kim, P. & Aldrich, H.E. (2005) *Social Capital and Entrepreneurship*. Delft: Now Publishers.
- Klyver, K., Evald, M.R. & Hindle, K. (2011) Social networks and new venture creation: The dark side of networks. In Klyver, K. & Hindle, K. (eds), *Handbook of Research on New Venture Creation*. Northampton: Edward Elgar, pp. 145–159.
- \*Klyver, K., Honig, B. & Steffens, P. (2018) Social support timing and persistence in nascent entrepreneurship: Exploring when instrumental and emotional support is most effective. *Small Business Economics*, 51, pp. 709–734.
- \*Klyver, K. & Schenkel, M.T. (2013) From resource access to use: Exploring the impact of resource combinations on nascent entrepreneurship. *Journal of Small Business Management*, 51, pp. 539–556.
- Ko, E.-J. & McKelvie, A. (2018) Signaling for more money: The roles of founders' human capital and investor prominence in resource acquisition across different stages of firm development. *Journal of Business Venturing*, 33, pp. 438–454.
- \*Larson, A. (1991) Partner networks: Leveraging external ties to improve entrepreneurial performance. *Journal of Business Venturing*, 6, pp. 173–188.
- \*Lechner, C., Dowling, M. & Welp, I. (2006) Firm networks and firm development: The role of the relational mix. *Journal of Business Venturing*, 21, pp. 514–540.
- Lechner, C., Frankenberger, K. & Floyd, S.W. (2010) Task contingencies in the curvilinear relationships between intergroup networks and initiative performance. *Academy of Management Journal*, 53, pp. 865–889.
- Lin, N. (2001) *Social Capital: A Theory of Social Structure and Action*. Cambridge: Cambridge University Press.
- Lin, N. & Dumin, M. (1986) Access to occupations through social ties. *Social Networks*, 8, pp. 365–385.
- Ma, R., Huang, Y. & Shenkar, O. (2011) Social networks and opportunity recognition: A cultural comparison between Taiwan and the United States. *Strategic Management Journal*, 32, pp. 1183–1205.
- Marineau, J.E., Labianca, G.(J.), Brass, D.J., Borgatti, S.P. & Vecchi, P. (2018) Individuals' power and their social network accuracy: A situated cognition perspective. *Social Networks*, 54, pp. 145–161.
- Mariotti, F. & Delbridge, R. (2012) Overcoming network overload and redundancy in interorganizational networks: The roles of potential and latent ties. *Organization Science*, 23, pp. 511–528.
- Martinez, M.A. & Aldrich, H.E. (2011) Networking strategies for entrepreneurs: Balancing cohesion and diversity. *International Journal of Entrepreneurial Behaviour & Research*, 17, pp. 7–38.
- \*Maurer, I. & Ebers, M. (2006) Dynamics of social capital and their performance implications: Lessons from biotechnology start-ups. *Administrative Science Quarterly*, 51, pp. 262–292.

- \*McCann, B.T. & Folta, T.B. (2011) Performance differentials within geographic clusters. *Journal of Business Venturing*, 26, pp. 104–123.
- McMullen, J.S. & Shepherd, D.A. (2006) Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31, pp. 132–152.
- Nahapiet, J. & Ghoshal, S. (1998) Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23, pp. 242–266.
- \*Newbert, S.L. & Tornikoski, E.T. (2012) Supporter networks and network growth: A contingency model of organizational emergence. *Small Business Economics*, 39, pp. 141–159.
- \*Newbert, S.L., Tornikoski, E.T. & Quigley, N.R. (2013) Exploring the evolution of supporter networks in the creation of new organizations. *Journal of Business Venturing*, 28, pp. 281–298.
- \*Ostgaard, T.A. & Birley, S. (1994) Personal networks and firm competitive strategy: A strategic or coincidental match? *Journal of Business Venturing*, 9, pp. 281–305.
- \*Ozdemir, S.Z., Moran, P., Zhong, X. & Bliemel, M.J. (2016) Reaching and acquiring valuable resources: The entrepreneur's use of brokerage, cohesion, and embeddedness. *Entrepreneurship Theory and Practice*, 40, pp. 49–79.
- \*Patel, P.C. & Terjesen, S. (2011) Complementary effects of network range and tie strength in enhancing transnational venture performance. *Strategic Entrepreneurship Journal*, 5, pp. 58–80.
- Post, C., Sarala, R., Gatrell, C. & Prescott, J.E. (2020) Advancing theory with review articles. *Journal of Management Studies*, 57, pp. 351–376.
- \*Powell, W.W., White, D.R., Koput, K.W. & Owen-Smith, J. (2005) Network dynamics and field evolution: The growth of interorganizational collaboration in the life sciences. *American Journal of Sociology*, 110, pp. 1132–1205.
- Putnam, R.D., Leonardi, R. & Nanetti, R.Y. (1994) *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
- \*Qureshi, I., Kistruck, G.M. & Bhatt, B. (2016) The enabling and constraining effects of social ties in the process of institutional entrepreneurship. *Organization Studies*, 37, pp. 425–447.
- \*Rank, O.N. & Strenge, M. (2018) Entrepreneurial orientation as a driver of brokerage in external networks: Exploring the effects of risk taking, proactivity, and innovativeness. *Strategic Entrepreneurship Journal*, 12, pp. 482–503.
- \*Ravasi, D. & Marchisio, G. (2003) Going public and the enrichment of a supportive network. *Small Business Economics*, 21, pp. 381–395.
- Rawhouser, H., Villanueva, J. & Newbert, S.L. (2017) Strategies and tools for entrepreneurial resource access: A cross-disciplinary review and typology. *International Journal of Management Reviews*, 19, pp. 473–491.
- \*Raz, O. & Gloor, P.A. (2007) Size really matters: New insights for start-ups' survival. *Management Science*, 53, pp. 169–177.
- \*Renzulli, L.A., Aldrich, H.E. & Moody, J. (2000) Family matters: Gender, networks, and entrepreneurial outcomes. *Social Forces*, 79, pp. 523–546.
- Rodan, S. & Galunic, C. (2004) More than network structure: How knowledge heterogeneity influences managerial performance and innovativeness. *Strategic Management Journal*, 25, pp. 541–562.
- Sarasvathy, S.D. & Dew, N. (2005) New market creation through transformation. *Journal of Evolutionary Economics*, 15, pp. 533–565.
- Scott, J. (2000) *Social Network Analysis: A Handbook*. London: Sage.
- \*Semrau, T. & Werner, A. (2014) How exactly do network relationships pay off? The effects of network size and relationship quality on access to start-up resources. *Entrepreneurship Theory and Practice*, 38, pp. 501–525.
- \*Shane, S. & Cable, D. (2002) Network ties, reputation, and the financing of new ventures. *Management Science*, 48, pp. 364–381.
- Shea, C.T., Menon, T., Smith, E.B. & Emich, K. (2015) The affective antecedents of cognitive social network activation. *Social Networks*, 43, pp. 91–99.
- Slotte-Kock, S. & Coviello, N. (2010) Entrepreneurship research on network processes: A review and ways forward. *Entrepreneurship Theory and Practice*, 34, pp. 31–57.
- Smith, E.B., Brands, R.A., Brashears, M.E. & Kleinbaum, A.M. (2020) Social networks and cognition. *Annual Review of Sociology*, 46, pp. 159–174.
- Soda, G. & Usai, A. (1999) The dark side of dense networks: From embeddedness to indebtedness. In Grandori, A. (ed.), *Interfirm Networks: Organization and Industrial Competitiveness*. London: Routledge, pp. 276–302.
- \*Sorenson, O. & Audia, P.G. (2000) The social structure of entrepreneurial activity: Geographic concentration of footwear production in the United States, 1940–1989. *American Journal of Sociology*, 106, pp. 424–462.
- \*Stam, W., Arzlanian, S. & Elfring, T. (2014) Social capital of entrepreneurs and small firm performance: A meta-analysis of contextual and methodological moderators. *Journal of Business Venturing*, 29, pp. 152–173.
- Steier, L. & Greenwood, R. (2000) Entrepreneurship and the evolution of angel financial networks. *Organization Studies*, 21, pp. 163–192.
- Stinchcombe, A.L. (1965) Social structure and organizations. In March, J.G. (ed.), *Handbook of Organizations*. Chicago, IL: Rand McNally, pp. 142–193.
- \*Stuart, T.E., Hoang, H. & Hybels, R.C. (1999) Interorganizational endorsements and the performance of entrepreneurial ventures. *Administrative Science Quarterly*, 44, pp. 315–349.
- \*Stuart, T.E. & Sorenson, O. (2003) The geography of opportunity: Spatial heterogeneity in founding rates and the performance of biotechnology firms. *Research Policy*, 32, pp. 229–253.
- \*Stuart, T.E. & Sorenson, O. (2007) Strategic networks and entrepreneurial ventures. *Strategic Entrepreneurship Journal*, 1, pp. 211–227.
- Tasselli, S., Kilduff, M. & Menges, J.I. (2015) The microfoundations of organizational social networks: A review and an agenda for future research. *Journal of Management*, 41, pp. 1361–1387.
- \*Tsui-Auch, L.S. (2005) Unpacking regional ethnicity and the strength of ties in shaping ethnic entrepreneurship. *Organization Studies*, 26, pp. 1189–1216.
- Uzzi, B. (1996) The sources and consequences of embeddedness for the economic performance of organizations: The network effect. *American Sociological Review*, 61, pp. 674–698.
- \*Uzzi, B. (1997) Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative Science Quarterly*, 42, pp. 35–67.
- Van Burg, E., Berends, H. & van Raaij, E.M. (2014) Framing and interorganizational knowledge transfer: A process study of collaborative innovation in the aircraft industry. *Journal of Management Studies*, 51, pp. 349–378.

- Van Burg, E. & Romme, A.G.L. (2014) Creating the future together: Toward a framework for research synthesis in entrepreneurship. *Entrepreneurship Theory and Practice*, 38, pp. 369–397.
- \*Vedres, B. & Stark, D. (2010) Structural folds: Generative disruption in overlapping groups. *American Journal of Sociology*, 115, pp. 1150–1190.
- \*Vissa, B. (2012) Agency in action: Entrepreneurs' networking style and initiation of economic exchange. *Organization Science*, 23, pp. 492–510.
- \*Vissa, B. & Bhagavatula, S. (2012) The causes and consequences of churn in entrepreneurs' personal networks. *Strategic Entrepreneurship Journal*, 6, pp. 273–289.
- \*Vissa, B. & Chacar, A.S. (2009) Leveraging ties: The contingent value of entrepreneurial teams' external advice networks on Indian software venture performance. *Strategic Management Journal*, 30, pp. 1179–1191.
- Williams, T.A. & Shepherd, D.A. (2017) Mixed method social network analysis combining inductive concept development, content analysis, and secondary data for quantitative analysis. *Organizational Research Methods*, 20, pp. 268–298.
- Witt, P. (2004) Entrepreneurs' networks and the success of start-ups. *Entrepreneurship & Regional Development*, 16, pp. 391–412.
- Zaheer, A. & Bell, G.G. (2005) Benefiting from network position: Firm capabilities, structural holes, and performance. *Strategic Management Journal*, 26, pp. 809–825.
- \*Zhang, J., Soh, P. & Wong, P. (2010) Entrepreneurial resource acquisition through indirect ties: Compensatory effects of prior knowledge. *Journal of Management*, 36, pp. 511–536.

## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

**How to cite this article:** van Burg E., Elfring T. & Cornelissen JP. (2022) *International Journal of Management Reviews*. 24:188–209.  
<https://doi.org/10.1111/ijmr.12272>