

## EFFECTS OF INITIAL TEAMWORK CAPABILITY AND INITIAL RELATIONAL CAPABILITY ON THE DEVELOPMENT OF NEW TECHNOLOGY-BASED FIRMS

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*New technology-based firms face substantial resource constraints. This study examines how teamwork capability and relational capability of the entrepreneurial team affects the development of new firms. Teamwork capabilities are captured by the quality of collaboration of the entrepreneurial team members among themselves. Relational capabilities are analyzed based on the collaboration of the entrepreneurial team members with partners external to the focal firm. Our findings show that teamwork and relational capabilities, while theoretically originating from social capabilities, can have diverging effects on the development of a new organization. We find that relational capabilities lead to founding team member additions as well as sales and employment growth. In contrast, teamwork capabilities lead to a reduced likelihood to add founding team members and do not affect sales and employment growth. Theoretical and practical implications are discussed. Copyright © 2011 Strategic Management Society.*

### INTRODUCTION

The founding process can be understood as a struggle for resources to assure survival and growth of the young organization. Founders generally start with very limited personal resources (Shane, 2008). In order to grow their new firms, they need to build the founding team, find employees, and obtain financial resources to pay for employees, product development, production inputs, and marketing. Additionally, they have to generate sufficient resources to pay for their personal living expenses. The struggle for resources is a salient and essential element of entrepreneurship. Hence, the acquisition

of resources, including financial resources (e.g., through sales, cash-flow, or external financing), human resources (e.g., employment growth), or managerial resources (e.g., team member additions), are principle measures of new venture success (Chandler and Hanks, 1993; Delmar, Davidsson, and Gartner, 2003).

While literature initially treated the entrepreneurial phenomenon as an individual endeavor (Cantillon, 1755; Hayek, 1948; Say, 1803; Schumpeter, 1982), more recent works propose that entrepreneurship should be understood as a team effort (e.g., Foss *et al.*, 2008; Roberts, 1991). Frequently, new firms are started by multiple individuals who create and lead the emerging organization together as the founding team. In the process, the initial founding team members might add additional members to complement their competencies and acquire greater managerial capacity. The founding team makes strategic decisions together and carries the

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responsibility for their decisions. In contrast to top management teams (TMTs) of established corporations, the members of founding teams commonly share ownership. Generally, the founding team starts as an emerging team with limited prior joint work experience and non-established roles within the team. In founding teams, members mutually self-determine their membership, while TMT membership in established firms is largely determined by the board of directors. As the firm develops and more team members are added to the founding team to complement existing competencies and add managerial capacity, the founding team evolves into a more managerial-oriented TMT. In this article, we use the term ‘founding team’ to refer to the initial team configuration and the term ‘entrepreneurial team’ as a more encompassing, general term for TMTs of new firms. Though extensive literature is devoted to TMTs of established organizations, limited research is dedicated to entrepreneurial and, especially, founding teams. However, the unique characteristics of founding teams provide a valuable context to analyze how the capabilities of the initial team affect the development of a new organization.

Early in the management literature, abilities of founding teams were identified as a prime limitation for firm growth. The theory of the growth of the firm proposes that while business opportunities might be abundant, founding teams constrain firm development as they determine the speed by which resources can be acquired and configured in a value-creating fashion to pursue business opportunities (Penrose, 1959). Penrose’s theory in particular draws attention to the social processes prevalent in the teams as they determine both the functioning of the team as an administrative unit and its managerial capacity. While the theory of the growth of the firm subsequently inspired various theoretical contributions such as the resource-based view (e.g., Amit and Schoemaker, 1993; Barney, 1991; Grant, 1991; Rugman and Verbeke, 2002), capability (e.g., McEvily, 2005; Grant, 1996; Helfat and Peteraf, 2003), dynamic capability (e.g., Drnevich and Kriauciunas, 2011; Teece, Pisano, and Shuen, 1997; Teece, 2007) or dynamic managerial capability theory (Adner and Helfat, 2003; Sirmon and Hitt, 2009), the empirical analysis of a founding teams’ early abilities on the development of their firms has been limited. Initial empirical studies in the entrepreneurship domain suggest that the *early* resource endowment, such as the founder’s initial human

capital and social capital, impact subsequent resource acquisition (Chandler, 1998; Florin, Lubatkin, and Schulze, 2003)—yet these findings refer to individual-level studies. At the firm level, entrepreneurship research stresses that a firm’s capability to deploy its initial resources improves subsequent firm performance (Baron and Markman, 2003; Boccardelli and Magnusson, 2006; Man, Lau, and Chan, 2002). Moreover, research on entrepreneurial team processes stresses that social processes (such as cognitive conflicts) benefit firm performance, while affective conflicts reduce performance (Ensley, Pearson, and Amason, 2002). In this study, we build on prior research by analyzing the effects of the founding teams’ social capabilities at start-up on different dimensions of firm development. To provide novel insights, we distinguish between two social capabilities: teamwork capability and relational capability. Teamwork capabilities are captured by the quality of collaboration of the founding team members among themselves (Hoegl and Gemuenden, 2001). Relational capabilities pertain to the collaboration of the founding team members with external partners (Capaldo, 2007; Eisenhardt and Schoonhoven, 1996; Walter, Aver, and Ritter, 2006). We define the founding team as the group of people who jointly lead the new firm, determine top-level business decisions and have the responsibility for these top-level decisions. The start-up time is defined as the time when the team members first got together to jointly pursue the business opportunity.

With regard to firm development measures, we distinguish between three firm development dimensions: (1) growth in managerial resources (team member additions to the founding team); (2) human resources (employment growth); and (3) financial resources (revenue growth). Additions to the founding team indicate the future potential of an increased capacity of the top management team (e.g., Adner and Helfat, 2003; Penrose, 1959). Employment growth reflects internal development progress, while revenue growth indicates market-related progress (Delmar *et al.*, 2003). Figure 1 depicts the research framework of this article.

The analysis of these distinct dimensions provides a more comprehensive understanding of the effects of two central social capabilities at the time of start-up. We contrast their diverging effects on firm development measures. While social capabilities are frequently portrayed as beneficial (Hitt *et al.*, 2001), the distinction between the two social capabilities

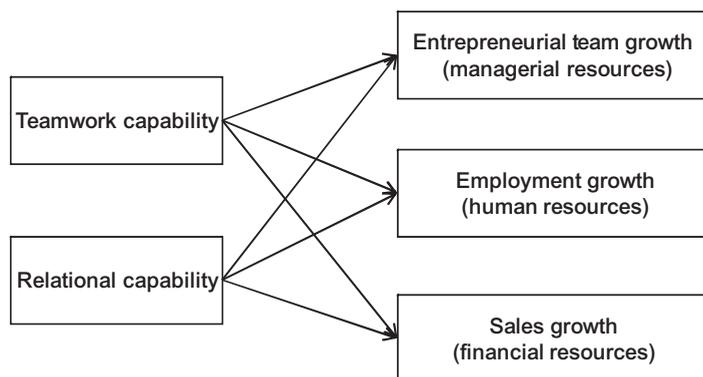


Figure 1. Research framework

allows us to elaborate a more detailed understanding. More specifically, it provides a basis for three main contributions to literature.

First, with regard to teamwork capability, we contribute to extant research on teams (Hoegl *et al.*, 2004; Mathieu and Weinkauff, 2008). While teamwork is commonly presented positively, we discuss potential negative implications of close initial teamwork capabilities and depict how these might limit new firm growth. We discuss how close team collaboration can lead to an aversion against subsequent team member additions, limiting the basis for competence growth and an increase in the managerial capacity of TMTs.

Second, building on prior research, we examine whether initial relational capabilities of the founding team constitute antecedents for new firm resource growth. Strategy research on established businesses has found that relational capabilities support knowledge acquisition, the creation of organizational capabilities, and the success of innovation projects (Capaldo, 2007). However, there are also indications in management research that repeated partnerships can decrease performance, especially in environments with greater technological uncertainty (Goerzen, 2007). Prior entrepreneurship research finds that networks of founders foster new firm development (Davidsson and Honig, 2003; Lechner, Dowling, and Weipe, 2006). Yet, fledging firm networks need to be actively managed (Alvarez, Ireland, and Reuer, 2006; Gulati and Higgins, 2003; Hite and Hesterly, 2001). To shed more light on the effects of network capability in the context of new firms, we conceptually and empirically probe the impact of a founding team's initial relational capabilities on

the management team, staff, and revenue growth.

Third, our analysis provides theoretical additions and empirical analysis of relationships proposed by the theory of the growth of the firm. By distinguishing between intrateam capabilities and capabilities regarding the interaction of the team with external partners, we are able to identify more specifically which initial capabilities can present a limitation to the growth of the firm and how the limitations manifest themselves.

Our research framework links the TMT level with firm-level performance. In so doing, we build on prominent literature that suggests TMT characteristics impact firm performance (Becker, 1975; Hambrick and Mason, 1984; Penrose, 1959). The limited initial size of the new firms and the absence of pre-established routines promise that the effects of founding teams on new firm performance are less confounded by other factors. We test hypotheses with data from 212 new technology-based firms (NTBFs). These firms are of special interest to us for various reasons. First, while NTBFs are unlikely to be representative of the population of new firms, they still form an important subgroup with respect to job creation, innovation, and national competitiveness (e.g., Almus and Nerlinger, 1999; Audretsch, 1995). Second, NTBFs are prevalently founded and lead by teams (e.g., Roberts, 1991). Third, by and large, growth is an important dimension for founding teams of NTBFs (Almus and Nerlinger, 1999; Roberts, 1991). Fourth, because NTBFs generally have augmented resource demands due to intensive research and development efforts, the need of highly skilled labor, expensive production facilities, and

costly sales and distribution systems, they provide a fertile ground to study resource acquisition and utilization.

## **THEORY AND HYPOTHESES DEVELOPMENT**

The literature on the resource-based view (RBV) provides valuable insights as it serves to explain the variance in performance between different firms by focusing on their resources. Resources include: (1) physical capital, such as equipment, physical technology, and location; (2) human capital including managerial capabilities and social relationships; as well as (3) organizational capital resources, such as formal and informal planning within the firm and with external partners (Barney, 1991; Grant, 1991). Resources can be a source of competitive advantage if they are valuable, rare, difficult to imitate, and difficult to substitute. Firms can be viewed as bundles of tangible and intangible resources. Management needs to develop a unique resource configuration over time to assure competitiveness (Galunic and Rodan, 1998). While the RBV was primarily developed for established firms, scholars increasingly adopt and refine the RBV to explain new firm emergence and development (Alvarez and Busenitz, 2001; Hanlon and Saunder, 2007). Extending the RBV to the context of start-up companies, entrepreneurship can be understood as a process in which entrepreneurs identify, control, and leverage resources to pursue aspirations and exploit perceived opportunities (Haber and Reichel, 2007; Venkataraman and Sarasvathy, 2001). According to the RBV, entrepreneurs are assemblers and organizers of resources. Their capabilities determine the utilization of the limited resource of the new firms and subsequent growth (Alvarez and Busenitz, 2001; Castanias and Helfat, 1991, 2001; Chandler and Jansen, 1992; Penrose, 1959). Following the theory of the growth of the firm, the functioning of the TMT as a managerial unit determines its capabilities to obtain and use resources (Penrose, 1959). Building on this notion, recent literature underlines the importance of resource management, which is conceived as the synchronization of resource-related investment, bundling, and deployment decisions (Sirmon and Hitt, 2009; Sirmon, Hitt, and Ireland, 2009). Moreover, a firm requires dynamic management capabilities to continuously reconfigure the resource base (Adner and Helfat, 2003). Consequently, we

consider the quality of collaboration of the founding team members among themselves (i.e., teamwork capabilities) and with external partners (i.e., relational capabilities) as key capabilities in the founding and growth process.

### **Initial teamwork capabilities and resource acquisition**

While the theory of the growth of the firm provides general propositions about the importance of effective team processes, literature on team processes and team dynamics more specifically addresses effects of teamwork capabilities on team and firm performance. Research on teams in established companies finds that the quality of teams' collaborative processes improves performance of innovation projects, which are of particular relevance to our study since they share similarities with NTBFs. Such tasks are characterized by high degrees of novelty, complexity, and uncertainty, requiring a high degree of collaboration in order to determine task strategies and coordinate various contributions (Olson, Walker, and Ruekert, 1995). As argued by Sicotte and Langley (2000), teams involved in innovative projects are more likely to face uncertainty and ambiguity that inevitably result in unpredictable situations and sometimes even confusion. Furthermore, at start-up there is a much higher likelihood of disruption and frustration as team members face this uncertainty and unpredictability. Moreover, much is at stake for the founders during the initial start-up because their personal goals, personal investments, career success, and social interaction are generally interwoven with the new firm development. This requires intense collaboration of team members in a non-preprogrammable task environment with strong reciprocal interdependencies and high information processing requirements (Daft and Lengel, 1986; Hoegl, Parboteeah, and Gemuenden, 2003).

In such a context, the initial teamwork capabilities of team members, in our case the founding team members, likely affect the growth and development of a NTBF, similar to how high teamwork quality drives performance in corporate innovation projects (Hoegl and Gemuenden, 2001; Hoegl *et al.*, 2004; Sethi and Nicholson, 2001). In teams with high teamwork capabilities, team members communicate relevant information openly (Hauptman and Hirji, 1996; Katz and Allen, 1988), coordinate their activities (Adler, 1995; Faraj and Sproull, 2000), mutually support each other in team discussions

and individual task work (Cooke and Szumal, 1994; Tjosvold, 1984), as well as establish and maintain work norms of high effort (Hackman, 1987; Weingart, 1992). Teamwork capability of the NTBF's founding team at start-up is likely to influence firm growth because teamwork capability reflects itself in high-quality teamwork among the founding team members. The high-quality teamwork fosters the utilization of every member's full potential in terms of relevant knowledge and skills (Seers, 1989). Moreover, it increases the NTBF's capacity to react to sudden and unforeseen changes in its environment (such as competitors' actions or new technological development), as well as in its internal processes (such as negative test results and the need for further experimenting) (Iansiti, 1995). As such, teamwork capability leads to better and faster decision making and subsequent implementation of corrective action, if needed.

Largely supporting this notion, prior entrepreneurship research shows that such teamwork-related individual social competencies as social perception, social adaptability, and expressiveness can increase the financial success of new firms (Baron and Markman, 2003). Similar positive results were obtained for characteristics such as interpersonal flexibility, team commitment, and helpfulness (Watson, Ponthieu, and Critelli, 1995). Other studies show that prior common teamwork experience has a positive effect on survival, profits, and growth (Roure and Keeley, 1990; Roure and Maidique, 1986). Additionally, team cohesion is found to augment firm growth in a sample of high-growth firms (Ensley *et al.*, 2002).

Following the theory of the growth of the firm and team literature, we expect that founding teams with greater teamwork capabilities at start-up will, in consequence, drive and accommodate more rapid resource growth in terms of additional revenues and additional employees. Thus, we propose:

*Hypothesis 1: Initial teamwork capabilities of the founding team relate positively to employment growth.*

*Hypothesis 2: Initial teamwork capabilities of the founding team relate positively to revenue growth.*

Teamwork capability is reflected in closer team collaboration. Closer team collaboration at start-up, however, can lead to an internal orientation, with a strong belief in the potency of the current team and

a high degree of cohesion (Janis, 1995). The literature on small groups in organizations has identified such inward orientation in the form of groupthink, i.e., a highly cohesive team's overly pronounced belief in its capabilities and its strive for unanimity in decision making (Janis, 1995; Neck and Moorhead, 1995). This internal focus can lead to avoiding new team member additions, because team members believe in the effectiveness of their team and ignore the value of adding new team members (Chandler, Honig, and Wiklund, 2005). As such, a highly cohesive founding team, reflected in intense team collaboration at start-up, may quickly develop a shared belief that it has all it takes to be successful and that any additions are not only superfluous, but may interfere with the current (and desired) unanimity of decision making. Adding new members to the founding team, however, has been described as a key determinant for the longer-term development of new firms, as the further growth of the company regularly hinges on an increasing managerial capability at the top of an expanding NTBF (Adner and Helfat, 2003; Penrose, 1959; Schreyögg, and Kliesch-Eberl, 2007). Notwithstanding the notion that in uncertain times it may well be more prudent for an NTBF not to add members to the top management team, adding team members is generally indicative of firms' growth or growth expectations.

The extant research on entrepreneurial team member additions finds that homophily—the similarity between members' characteristics—is a dominant selection criteria (Ruef, Aldrich, and Carter, 2003). Team members with similar characteristics exhibit greater levels of interpersonal attraction, trust, understanding, and social affiliation compared to dissimilar individuals. Team members who collaborate closely might perceive outsiders generally as being more different compared to their existing members as they have adopted similar working standards, communication styles, etc. (Guzzo and Shea, 1992; Lichtenstein *et al.*, 1997). An inclination toward homophily paired with a perceived heterogeneity of potential new team members could lead to limited proclivity to add new members. New team members also need some time to adjust and integrate in the team in order to work effectively (Penrose, 1959). Team members who perceive that they belong to a well-functioning team might also fear a negative change in team dynamics due to member additions (Forbes *et al.*, 2006). Since new entrepreneurial team members generally get an equity stake in the firm, the risks associated with dysfunctional team

dynamics go beyond the immediate team performance outcome, but include additional governance and financial risks as well (Blyler and Coff, 2003). Therefore, it can be expected that a closely collaborating team will tend to avoid team member additions, either intentionally or unintentionally. Thus, we expect that the founding team's initial teamwork capabilities will lead to fewer additions of managerial resources at the top management team level.

*Hypothesis 3: Initial teamwork capabilities of the founding team relate negatively to additions of entrepreneurial team members.*

### **Initial relational capabilities and resource acquisition**

Following resource dependence theory, a firm's survival and growth depends on the acquisition of resources from its environment (Pfeffer and Salancik, 1978). Due to its resource limitations at start-up, yet immediate resource needs, resource acquisition is a critical task for new firms. In competition with established firms for scarce resources, new firms face a liability of newness (Stinchcombe, 1965) and a liability of smallness (Bruderl and Schusser, 1990). Additionally, information asymmetry between the founders and external resource providers hinders resource acquisition (Janney and Dess, 2006; Stuart, Ha, and Hybels, 1999). In order to overcome these liabilities and hindrances, the founding team needs to effectively and efficiently manage the exchange with its environment. Strategic network theory proposes that resources are obtained through the interactions of the founding team with network members outside the firm (Leung *et al.*, 2006; McEvily and Zaheer, 1999; Stuart, Hoang, and Hybels, 1999). A network can be understood as a set of connections and exchanges between actors (Fombrun, 1982; Larson, 1991). The networks of new firms are an amalgamation of personal networks of the founders and organizational networks (Eisenhardt and Schoonhoven, 1996; Johannisson, 2000; Lechner *et al.*, 2006). The personal networks comprise social relationships of the founders with individuals such as friends, relatives, and former colleagues. The organizational network encompasses interorganizational relationships of the new firm (Lechner *et al.*, 2006). At start-up, the personal networks of the founders generally constitute the organizational network of the fledgling firm to a great extent (Hallen,

2008). As the organization grows and an accomplishment record is established, organization-specific networks, such as networks of employees or investors, are likely to complement the founders' personal networks. Yet, the personal networks of the founders remain a prominent determinant of the networks (Hallen, 2008).

Especially at start-up, the founding team's network can provide new firms with access to critical resources such as legitimacy, reputation, technologies, financing, human resources, and facilities, as well as information regarding markets, marketing, and business opportunities (e.g., Gulati and Higgins, 2003; Starr and MacMillan, 1990; Stuart, Hoang, and Hybels, 1999). Alternatively, the founding team can leverage the new firms own resources through networking (Eisenhardt and Schoonhoven, 1996). The founding team can allow external partners to use its resources in its value-creation chain, e.g., by leasing R&D facilities or production services to another firm. In the marketing field, the founding team can use the NTBF's customer base to market complementary products from other firms. Furthermore, network partners can provide important endorsement to reduce perceived risks and uncertainty by other stakeholders (e.g., Podolny and Stuart, 1995; Stuart, Hoang, and Hybels, 1999). Larson (1992) suggests that social networks are preconditions for such economic exchanges. The founders' networks at start-up—their direct and indirect ties—are oftentimes the main source of social capital for the new firms (Dubini and Aldrich, 1991; Hallen, 2008; Larson, 1992; Watson, 2007).

However, the network of the founders presents merely the potential for access to critical resources for the new firm (Baron and Markman, 2000; Blyler and Coff, 2003). To capture the value of their network, founders need to engage in exchange with members of the network through networking activities. In order to carry out network activities, founders need initial relational competencies (Baron and Markman, 2003). Both elements, the access to the network as well as initial relational competencies in using the network, are important for new firm development (Baron and Markman, 2003; Dubini and Aldrich, 1991; Ostgaard and Birley, 1994). Starr and MacMillan (1990) propose that utilizing resources at reduced costs distinguishes entrepreneurs from administrators. These authors suggest that founders oftentimes exchange economic resources for their social resources. Strategic network theory also points to negative effects of networking between the

founding team and external contacts. These can consist of lockout and overembeddedness effects (Goerzen, 2007; Uzzi, 1997). Additionally, alliance literature highlights potential disadvantages, such as transaction costs, lack of internal competence development, and reduced cash flow due to revenue or income sharing (e.g., Eisenhardt and Schoonhoven, 1996). Yet, prior empirical entrepreneurship research finds mainly positive effects. According to West and Noel (2002), networking activity of founders increases firm success. Other research shows that the participation in start-up counseling programs increases a firm's chance of survival (Chrisman and McMullan, 2004). Also, political competence encompassing the involvement of people, firm/team complementarities, and the gathering of external support increases profitability and growth of small manufacturing firms (Chandler and Jansen, 1992). Following the concept of relational capability developed in the context of established firms (Capaldo, 2007), new venture teams can obtain critical knowledge, build internal capabilities, and derive economic returns based on their initial network ties. Moreover, since the network ties are repeatedly deployed (tie repetition) and new ties are frequently established based on prior ties (tie transitivity), the initial relational configuration determines subsequent relation developments through strong path dependencies (Hallen, 2008). As such, we argue that a founding team's initial relational capability fosters a NTBF's development in terms of both financial and human resource growth. Formally, we posit:

*Hypothesis 4: Initial relational capabilities of the founding team are positively related to employment growth.*

*Hypothesis 5: Initial relational capabilities of the founding team are positively related to revenue growth.*

With regard to team member additions, we expect that founding teams with higher initial relational capabilities embrace more of an external orientation (Baron and Markman, 2000; Mehra *et al.*, 2006; Yli-Renko, Autio, and Sapienza, 2001). The more outwardly oriented teams will have a general appreciation of the valuable resources outside the team and the firm. Research on team external interactions in established firms underscores the importance of such outward orientation (Ancona and Caldwell, 1990, 1992). Moreover, they will also possess better

information about team enlargement opportunities in their environment since they have greater exposure to potential team partners. Integrating new external partners, such as a financial or marketing specialist, into the firm by enlarging the founding team can lower transaction costs and increase the managerial capacity of the team (Penrose, 1959). Thus, we expect founding teams with strong initial relational capabilities to be more likely to expand their managerial capacity and knowledge base by adding members to the entrepreneurial team. Hence, we hypothesize:

*Hypothesis 6: Initial relational capabilities of the founding team are positively related to the acquisition of entrepreneurial team members.*

## METHOD

### Sample

Our sample was selected from different German technology industry registrars (VDI Technology Centers, AMA Verband für Sensorik, ADT Bundesverband Deutscher Innovations, Technologie und Gründerzentren e.V., BioTOP, Vereinigung Deutscher Biotechnologieunternehmen), and from specific industry fair catalogs (Laser Optik Messe Berlin, Hannover Messe). Companies qualified to participate in our research if they met the following criteria: (1) focus on high-technology products; (2) own research and development, production, and marketing activities (no trading businesses); and (3) founded and led by at least two persons. The first requirement was introduced due to the special importance of technology firms in the entrepreneurship field. The second requirement was introduced to obtain a homogenous sample of production-based technology firms and to exclude trading businesses, which have very different resource characteristics. The third requirement was introduced to reflect our research framework and select only team-founded ventures. Founding team membership was defined by three conditions, persons who: (1) jointly lead the firm; (2) make key decisions at the executive level together; and (3) share the responsibility for these decisions.

Companies willing to participate in our study received questionnaires which could be completed electronically or in a printed version. We addressed the questionnaire to the CEO of the NTBF. In order to address a potential response bias, we undertook

different measures. First, we designed the questionnaire to be appealing to our target population through intensive pretests (topic, format, lengths, cover letter, free mail return postage, and electronic submission possibility). Second, we intensively followed up after sending the questionnaire (Kanuk and Berenson, 1975). Third, following other researchers (e.g., Becherer and Maurer, 1999; Chrisman and McMullan, 2004; Kazanjian and Drazin, 1989), we compared central descriptive data of early versus late respondents with regard to key descriptive data (number of team members, team and external collaboration assessments, sales and employment figures). T-tests comparing the variable means of central descriptive measures (number of team members, team and external collaboration assessments, sales and employment figures) of these two groups indicated no significant difference between early and late respondents. Out of the 617 contacted companies, 212 completed the questionnaire, yielding a response rate of 34 percent.

We employed several measures to address a potential retrospective bias. First, we asked respondents for start-up and current assessments of teamwork and relational capabilities. The specific distinction should assist respondents in distinguishing between the different time instances. Moreover, respondents had to specify specific activities at start-up, which was also intended to create more awareness about the different time points. Second, we validated subjectively assessed data with more objective background data. For example, when asking about specific competencies, we analyzed whether their background experience justified the assessments. The comparison of more objective background data with their subjective assessments (ANOVA and correlations) signaled validity of their recalled assessments. Third, we added a control variable for age of the venture. If a systematic—e.g., ‘positive performance recall’ bias—affects the respondents, this variable should largely capture this bias. Fourth, in additional analyses, we made a median age sample split and assessed the relationships for the younger subsample in comparison with the prior results from the total sample. In these analyses, the coefficients were similar yet nonsignificant due to the reduced sample size when estimating employment and sales growth. The regression estimating team member additions yielded significant results that supported our prior findings.

The contact data of the CEOs reveals that eight out of 178 (4.5 percent) respondents were female.

Prior to the founding, 68 percent of the respondents worked in technology functions (68 percent), 55 percent worked in marketing, and 54 percent had a financial management background. The companies in the sample were active in the following technological areas: micro (36), nano (25), medical (17), biotechnology (20), electronics (54), instrument development (26), and laser/optics (27). Initially, the average founding team consisted of two to three members and their firms had two to three additional employees. We eliminated five cases that were less than 13 months old, representing 2.4 percent of the total sample. At the time of data collection, the median age of the firms was six years (SD: 3.7), the median sales of these companies was € 650,000 (SD: € 2,113,000), and the median number of employees was 10 (SD: 32.0). In the first year the NTBFs had average sales of € 216,000 (SD: 670,000) and five employees (SD: 9.82). Many (111) firms had an independent founding background, while the remaining firms originated from corporate or academic organizations. Thirty-seven percent of the NTBFs were able to finance themselves from cash flows. While this sample might not be representative of the general NTBF population as indicated by the elevated average sales and employment numbers, the sample characteristics nevertheless suggest adequacy with regard to our understanding of high-growth NTBFs, which is the focus of the theory underlying this research (Penrose, 1959).

### **Dependent variables**

The growth of new firms is a complex, multidimensional phenomenon. Hence, scholars advocate applying multiple dependent variables to capture the multifarious development of new firms (Delmar *et al.*, 2003). In order to depict the growth of the NTBFs, we used three dependent variables: team member additions, employee additions, and sales growth.

Penrose highlights how the size of a founding team affects its managerial capacity. Thus, studying the team member additions indicates the acquisition of managerial capacity at the top of the firm. Moreover, additional literature building on Penrose’s work such as resource-based literature (Amit and Schoemaker, 1993; Barney, 1991; Hitt *et al.*, 2001; Hitt *et al.*, 2006), capability-based literature (McEvily, 2005; Grant, 1996; Helfat and Peteraf, 2003), dynamic capability literature (Blyler and Coff, 2003; Coff, 2010; Dosi, Nelson, and Winter,

2000; Eisenhardt and Martin, 2000; Helfat *et al.*, 2007; Teece, 2007), and literature on dynamic managerial capabilities (Adner and Helfat, 2003; Sirmon and Hitt, 2009) propose that adding founding team members can facilitate the development of managerial capabilities over time and, consequently, enables firm growth. Team additions were calculated based on data provided by respondents since public data on these private firms were not available. Respondents were specifically asked to identify the number of additions to their founding team during the venture. In order to control for the age of the firms, we computed the team additions per year.

Employment growth is the resource measure to capture the growth in overall human resources of the firm. Employment growth is a prominent growth measure (Birley, 1987; Delmar *et al.*, 2003; Kazanjian, 1988; Westhead, 1995). The employment growth numbers were calculated by subtracting the initial number of employees from the number of employees at the time of the study. In accordance with prior research, the employment growth figures were calculated as employment growth per year.

The sales growth variable can be understood as an indicator of resources customers transfer to the firm. Sales growth is also a frequently used measure to capture firm development, especially when focusing on growth firms (Delmar *et al.*, 2003; Kazanjian, 1988). Sales growth signals trust of customers in the company and strength in the marketplace. Additionally, sales generally imply a financial benefit to the firm. Research highlights the importance of sales for financing growth of NTBFs (Brinckmann, Salomo, and Gemuenden, forthcoming). In analogy to employment growth, the sales growth variable was calculated by subtracting initial sales from the sales figure at the time of study. Again, sales growth was computed as sales growth per year.

### Independent variables

The initial teamwork capability construct was based on the teamwork quality dimensions presented by Hoegl *et al.* (2004). Based on this concept, prior entrepreneurship research derived a compact measurement scale and supported the validity of this concept for founding teams in NTBFs (e.g., Lechler, 2001; Müller, Walter, and Gemuenden, 2002). Similar to the original measure of teamwork quality, the scale employed in this study captures multiple teamwork quality facets, including communication,

mutual support, and cohesion. In addition, we validated the teamwork capability measure employed in this study with the original 38-item scale by Hoegl and Gemuenden (2001). The correlation between these measures is 0.92.

The initial relational capability construct is based on literature regarding social networking, social competence, and social capital (Capaldo, 2007; Lorenzoni and Lipparini, 1999; Walter *et al.*, 2006). The items assess the existence of network linkages with key resource providers, as well as the competence to effectively cooperate with these network partners. In our study, this construct evaluates the existence and cooperation competences with resource providers in the technological, marketing, and financial domain. Other research proposes that these three functional areas are particularly important for the development of new firms (e.g., Berger and Udell, 1998; de Bettignies and Brander, 2007; Gruber, 2007; Lechner *et al.*, 2006; Roberts, 1991; Shane, 2001; Stuart, Ha, and Hybels, 1999).

Respondents were asked to evaluate their team's initial teamwork and initial relational capabilities referring both to the start-up time. The start-up time was defined as the time when the founders joined together and undertook first activities to pursue the business opportunity. Considering the small size of founding teams (median = 2 members), we adopted a key informant approach. One member of the founding team was asked to assess the team's collaboration as a team and with external partners. In new firms, founders can be considered the most knowledgeable and valid information resource (Lechner *et al.*, 2006). Following prior research, self-assessments through key informants of small groups are an adequate measurement tool (Baron and Markman, 2003; Brinckmann *et al.*, forthcoming; Chandler and Hanks, 1994; Chandler and Jansen, 1992; Delmar and Shane, 2003; Zahra and Covin, 1993). Because the median size of top team membership is two persons, a close collaboration and high information level concerning central founding issues of each executive can be assumed. Various studies illustrate the consistent assessments of different top management team members on central founding issues in the NTBF context (e.g., Chandler and Jansen, 1992; Müller *et al.*, 2002).

An exploratory factor analysis indicates that both constructs form independent factors with cross-loadings below 0.35. We analyzed the internal consistency reliability of the two independent constructs. The Cronbach's alpha of the six items relating to

teamwork capabilities is 0.93 and cannot be improved by eliminating any item. The Cronbach's alpha for the six items pertaining to initial relational capabilities is 0.79. Again, the measurement characteristics of the construct could not be improved by using a reduced scale. The items for the initial teamwork capability and initial relational capability constructs are included in the Appendix of this article.

### Controls

We included a number of control variables in our analyses. A first control variable was a dummy variable capturing the background of the firm. It was coded '1' for independently founded firms and '0' for firms originated from other institutions. We also controlled for industry-specific resource acquisition effects by applying respective dummy variables for the different industries. Furthermore, we controlled for the initial team size of the firm, since human capital theory suggests that this figure could impact the subsequent resource acquisition of firms (e.g., Barkham, 1994; Cooper, Gimeno-Gascon, and Woo, 1994; Davidsson and Honig, 2003; Feeser and Willard, 1990). We also included the age of the firm as a control variable. Firms might be able to add resources more easily as they survive more years. An additional control variable related to the functional homogeneity of the founding team. It seems possible that this may have an effect on the addition of new team members (Ucbasaran *et al.*, 2003). Moreover, with regard to firm success, other research suggested that team diversity benefits firm development (e.g., Keck, 1997; Kilduff, Angelmar, and Mehra, 2000). In order to control for these effects, we computed a Herfindahl measure indicating the degree of functional background homogeneity of the team (Bunderson and Sutcliffe, 2002). Finally, we controlled for access to a resource base at start-up by including a dummy variable that captures if the new firm was able to finance itself from cash flow since its inception and another variable that measures the amount of sales in the first year.

A possible limitation of cross-sectional studies is the common source bias (Lindell and Whitney, 2001; Podsakoff *et al.*, 2003). Following the categorization of Podsakoff *et al.* (2003), we used different procedural measures. We applied psychological separation by disjoining various functional, temporal, and organizational levels of analysis in the questionnaire. Additionally, we used a counterbalanced question ordering. In addition, we applied construct-based

measurements for our predictor variables and used hard-coded data for our dependent variables (exact team size numbers, sales, and employment figures). These dependent variable data are generally recorded and available to respondents. As additional procedural measures suggested by Podsakoff *et al.* (2003), we protected the anonymity of the respondent, the introduction letter portrayed that the purpose of this study was purely scientific, and we highlighted the importance of accurate assessments to derive conclusions. Moreover, in order to improve the scale items, we pretested the questionnaire to eliminate ambiguous, suggestive, or multidimensional questions. Furthermore, three researchers with extensive questionnaire design and empirical analysis experience reviewed the final version of the questionnaire. Moreover, we followed a statistical procedure suggested by Lindell and Whitney (2001) to evaluate a potential common method bias, which is described later.

By referring to the start-up time, we also wanted to control for potential confounding effects such as a potential network endogeneity problem based on early venture success or networks of parent organizations (Stuart and Sorenson, 2007). Most of the founding teams have created independent start-ups. Hence, the impact of the parent organization's success on the network at start-up is not relevant. To further control for a potential impact of the parent organization's resources and success on subsequent venture dynamics, we included a control for the founding background (independent versus spin-off). Moreover, as our study focuses on effects of initial relational capabilities on long-term new venture success, the emergence of networks due to pre-founding success events of the nascent firm or its founders could create endogeneity effects. To control for endogeneity resulting from pre-founding success, we include additional initial success measures as controls for network selection effects (first-year sales and ability to finance from cash flow). Comparing initial models with models employing control variables to account for early venture success or a parent organization's ties, we find consistent results, which indicate the robustness of our findings.

Table 1 presents the correlations of the variables. With regard to the correlation table, it is insightful to note that although initial teamwork capability and relational capability are two diverging and distinct concepts, they are positively related. The positive correlation indicates their common origin, since

Table 1. Correlation analysis

	MEAN	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	
1. Independent background	0.59																			
2. Electronics	0.31	0.04																		
3. Microtechnology	0.21	-0.07	-0.02																	
4. Nanotechnology	0.14	-0.17	-0.21	0.13																
5. Laser/optics	0.15	-0.04	-0.11	-0.11	-0.05															
6. Biotechnology	0.10	-0.13	-0.16	-0.06	0.09	-0.05														
7. Medical techn.	0.09	-0.03	-0.01	-0.05	0.11	0.09	0.05													
8. Techn. instruments	0.14	0.08	0.00	0.03	0.00	0.11	-0.05	0.06												
9. Nr. of initial team members	2.62	0.90	-0.13	-0.09	0.03	-0.01	-0.02	-0.01	0.00	-0.03										
10. Herfindahl index of functional background	0.60	0.27	-0.04	-0.09	0.02	0.19	0.00	-0.07	-0.01	-0.06	-0.12									
11. Age in months	78.90	45.09	0.28	0.07	0.12	-0.02	0.03	-0.08	0.05	0.08	-0.07	0.15								
12. Finance from cash flow	0.37	-0.04	-0.03	-0.05	0.07	0.02	0.02	-0.07	-0.01	-0.02	-0.04	0.02	0.11							
13. Initial sales in thousands	216.25	670.28	0.02	-0.09	0.07	-0.06	-0.07	-0.04	-0.08	-0.10	0.05	-0.08	0.01	-0.05						
14. Initial teamwork capability	4.24	0.78	0.03	-0.02	-0.07	-0.01	0.09	-0.08	-0.10	0.00	-0.18	0.04	-0.07	0.11	-0.04					
15. Initial relational capability	3.17	0.98	-0.12	0.03	0.04	0.05	-0.05	-0.11	-0.08	-0.03	-0.01	-0.14	-0.20	0.00	0.20	0.21				
16. Team member additions per month	0.01	0.02	-0.08	-0.08	0.02	0.03	-0.03	0.22	0.18	-0.11	0.21	-0.05	-0.08	-0.13	0.19	-0.09	0.09			
17. Sales growth in thousands	16.58	28.67	0.14	-0.04	-0.09	-0.04	-0.06	-0.09	0.01	-0.02	-0.03	-0.04	0.09	0.01	0.59	0.06	0.25	0.17		
18. Employment growth	0.17	0.24	0.02	-0.06	-0.07	-0.04	0.00	-0.05	0.08	0.04	0.09	-0.06	0.13	-0.14	0.35	0.05	0.24	0.29	0.48	

Background and industry variables are dummy coded variables. The mean represents the proportion of the total in each category. Standard deviations for dummy coded variables lack meaning and are not reported. In the correlation matrix absolute values greater than 0.15 are significant at the 0.05 level and absolute values greater than 0.20 are significant at the 0.01 level.

both measure social capabilities of the founding team.

## RESULTS

In order to test our hypotheses, we estimated three regression models explaining the three dependent variables. All three models are significant. The results of these analyses are provided in Table 2. Overall, initial teamwork capability relates to firm development measures substantially less than initial relational capability. Initial teamwork capability does not relate to employment growth. Moreover, results show no relationship between initial teamwork capability and sales growth. Hence, Hypotheses 1 and 2 are not supported by these data. As such, our initial arguments based on prior literature do not seem to hold in this context of NTBFs. Initial teamwork capabilities (enabling the founding team, e.g., to closely communicate information and mutually support each other) do not seem to, by themselves, promote the development of NTBFs. This raises

interesting questions about the role of teamwork in growing new ventures in general and NTBFs in particular. We discuss such implications in the next section.

However, we find the initial teamwork capability has a negative relationship with team member additions. Teams that exhibit a high degree of teamwork capability at start-up, in consequence, add fewer members to their teams. Hence, Hypothesis 3, which proposed this relationship, is supported.

With regard to initial relational capability, we find that it positively relates to all development measures. Higher initial relational capability is positively associated with additions to the entrepreneurial team, additions to (non-top-executive) staff, and increases in sales. Thus, Hypotheses 4, 5, and 6 are supported. Overall, these sharply contrasting results suggest that a founding team's initial relational capability is positive for subsequent firm development, while its initial teamwork capability has nonsignificant or negative effects.

In an additional analysis, we studied the interaction effects of initial teamwork capability and initial

Table 2. Regression analysis

Dependent variable	Team member additions	Sales growth	Employment growth
Control variables			
1. Independent venture	0.01	0.13*	0.05
2. Electronics	0.10	-0.02	-0.10
3. Microtechnology	-0.09	-0.13*	-0.09
4. Nanotechnology	-0.03	0.02	-0.05
5. Optical technology	0.00	-0.04	-0.02
6. Biotechnology	0.06	-0.04	-0.04
7. Medical technology	0.16*	0.06	0.11
8. Technical instruments	-0.09	0.03	0.02
9. No. of team members	0.25**	-0.03	0.05
10. Herfindahl index of functional background of team members	0.11	0.02	0.00
11. Age	0.11	0.05	0.12
12. Finance from cash flow	-0.13 <sup>†</sup>	0.01	-0.16*
13. Initial sales	0.10	0.55***	0.05
Capability variables			
14. Initial teamwork capabilities	-0.15*	0.03	0.03
15. Initial relational capabilities	0.14 <sup>†</sup>	0.15*	0.26***
Main effects F ratio	3.06***	7.47***	2.11**
R <sup>2</sup>	0.22	0.41	0.13

<sup>†</sup> $p < 0.10$ ; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Table 3. Correlations adjusted for common method bias

Initial teamwork capabilities	Initial relational capabilities	
-0.18*	0.09	Founding team member additions
0.01	0.21*	Sales growth
0.00	0.20*	Employment growth

\* $p < 0.01$ .

relational capability on the three dependent variables (team member additions and sales and employment growth). While all of the interaction coefficients were positive, they were nonsignificant.

In order to address a potential common method bias, we followed a testing procedure suggested by Lindell and Whitney (2001), which aims at partialing out common method effects. As a marker measure, we used the degree of innovativeness of the venture project, as it had the smallest positive correlation (0.05) with the sales growth measure and was adjacent in the questionnaire, hence most likely to capture context effects (Lindell and Whitney, 2001). The correlations resulting after controlling for the common method variance are documented in Table 3.

These adjusted correlations indicate that relationships found in prior analyses are not distorted by a potential common source bias (Lindell and Whitney, 2001). However, this procedure does not address potential biases induced via implicit theory (Podsakoff *et al.*, 2003). Yet, if respondents generally have a theory that more successful firms should have had higher cooperation capabilities, this bias should affect both the relational capability and teamwork capability ratings. Correlation analysis does not support such an assumption, as initial teamwork capabilities are not significantly correlated with employment or sales growth. It appears unreasonable that respondents generally have a differentiated theory in their minds that initial network capabilities are relevant while their initial teamwork capabilities are nonrelevant.

## DISCUSSION

Literature points to the managerial ability of founding teams as a determinant of growth (Adner and Helfat, 2003; Penrose, 1959; Sirmon and Hitt, 2003).

Our study builds on this stream of literature and finds that the founding team's initial relational capability is important for new firm development. The initial relational capability of a founding team subsequently augments the resource base with respect to managerial, human, and financial resources. Yet, the initial teamwork capability, implying closer team collaboration among the founding team members, reduces the likelihood of team member additions and has no effects on sales or staff growth. This is a particularly noteworthy finding, as prior theory stressed the positive aspects of teamwork on the performance of new firms (Penrose, 1959). As such, these findings have important implications for our understanding of the growth of new firms. Next, we outline theory implications for the literature on the growth of the firm and network-related research, as well as research on founding teams and TMTs.

## Theoretical implications

Following the theory of the growth of the firm, this study investigates which specific social capabilities of the founding team impact subsequent firm development. While the theory of the growth of the firm has shaped salient theoretical developments such as the RBV or the capability literature, empirical studies analyzing how the founding team's initial capabilities restrict the development of a new organization remain scant. By distinguishing between initial teamwork and relational capabilities, we are able to show diverging development effects, which also indicate restrictive forces of the founding teams. The positive correlation between initial teamwork and initial relational capability documents that both concepts reflect the founders' willingness and ability to collaborate. This positive association of team-internal and team-external collaboration is consistent with prior findings in the innovation management literature (Hoegl *et al.*, 2004). Yet, while both team-internal and team-external collaboration are likely based on the same collaboration ability (e.g., Penrose, 1959), this study cautions that their effects on new firm development are likely diverging.

With respect to network-related research, our findings enrich prior research. Extant literature proposes that networking with critical resource providers is beneficial for new firm development (e.g., Dubini and Aldrich, 1991; Eisenhardt and Schoonhoven, 1996; Stuart and Sorenson, 2007). By analyzing these propositions with respect to technology, marketing, and financial partners, our research confirms

the existence of positive performance effects of networking. Additionally, our research underlines that technology, marketing, and financial partners are important resource providers that merit close collaboration. The close collaboration with these partners fosters the acquisition of resources, such as entrepreneurial team members, employee additions, and additions in sales.

Another (at least as equally important) finding of this study is that the founding teams' initial teamwork capabilities do not show a positive effect on new venture development. As proposed based on related team literature, our research indicates that closely collaborating founding teams seem to be less inclined to add new members. This offers support for our arguments based on homophily (Ruef *et al.*, 2003) and groupthink (Janis, 1995; Neck and Moorhead, 1995) considerations, promoting an inward orientation. This, in turn, probably makes founding teams want to preserve their group as it is (Forbes *et al.*, 2006). However, various theoretical approaches building on the theory of the growth of the firm (Penrose, 1959; Rugman and Verbeke, 2002; Sirmon and Hitt, 2009) such as resource-based literature (Amit and Schoemaker, 1993; Barney, 1991), capability based literature (McEvily, 2005; Grant, 1996; Helfat and Peteraf, 2003), dynamic capability literature (Dosi *et al.*, 2000; Eisenhardt and Martin, 2000; Helfat *et al.*, 2007; Teece, 2007), and especially literature stressing the importance of dynamic managerial capabilities (Adner and Helfat, 2003; Sirmon and Hitt, 2009) propose that adding founding team members can facilitate the development of managerial capabilities over time. The development of the managerial capability of the founding team constitutes an idiosyncratic, intangible, and hard to imitate characteristic of the emerging firm that shapes the productive services the other resources render (Penrose, 1959). In consequence, the additional capabilities of the founding team can facilitate the building, integration, and reconfiguration of organizational resources and competences and, hence, benefit the long-term development of the new firm in light of environmental change (Adner and Helfat, 2003; Blyler and Coff, 2003; Coff, 2010). Further theory development on founding teams should, therefore, consider the downsides of highly cohesive and integrated founders—especially with regard to these distinct managerial functions and their consequences for the new firm development.

The nonsignificant effect of initial teamwork capabilities on sales and employment growth is sur-

prising given our hypotheses based on extant literature. Nonetheless, these results offer important implications for future theorizing on founding team effectiveness. As such, negative collaboration effects might counteract the positive ones put forth in support of our hypotheses. In the entrepreneurial context, consensus in founding teams can limit the variety of approaches to problem solving (Pelled, Eisenhardt, and Xin, 1999). A strong sense of morale in founding teams can lead to reduced cognitive conflict (Ensley *et al.*, 2002). Yet, cognitive diversity, generating a variety of problem solutions, critical discussions of alternatives, and expressing conflicting views appear especially beneficial in highly ambiguous situations like firm creation (Kilduff *et al.*, 2000; Talaulicar, Grunder, and Werder, 2005). Likewise, prior research on technical innovation teams (e.g., R&D teams) indicates a decline in performance of long-standing teams, as group longevity influences communication and work processes (Katz, 1982). Moreover, collaboration itself consumes time and effort of everyone involved, and as research on innovation teams has shown, an overly collaborative work process may add little benefit while compromising process efficiency (Sicotte and Langley, 2000).

Taken together, our study does not indicate any positive effects of a founding team's initial teamwork capabilities on the development of NTBFs. This contrasts with the generally positive connotation of teamwork in the literature on TMTs (e.g., Eby and Dobbins, 1997; Shanley and Correa, 1992), project teams (e.g., Hoegl and Gemuenden, 2001), and founding teams (Watson *et al.*, 1995). Yet, prior empirical findings also pointed to some weak or nonsignificant performance effects (e.g., Ensley, 1997; Lechler, 2001). In line with such limited prior work, this study points to a more fine-grained (rather than general) conceptualization of when and how a founding team's teamwork capabilities support firm performance and development. This calls for further research examining conditions under which the collaboration of the founding team members has positive effects (as outlined in support of our hypotheses) and when negative effects are dominant. In this regard, literature on teams in established firms can guide further research, as it proposes that characteristics of the team's task environment, such as complexity, dynamism, and uncertainty (Gladstein, 1984; Hoegl *et al.*, 2003; Keller, 1994), as well as the variability of team processes over time (Hoegl *et al.*, 2004) affect the effectiveness of team member

collaboration. Following other examples of more domain-specific theorizing on team processes and effectiveness (e.g., TMTs or project teams), such contextual and temporal influences are important to understand in order to advance closer to a theory of founding team effectiveness.

### Managerial implications

This research offers implications for entrepreneurs and managers in entrepreneurial contexts. First, this research affirms the importance of the founding team's initial relational capabilities. While researchers and practitioners widely agree on the significance of the founding team members' personal contacts (and their ability to broaden, strengthen, and utilize them), this study draws our attention to its specific effect on attracting new additions to a new firm's management team. Founding teams that have strong external links, collaborate actively with external partners, and exhibit an external orientation are more likely to add members to their teams. In consequence, team member additions can increase the team's managerial capacity as the team receives access to more information, knowledge, abilities, networks, and managerial capacity. This can be a critical factor enabling the growth of a new firm and it might otherwise have been restricted by the tasks the generally small founding team can handle. In other words, our study suggests that those founding teams that utilized their networks to identify and attract necessary additions to their teams lay the groundwork for further business expansions and subsequent growth.

Moreover, our study suggests that (otherwise) 'well-functioning' founding teams may be reluctant to pursue necessary additions to their teams precisely because they work so well at present. Therefore, founding teams must be aware of a potential bottleneck created by resisting growth in the firm's top managerial capacity (Penrose, 1959). As such, the popular saying to 'never change a winning team' might be a dangerous simplification. In this respect, team member additions might be a beneficial option. The positive correlations between team member additions and sales and employment growth further suggest its importance. Necessary additions to the team must be selected both on functional ground, social capabilities, and 'culture fit' with the present team (Forbes *et al.*, 2006; Pelled *et al.*, 1999). Once selected, new team member socialization into the team and the entire company should be

actively accompanied through such means as mentoring (Higgins and Kram, 2001).

### Limitations and outlook

Some limitations of this study, along with directions for future research are also worth noting. Since only existing firms were evaluated, this study might suffer from a survival bias. However, given that our study is directed to explain strong resource growth to fulfill the resource demands of NTBFs, it seems appropriate to analyze surviving firms and focus on NTBFs that continue to exist and yet achieve different resource growth levels. Also, the assessment of the independent variable by one key informant may be regarded as a limitation of our study. While this is a common approach in entrepreneurship research, it would have been preferable to include additional team members in order to capture their common assessment of the collaboration. However, several studies demonstrate strong agreement across multiple respondents' assessments of team-related characteristics in new firms (Baron and Markman, 2003; Chandler and Hanks, 1994; Chandler and Jansen, 1992; Shortell and Zajac, 1990), as well as in innovation teams in established firms (Hoegl and Gemuenden, 2001; Hoegl *et al.*, 2004). Especially considering the small size of the teams in this study (two or three members on average), one respondent can be expected to provide a valid assessment of the collaboration. Moreover, the present study was conducted in Germany, raising the question of transferability of results to other cultures. While this study is not internationally comparative in nature and, therefore, cannot offer any answers to this question, the theoretical considerations presented in this article are not country specific, but rather based on international scholarly work and empirical findings. Further research in other countries is encouraged to increase our understanding of the possible influences of country contexts on the relationships investigated here.

While our discussion of this study's theory implications already highlighted several avenues for future research, there are additional directions that might be fruitful. This study followed arguments of the theory of the growth of the firm, which is closely linked to the RBV framework (e.g., Alvarez and Busenitz, 2001). As we investigated one aspect of human capabilities, many others can be expected to influence resource acquisition, firm growth, and competitive advantage. Future research could

investigate empirically how resource appropriation and resource utilization capabilities influence new firm development. Our research distinguishing between team-internal and team-external capabilities serves as a refinement of the analysis of resource acquisition and deployment. Resource-based research has examined resource development in the organizational field—a dimension which has received limited attention in entrepreneurship, yet appears important for a growing firm. We also call for more founding team-related research to further advance toward a theory of founding team effectiveness. As such, the nonsignificance of the interaction term of initial teamwork and initial relational capability suggests that both social capabilities combined are not as relevant. We encourage future research to further explore possible interaction effects between teamwork and relational capabilities, perhaps considering such capabilities at not only at the time of start-up, but also during subsequent phases of new firm development. Moreover, following our initial findings (especially the nonsignificant relationships of teamwork capabilities with sales and staff growth), it appears fruitful to study how team dynamics affect the strategic orientation of the team or the new firm and, subsequently, the characteristics of the resource base. While our study indicates that team additions, and sales and employment growth are positively correlated, we know little about the specific relationship and causalities between these variables. Future research could aim to contribute to our understanding of how team dynamics impact the managerial capacity of founding teams and how this, in consequence, impacts the performance of the new firm. In this light, the study of founding teams' dynamics can also contribute to related research on top management teams in established firms.

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**APPENDIX**
**Measurement scales for independent variables**


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Variable	Items
Initial teamwork capabilities	<p>The members of the founding team communicate intensively.</p> <p>Important information and ideas are shared openly among the members of the founding team.</p> <p>The team members provide exact information for their founding team members.</p> <p>The individual efforts are well coordinated between the team members.</p> <p>The founding team members provide mutual support for other team members.</p> <p>A collaborative atmosphere characterizes the team interaction.</p>
Initial relational capabilities	<p>The founding team collaborates intensively with external partners in the technology management domain (e.g., research institutions, other firms).</p> <p>A collaborative atmosphere characterizes the interaction between the founding team and the external technology management partners.</p> <p>The founding team collaborates intensively with external partners in the marketing domain (e.g., distributors, market research firms).</p> <p>A collaborative atmosphere characterizes the interaction between the founding team and the external marketing partners.</p> <p>The founding team collaborates intensively with external partners in the financial management domain (e.g., accountants, investors).</p> <p>A collaborative atmosphere characterizes the interaction between the founding team and the external financial management partners.</p>

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