How exactly do networking Investments pay off? Analyzing the impact of nascent Entrepreneurs networking Investments on Access to Start-Up Resources

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Key words: Networks; Network Investments, Resource Access, Nascent Entrepreneurship

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ABSTRACT

It is widely recognized that networks provide access to the resources necessary for founding a business. Up until now, however, the relationship between networking investments and the availability of resources has not been analyzed in depth. Using a sample of 416 nascent entrepreneurs, we address this issue, and provide evidence that networking investments lead to diminishing marginal resource returns in terms of financial, informational, emotional and contact support. Our results also show that resource returns strongly vary with resource type. While emotional support is quite easy to get, many more networking investments are needed to achieve financial support.

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INTRODUCTION

Over the past decade, entrepreneurship research has made considerable efforts to understand the factors influencing new venture creation and development success. One factor that figures most prominently in this stream of research is social networks (e.g., Street & Cameron, 2007). Focusing on the relationship between networks and founding success, previous research provides strong evidence that network characteristics like network size, time spent on developing and maintaining network relationships, frequency of communication, network heterogeneity, closeness/broadness of relationships, and membership in business networks are positively and significantly associated with founding and early start-up success (e.g., Aldrich,

Rosen & Woodward, 1987; Hansen, 1995; Davidson & Honig, 2003; Renzulli, Aldrich & Moodie, 2000; Brüderl & Preisendörfer, 1998).

The rationale given for this positive relationship between network characteristics and founding and new venture development success is a rather simple one and is accepted as one of the fundamental propositions of social capital theory: entrepreneurs are seen as gaining valuable and necessary resources through their networks (Batjargal, 2003; Liao & Welsch, 2005). In fact, some authors even describe networks as the foremost and fundamental source of the information and resource support needed to successfully start a new venture (Yoo, 2000).

Surprisingly, however, even though network literature often emphasizes the impact of networks on founding success and new venture development, we still know very little about how networks and networking activities affect the availability of different resources. In fact, this question has been almost completely neglected by empirical research to date (Witt, 2004). There are only a few studies available that concentrate on access to specific resources as an outcome variable in entrepreneurship network research. Among those, the majority focus on the positive effects of the reputation and legitimacy granted by prominent network partners on market capitalization (Stuart, Hoang & Hybels, 1999) accumulated financial capital invested in a company (Honig, Lerner & Raban, 2006), and IPO success (Gulati & Higgins, 2003). Additionally, there is one study showing that friendship-based ties positively affect venture capitalists' investment decisions (Batjargal & Liu, 2004). The relationship between nascent entrepreneurs' networks and networking activities as a major explanatory variable and access to other relevant start-up resources like emotional support, information and additional business contacts, however, has not been empirically analyzed so far.

This lack of empirical research addressing networking outcomes in detail is even more surprising when considering that recent research results point to negative effects of extensive networks and networking activities, which may even hinder successful new venture

development. Analyzing the connection between networking activities and firm survival, Watson (2007), for example, finds that this relationship may be best described by an inverted U-shaped function. He explains this result by hypothesizing that the marginal benefits from further networking activities may be offset by their negative impact on the owner's time available for important internal business affairs. Considering this result and the more general notion that networking activities come along with opportunity costs in terms of the time and resource investments necessary to develop and maintain network relationships (Johannison, 1996; Ebers & Grandori, 1997; Witt, 2004), we argue that activities undertaken to develop and maintain network relationships have to be seen as investments that only pay off if their costs are outweighed by their returns.

Building on this proposition, we try to shed some more light on the relationship between networking investments and revenues in terms of resource access provided by the network. Drawing on network and social capital theory, we first derive the hypotheses that increasing network size and spending more time on maintaining network relationships lead to positive but diminishing marginal resource returns. We then test these hypotheses using a sample of 416 nascent entrepreneurs from Germany. Our results provide broad support for our hypotheses. In fact, we find that increasing network investment leads to positive but diminishing returns in terms of informational, financial and emotional support, as well as contacts brokered by other external network members. Furthermore, we observe that the networking investments necessary to access resources through network contacts differ considerably according to resource type and discuss two complementary explanations for this effect.

Consequently, we see the contribution of our paper as the following: in providing theoretical reasoning and empirical evidence for positive but diminishing resource returns on increasing network investments, we specify network theory and give a partial explanation for the inverted U-shaped relationship between networking activity and entrepreneurial success. We

further develop network theory by showing that the effects of networking investments on resource access vary considerably with resource type and providing an explanation for these empirical results. Finally, we believe that our results have considerable implications for the efficient network management of nascent entrepreneurs.

The rest of our paper is organized as follows. In the following section, we present our theoretical framework and develop testable hypotheses. Next, we describe our research method and data. Then, we present the results of our study, which we discuss in the section that follows. Finally, we present our conclusions and some limitations of our study.

THEORY AND HYPOTHESIS

The process of new venture formation has been described in several different phase and stage models. Wilken (1979), for example, distinguishes three phases in the establishment of enterprises—motivation, planning and establishment. Similarly, Reynolds (2007) and Reynolds, Carter, Gartner and Greene (2004) describe different stages and transitions between these stages that together constitute the founding process. Now, even though it is widely recognized that a) entrepreneurs do not progress through the stages posited automatically or at the same rate, and b) the borders between these stages may be blurred, phase and stage concepts have proven their usefulness in describing the preconditions of new firm emergence (Bhave, 1994; Aldrich, 1999). In the following, we will therefore draw on the work of Reynolds et al. (2004) to describe why and how social networks are relevant for success in new venture formation.

According to Reynolds et al. (2004), the process of founding a new venture can be described by distinguishing three different stages—conception, gestation and infancy—with two major transitions in between them. Within the model, a transition is triggered when the individuals

not only think about trying to start a new business but also are engaged in activities to help them reach that objective. If an individual has not yet succeeded in making the transition to new business ownership, he or she is called a nascent entrepreneur (Reynolds et al., 2004; Aldrich, 1999; Carter, Gartner & Reynolds, 1996). To successfully start a new venture in the near future, nascent entrepreneurs have to fulfill many different tasks, such as writing a business plan, developing their first product models or prototypes, creating a legal identity, organizing a start-up team and many more (Aldrich, 1999; Carter et al., 1996; Liao and Welsch, 2005). To meet the requirements associated with fulfilling these tasks, entrepreneurs need many different resources, which they usually do not have in sufficient quantity or with sufficient quality. Consequently nascent entrepreneurs have to mobilize additional resources (Aldrich, 1999; Yoo, 2000; Hanlon & Saunders, 2007), of which social networks are seen as the major source (Starr & Mc Millan, 1990; Aldrich, 1999; Greve & Salaff, 2003; Hanlon & Saunders, 2007; Bowey & Easton, 2007; Casson & Della Giusta, 2007). As posited in entrepreneurship theory and research, the variety of resources nascent entrepreneurs mobilize through their networks is considerable. According to Aldrich et al. (1987), as well as Aldrich (1999), nascent entrepreneurs obtain resources like money, social support, product ideas and information through social network members. Quite similarly, and based on interview data from Korean entrepreneurs, Yoo (2000) posits that the major resources that nascent entrepreneurs mobilize via network contacts are knowledge, information and financial capital. If we combine these conclusions with other propositions in the field, four main categories of resources that nascent entrepreneurs may obtain via social contacts emerge: (i) financial capital (e.g., Casson & Della Giusta, 2007; Hanlon & Saunders, 2007); (ii) guidance, information and knowledge (e.g., Yoo, 2000; Liao & Welsh, 2005); (iii) social or emotional support (e.g., Liao & Welsh, 2005; Reynolds, 2007); and (iv) contacts with potential customers, investors or consultants (e.g., Aldrich, 1999; Aldrich, Rosen & Woodward, 1987).

However, even though networks of social contacts are seen as a major source of financial, informational, emotional and contact support for a nascent entrepreneur, one has to keep in mind that the mere existence of a network with social contacts does not necessarily mean that a nascent entrepreneur gets access to the resources he or she needs. As social capital theory proposes, certain network variables like the size of a network, its heterogeneity and the characteristics of the relationships between a nascent entrepreneur and the members of his or her network significantly influence the amount of resources he or she achieves through network contacts (Burt, 1992; Batjargal, 2003; Liao & Welsch, 2005; Stam & Elfring, 2008). Additionally, research has also shown that networks and networking are not only beneficial but also bear disadvantages. According to Ebers and Grandori (1997) or Witt (2004), for example, two types of costs can be associated with network relationships. First, there are direct costs stemming from the need to deliver services, information or other resources in exchange for those resources obtained from network partners. Second, there are indirect costs stemming from the time spent on maintaining network relationships; these costs are especially relevant for entrepreneurs (Zhao & Aram, 1995; Watson, 2007). While the direct costs in terms of resource obligations can be seen as the price of obtaining specific resources via network exchange, which is usually more favorable than the one realized in market relationships (Uzzi, 1999; Uzzi & Lancaster, 2004), the indirect or opportunity costs make networking an investment. To establish and maintain network relationships that might be useful in terms of potentially providing resources crucial for founding a new venture, nascent entrepreneurs have to invest time and energy in the first place, which negatively impacts their time available for other tasks that are important for founding a new venture. As a result, in line with Hansen, Podolny and Pfeffer (2001), we propose that spending time on developing and maintaining network relationships is an investment that is only beneficial if the resource returns outweighs the costs coming along with networking activities.

In the following sections, we will analyze the relationship between two network variables—network size and the time spend on maintaining a single network relationship—which mainly determine the indirect costs of networking and the benefits stemming from network investments in terms of access to resources crucial for founding a new venture.

Investments in network size and resource access

Connected to the size of a network is the time people must spend maintaining network contacts (Greve, 1995; Greve & Salaff, 2003). With the time spent per contact (which we will address in the following section) kept constant, the size of a network directly represents the time a nascent entrepreneur has to spend to maintain relations. Consequently, the opportunity costs of time that come along with maintaining network relations increase with network size. The more network contacts held by a nascent entrepreneur, the less time he or she has left to attend to important business affairs.

Nevertheless, greater network size does not only come along with higher costs. As social capital theory proposes, the time invested in network size may pay off because network contacts provide access to resources, and the size of a network indicates how many different people a nascent entrepreneur can rely on when establishing his venture (e.g., Nahapiet & Ghoshal, 1998; Adler & Kwon, 2002; Batjargal, 2003). If a network is larger, it is comprised of more people, who may own resources necessary for succeeding in founding a new venture. Therefore, the opportunity to leverage resources through an existing network increases with network size. Yet, not only is the mere quantity of resources within the network affected by network size, but as Greve and Salaff (2003) and Greve (1995) argue for the case of information networks, having a large number of people within the network increases the possibility of receiving diverse information. Quite similarly, Batjargal (2003) proposes that greater network size augments the variety of resources available to an entrepreneur.

Accordingly, a high number of network members should not only increase the quantity of resources available within the network but should also enhance the chances of receiving the resources needed (Hansen et al., 2001; Liao & Welsch, 2003).

However, we do not expect the rate at which the probability of receiving the resources needed increases with network size to be constant. Whereas adding more partners to a small network will significantly enhance the probability that necessary resources become available, we expect this increase in probability to diminish with network size. When the network is already of considerable size, adding more contacts to the network will much more likely mean adding people with resources already available through the network. In other words, we expect that the likelihood of adding ties with necessary and non-redundant resources that provide additional value should decrease with network size. Accordingly, we hypothesize that the relationship between a nascent entrepreneur's network size and the opportunity to access specific kinds of resources via his network will be positive but diminishing:

H1: There will be a positive but concave relationship between a nascent entrepreneur's network size and the availability of resources.

Investments in networking activity and resource access

As mentioned above, the time people spend on maintaining their network contacts in total varies with network size. As indicated by Greve (1995), however, nascent entrepreneurs may also vary the time spent on each person within the network. Following Aldrich and Reese (1993) as well as Chell and Bains (2000), we will refer to this time spent on a single network contact as "networking activity", and argue that this variable is also important to look at when trying to analyze network costs and benefits. Conversely to what we have described above, the time spent per contact directly represents the time a nascent entrepreneur spends on maintaining his or her network when keeping network size constant. When he or she doing so,

the opportunity costs of time, representing the time during which a nascent entrepreneur cannot attend to other tasks necessary for founding a new venture, will directly increase with the time spent on every single network relationship. However, in a manner similar to what we have described above, the time spent on network contacts also does not only lead to higher costs. Instead, and in line with the research results generated by Duchesneau and Gartner (1990), who have observed that successful entrepreneurs spend more time on communicating with partners, we argue that the time spent on network ties will strengthen a relationship and therefore increase the probability that a nascent entrepreneur may access the resources he needs.

As social capital theory suggests, the mere fact of a tie or relationship between people says little about the probability that one actor will get access to the other's resources (e.g., Portes, 1998; Adler & Kwon, 2002). Instead, a certain relationship quality is needed to motivate network members to grant resource access (Krackhardt, 1992; McFayden & Cannella, 2004). According to Aldrich and Reese (1993), as well as Jiang (2005), a high degree of intensity in the interaction between a focal actor and its network members is necessary to develop strong relationships. In spending time together, partners find that their relationship deepens; trust and feelings of affection for one another arise, making partners more willing to grant one another access to their resources (Krackhardt, 1992; McFayden & Cannella, 2004). Of course, investing time in a relationship not only influences alters' motivation to grant resource access but also makes exchanging resources, such as information and knowledge, more efficient. Through repeated interactions, exchange partners develop similar knowledge stocks, shared modes of understanding, and heuristics that increase interaction efficiency especially (but not only) when exchanging knowledge (Uzzi, 1997; McFayden & Cannella, 2004). Thus, obtaining the resources embedded within a network should be much easier for a nascent entrepreneur when he or she spends more time with network partners. Accordingly, we expect that investing more time in networking activities while keeping the number of contacts

constant will increase the probability that the resources needed are accessible to a nascent entrepreneur in the venture creation process.

Again, however, one should not expect a linear effect of increasing networking activity on resource availability. Although increasing the time invested in relationship maintenance might have a significant impact on the availability of resources when the original amount of time spent is small, the marginal benefits of increasing networking activities should diminish. At some point, external partners will already be motivated enough to grant access to the resources they have, so that any further time investments will not have an additional effect. Similar, when working routines and shared norms of understanding are well established and resource exchange is already very efficient, any additional increase in interaction will not have a similar significant impact on the availability of resources. In aggregate, these differences should lead to positive but decreasing resource access benefits from increasing investments in networking activities. Therefore, we propose:

H2: The relationship between time spent on networking activities and the probability that required resources are afforded by the network will be positive but concave.

SAMPLE AND METHOD

The data used in this study were generated especially for the purpose of analyzing the impact of network investments on resource acquisition among nascent entrepreneurs. As noted by Markman, Baron and Balkin (2005), the act of defining who is an (nascent) entrepreneur and who is not, as well as that of identifying a suitable sample, is a methodological challenge in entrepreneurship research. We tried to meet with this challenge as follows: to find enough individuals actively engaged in creating a new venture, we visited several business start-up exhibitions in Germany between December, 2006 and July, 2007 and gathered data from 416

individuals, who answered all of the questions relevant for our statistical analysis. Following the operational definition given by Davidsson and Honig (2003), we consider these individuals to be nascent entrepreneurs because they have each initiated at least one of the typical gestation activities by attending a business start-up exhibition to gather information relevant to starting a new business venture. Moreover, 79% of the respondents explicitly stated that they had already developed a business plan or concept at the time the interview was conducted. Additionally, over 90% of our interviewees stated that they had already made or were sure about making a financial investment necessary for starting their new venture in the near future. Thus, even though our definition of nascent entrepreneurship is not exactly the same as the one used in the Global Entrepreneurship Monitor (e.g., Reynolds et al., 2004), we are confident that our respondents can be considered nascent entrepreneurs.

As a consequence of our approach to collecting the data used in our study, the sample generated has to be considered one of convenience, which may raise issues of representativeness. We therefore analyzed the representativeness of our sample by comparing it with data from the German Socio-Economic Panel Study (GSOEP). The GSOEP is a representative household panel survey conducted annually by the German Institute for Economic Research (DIW) in Berlin and often used for research on German (nascent) entrepreneurs (e.g., Mueller, 2006; Caliendo, Fossen & Kritikos, 2009; Schäfer & Talavera, 2009). Among other detailed information, the GSOEP reveals the participants' propensity to become self-employed. To test the representativeness of our sample, we used the data from 2006 that is comprised of interviews with 21,105 individuals. We limited the sample to those people who were to some extent interested in becoming self-employed in the near future and checked whether the distribution by gender, age, and education matched with our data. We found a high degree of similarity between the nascent entrepreneurs in our sample and those within the GSOEP. With 59.2% of the nascents in our sample being male, for example, our data matches the 58.3 % observed within the GSOEP fairly well. We are therefore

confident that the results of our study are representative, albeit based on a convenience sample.

Measures

An overview summary of the dependent and explanatory variables used in the further analysis is reported in Table 1.

>Insert Table 1 around here<

To capture our theoretical concepts, we had to rely on self-reported measures. Even though this issue should be kept in mind when considering our results, we are quite confident that this approach is appropriate. First of all, previous research in entrepreneurship has yielded broad support for the reliability and validity of such self-reported measures (Brush & Van der Werf, 1992; Lechner, Dowling & Welpe, 2006). Second, the main constructs focused on in our study exist in contrast to the psychometric variables manifest and should therefore most likely be perceived very similarly by the respondents (Fuchs & Diamantopoulos, 2009). Finally, we checked for common method bias according to Podsakoff and Organ (1986) by performing a Harman's one-factor test. The results of our unrotated factor analysis show six factors with eigenvalues of more than one, with the maximum variance explained being 15.9%. We thus concluded that common method bias is not a significant issue because no single factor accounts for the majority of the variance that emerged.

Dependent Variables

As explained in our theory section, nascent entrepreneurs' networks are seen as an important source of financial capital, information and knowledge, emotional support and business-

relevant contacts. Since we expect these resources to vary in terms of availability and transferability within a network, we decided to measure them separately. Thus, we constructed four items and asked our respondents if they received financial, informational, emotional or contact support from their network members. The respective resource variable took the value of one if the interviewee had access to that specific type of resource via his network contacts, and zero otherwise.

Independent Variables

To capture our network-related variables, we followed the ego-centered network approach (e.g., Knoke & Kuklinski, 1982; Wassermann & Faust, 1994; Greve & Salaff, 2003; Stam & Elfring, 2008) and designed single tailor-made questions to measure our concepts (e.g., Borgatti & Cross, 2003; Marsden, 1990; Rossiter, 2002). Ego-centered network analysis explores network relationships around each sampled person only, i.e., not the total network relationships in which the individuals are embedded. Accordingly, respondents are asked to describe their specific networks, networking activities and relationships with other network members. This form of analysis is especially appropriate for collecting data from a target population like that of nascent entrepreneurs—that is, a small percentage of a population whose relations are not concentrated in a single social structure (Greve & Salaff, 2003).

To measure *network size,* we did not follow the 'discussion network approach' that is often used in entrepreneurship research (e.g., Greve & Salaff, 2003; Aldrich & Reese, 1993). Instead, in order to also include contacts that may not be useful in discussing business matters but provide some of the other resources addressed in our study, we followed Hansen (1995) and addressed the nascent entrepreneur action set, meaning the complete subset of individuals who are somehow involved in setting up the nascent entrepreneur's business. Consequently, we adapted a measure constructed by Lechner et al. (2006) to indicate network size to the

field of nascent entrepreneurs and asked our respondents for the total number of contacts they regarded as important for setting up their business.

To measure *networking activity*, we followed Aldrich, Rosen and Woodward (1987) and Aldrich and Reese (1993), and asked our respondents to indicate their weekly amount of time spent on business-relevant contacts. We then divided the total time spent on networking activities by network size to include the time spent per contact in our econometrical model.

Controls

We included several control variables in our study that might affect the demand for or the availability of network resources and our network variables. First, we added *female*, because men and women tend to differ with respect to the composition of their networks (Moore, 1990; Renzulli et al., 2000). Second, we include *marital status* because being married indicates that these respondents have very strong social ties to a spouse who will probably be highly motivated to provide the nascent entrepreneur with emotional support or other resources (Sanders & Nee, 1996). Third, we control for *age* because of two underlying effects. First, as individuals get older, they tend to make more contacts (Renzulli et al., 2000). Second, older individuals are also more likely to possess a higher stock of human and financial capital than are younger ones. This may reduce their overall need for external resources (Parker, 2004). Especially because of the latter argument, we decided to also include *years of education, prior self-employment experience,* and *industry-specific experience,* which all indicate different aspects of human capital and have shown their influence on the amount of knowledge and information needed from external sources as well as on the ability to attract external partners (Yoo, 2000; Diochon, Menzies & Gasse, 2008; Mosey & Wright, 2007). For similar reasons, we also include two variables distinguishing the two types of entrepreneurs identified within the Global Entrepreneurship Monitor Project: the

opportunity entrepreneur (i.e., someone driven to entrepreneurship by the perception of an "entrepreneurial opportunity") and the *necessity entrepreneur* (i.e., someone who is usually pushed into nascent entrepreneurship by unemployment) (e.g., Schjoedt & Shaver, 2007; Bosma, Jones, Autio, Coduras & Levie, 2009). We assume that belonging to one of these entrepreneurial types may affect both network composition and resource access (previously unemployed nascent entrepreneurs, for example, may have less access to business-related contacts yet more need for external resources). Finally, we control for the *economic environment* by constructing a set of dummy variables representing the five exhibitions we used for data collection.

Analytical Approach

Our four endogenous variables (i.e., financial, informational and emotional support, as well as support through the provision of further business relevant contacts) are all binary variables taking the value of one if a person has access to those resources and zero otherwise. We therefore considered multiple logistic regressions as the appropriate econometrical model for our analysis. To test our propositions of diminishing resource returns associated with network size and networking activities within logistic regression, we followed the approach to test for nonlinear effects described by Wooldridge (2003) and applied by Colombo, Grilli and Piva (2006) in entrepreneurship research, and resorted to a quadratic model specification. More specifically, we included both variables as well as their respective squared values in the model and performed joint tests for significance to analyze whether the nonlinear functional form of our regression models is correct.

The descriptive statistics of all variables used in our study, as well as their Pearson's correlations, are provided in Table 2.

>InsertTable 2 around here<

Our average nascent entrepreneur has a network with 14 contacts and spends a considerable amount of time, namely 0.85 hours per week, maintaining each network contact. Around 48% of our respondents are provided with financial resources for their founding project by their networks members, 68% receive informational support, 64% obtain other contact support, and 77% agree that they received emotional support from their network contacts. The correlation matrix additionally reveals that resource availability is significantly correlated with network size and—to a lesser degree—with network activity and several of our control variables, like age, education and industry-specific experience. As our independent variables are not highly correlated, multi-collinearity is not an issue in our study.

Table 3 displays the results of our logistic regressions, which predict access to financial, informational, contact and emotional support as a function of network size and activity as well as our control variables. As a LR-Chi² Test reveals, all of our models are significant.

>Insert Table 3 around here<

With regard to the control variables, our results show that married people have a higher probability of achieving informational support. The effect of age on resource access is negative and statistically different from zero at a conventional level for both informational and other contact support. Additionally, our human capital variables have a significant influence on access to informational and financial support. We finally see that nascent

entrepreneurs who have failed with their former businesses are less likely to receive financial support.

With respect to our hypotheses, our results show the expected effects of network size and networking activity on resource access. As proposed, the coefficients of network size and networking activity are positive, whereas the coefficients of the squared values are negative, which indicates a concave relationship. A joint test of significance further reveals that our nonlinear specifications of the regression models are correct: the null hypothesis that the coefficients of the quadratic terms, the network variables, are jointly equal to null in models 1-4 is rejected at conventional significance levels by a Wald X^2 test (X^2 (2) = 15.17, 30.2, 19.6 and 37.69, respectively).

This means that, as stated by hypothesis 1, the probability of achieving access to financial, informational, contact or emotional support *increases* with the number of network partners but at a *decreasing* rate. Quite similarly, the probability of getting access to relevant start-up resources addressed also *increases* at a *decreasing* rate with the amount of networking activities undertaken by a nascent entrepreneur, confirming our second hypothesis.

To give a better impression of how the returns on network investments vary with the type of resource analyzed, we plotted the predicted probabilities for the network variables for each regression model separately. Noting that the estimated probabilities in a nonlinear model strongly depend on the contribution of the other covariates (Mitchel & Chen, 2005; Long & Freese, 2006), we estimated three different sets of predicted probabilities to test the robustness of our results. Specifically, we estimated the predicted probabilities for (a) an "average" individual by setting all control variables at their means (type A individual), (b) a single female without self-employment and industry-specific experience who is pushed into nascent entrepreneurship (type B individual) and (c) a married male with self-employment and industry-specific experience who is pulled into nascent entrepreneurship (type C

individual). Figure 1 visualizes the results for an "average" individual (i.e., at the means of all control variables), whereas Figures 2 and 3 show the results for type B and type C individuals.

>Insert Figures 1 - 3 around here<

All three figures show that the relationship between network size and resource availability is positive and concave for every type of resource analyzed. This provides support for our proposition that higher network investments in terms of greater network size and a larger amount of networking activities lead to diminishing marginal resource returns, which can be taken as proof of the robustness of the non-linearity effect.

Additionally, we find that the returns stemming from network investments strongly vary with the type of resource. As these slope progression differences only slightly differ with the type of individual analyzed, these effects also seem to be quite robust. While emotional support, for example, seems to be quite easy to obtain, many more network investments are needed to get access to informational, contact or financial support, and financial support is always the type of resource that is most difficult to obtain.

DISCUSSION

Social capital theory and network research in entrepreneurship both suggest that nascent entrepreneurs may profit from network investments because they allow access to resources valuable for founding a business. This proposition, however, has not been specified and empirically investigated so far, leaving the ratio between the costs stemming from networking activities and their benefits under-investigated. With the study at hand, we aimed to contribute to closing this gap in the research by investigating the relationship between network

investments (in terms of network size and time spent on maintaining network relationships) and resource access provided by network members. More specifically, we derived the hypothesis that nascent entrepreneurs will gain positive but diminishing marginal resource returns from increasing network investments. Our results confirm this hypothesis.

First of all, the results provide evidence for the proposition that investments in network size increase nascent entrepreneurs' opportunities to leverage resources like financial capital, information, and emotional and contact support through their network. As proposed by social capital theory, larger networks indeed provide a greater quantity of resources and increase the probability that a nascent entrepreneur may access the resources needed through his network. But as proposed within our theory section, our results also show that the likelihood of getting access to resources through the network increases at a decreasing rate with network size. This means that additional investments in networks lead to diminishing resource returns.

Analogously, our results also support the proposition that greater networking activities, which entail dedicating more time to single relationships, influence the respective alters' motivation to grant resource access as well as the efficiency of resource exchanges. These results underscore the idea that exchange partners' spending time together fosters trust, the existence of common goals and mutual understanding. But again, our results show that the marginal effects of increasing networking activity on both partner motivation and exchange efficiency are diminishing. This result supports the argument that there is a point in every relationship at which a further increase in the time invested in a relationship will not have a significant further impact on exchange efficiency or a partner's motivation to grant resource access.

In sum, these results provide a partial explanation for an inverted U-shaped relationship between network variables and new venture performance recently observed in the field of established ventures (Watson, 2007). Watson's (2007) reasoning for this shape of the curve is mainly based on the argument that beyond some limit, the marginal benefits from networking will be more than offset by network costs. Our results provide support for and specify this

argument. They show that even if networking costs stemming from an entrepreneur's lack of time available to attend to internal business affairs are linear, the overall effect of networking investments will turn negative because of diminishing marginal benefits in terms of access to financial, emotional, informational and contact support.

Additionally, our results show that the resource returns stemming from network investments vary significantly with resource type. While access to some resources like emotional support is highly probable even when a nascent entrepreneur bears only a very limited amount of network investment, many more contacts and networking activities are necessary to gain access to financial, informational or contact support.

An explanation of these differences in resource returns may be provided via a dynamic perspective on the nascent entrepreneur's network. Individuals who are engaged in setting up their own business will try to adjust their network, because they are confronted with new tasks and challenges (Witt, 2004; Lechner & Dowling, 2003). In the very beginning of the entrepreneurial process, however, they have to rely on their pre-existing network (Hite & Hesterly, 2001). As this network is usually comprised of relatives, friends and acquaintances, receiving emotional support should not be a problem. In comparison, however, the probability that these initial contacts will be able to provide access to more founding-specific resources, like market information and knowledge or contacts among potential suppliers and customers, should be low. So nascent entrepreneurs, who do indeed need resources that are founding-specific (i.e., only necessary when founding a new venture), will have to invest more time and energy in developing their network.

The observation that access to financial and contact support needs many more network investments from the nascent entrepreneur than receipt of emotional support may, however, also be explained from a network partner's perspective. From that point of view, granting resource access to a nascent entrepreneur comes along with certain costs that differ by resource type. While providing access to emotional or even informational support is, despite

the time investment necessary, almost cost-free for network partners, supporting a nascent entrepreneur with contacts or financial capital is much more expensive. In the case of financial capital, these expenses are quite apparent. But contact support also comes along with certain costs. According to Burt (1992), contact mediation always means giving up a bridging position and thus the opportunity to "profit from being between others" (p. 79). Additionally, there are reputational risks involved when contacts are mediated, because the broker is typically made responsible when a new contact turns out not to be as reliable or trustworthy as expected (Coleman, 1988; Gulati & Gargiulo, 1999).

CONCLUSION AND LIMITATIONS

The purpose of our study was to shed light on the questions of if and how network investments pay off. More specifically, we investigated the relationship between network investments in the context of network size and networking activity and resource returns.

Our findings indicate that there are positive but diminishing resource returns that stem from increasing network investments. This implies that the role of large networks and intense network relationships in the early stages of entrepreneurship is an ambivalent one. On the one hand, nascent entrepreneurs should invest in a network of external contacts if they need access to resources such as financial capital, knowledge and information, as well as additional contacts and emotional support, which are crucial for the founding progress. On the other hand, a nascent entrepreneur has to keep in mind that increasing network size and networking activity lead to diminishing marginal resource returns, which may be outweighed by the costs that come along with increasing network investments. Thus, a nascent entrepreneur should avoid investing more time in his or her network, when the resource returns of this investment are already small and he or she risks neglecting other tasks that are important for founding the new venture. In other words, nascent entrepreneurs should act strategically when developing

and maintaining their networks to avoid resource deficits on the one hand, and neglecting other important tasks on the other.

However, our results also show that nascent entrepreneurs have to carefully consider what kind of resources they want to gain access to when strategically choosing their network investments. Compared to a situation in which emotional support and information are needed, nascent entrepreneurs have to invest more time and energy in developing and maintaining their network when they need financial capital and the mediation of further contacts.

Finally, we note some limitations of our study. First of all, we gathered data only on the average amount of time spent by entrepreneurs on networking activity. Therefore, we are not able to identify how much time they actually dedicate to a specific network contact. Some of our respondents may have distributed their time equally among their network partners; others may have concentrated a great percentage of their time on only a few network members. Consequently, the conclusion that there is a concave relationship between the intensity of networking activities and resource returns gained from a single relationship may be challenged. What we can infer from our results, however, is that investing additional time on a fixed number of contacts leads to diminishing returns in terms of access to the resources addressed.

We also should note that our analysis is based on self-reported measures. However, as we have already described above, previous research supports the reliability and validity of self-reported measures (Brush & Van der Werf, 1992; Lechner et al., 2006), and as there are almost no objective data available on nascent entrepreneurs and their networks, this approach is the only one feasible.

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Table 1: Definition of the endogenous and explanatory variables

Variable Name	Variable Description
Resources	
Financial Support	Do you get financial support from your network? [0=no; 1=yes]
Informational Support	Do you get informational support from your network? [0=no; 1=yes]
Other Contact Support	Do you get contact support from your network? [0=no; 1=yes]
Emotional Support	Do you get emotional support from your network? [0=no; 1=yes]
Networks	
Network Size	How many contacts have you used to found your new business? [metric, in numbers]
Networking Activity	How many hours per week do you spend to maintain those contacts? [metric, in hours / total number of contacts]
Controls	
Gender	Your Gender? [0=female; 1=male]
Marital Status	Are you married? [0=not married; 1=married]
Age	How old are you? [metric, in years]
Education	Years of education? [metric, in years]
Ind-spec. exp.	Do you have prior industry-specific experience in the new firm's industry? [0=no; 1=yes]
Self-e. Exp (S)	Did you have earlier self-employment spells? If yes, was your prior business a success? [0=no; 1=yes, successful]
Self-e. Exp (F)	Did you have earlier self-employment spells? If yes, was your prior business a failure? [0=no; 1=yes, failure]
Necessity	Are you unemployed or will you become unemployed in the near future if you do not switch into self-employment? [0=no; 1=yes]
Opportunity	Do you anticipate higher earnings as an entrepreneur? [0=no; 1=yes]

Table 2: Means, Standard Deviations, and Pearson's Correlations

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Financial Support	.48	.50	1														
2. Informational Support	.68	.47	.34**	1													
3. Other Contact Support	.64	.48	.23**	.48**	1												
4. Emotional Support	.77	.42	.24*	.50**	.57**	1											
5. Network Size	14	21	.20**	.19**	.15**	.19**	1										
6. Networking Activity	.85	1.6	.02	.09	.07	.16**	-.18**	1									
7. Gender	.61	.49	.08	.03	-.03*	-.07	.04	-.13**	1								
8. Marital Status	.33	.47	-.05	.03	.01	.08	.01	-.05	-.01	1							
9. Age	37	9.7	-.10*	-.10*	.04	.08	-.02	.06	-.14**	.38**	1						
10. Education	15	2.6	-.05	.10*	.07	.10*	.11*	-.08	-.08	-.01	.13**	1					
11. Ind-spec. exp.	.57	.50	.02	.10*	.10*	.06	.11*	.04	.03	.01	.05	-.02	1				
12. Self-e. Exp (S)	.11	.32	.06	.01	.03	.05	.14**	-.05	-.01	.05	.07	.08	.14**	1			
13. Self-e. Exp (F)	.07	.26	-.09	.02	.01	-.02	.02	-.05	-.01	.09	.06	-.11*	.17**	-.10*	1		
14. Necessity	.46	.50	-.05	-.11*	-.01	-.04	-.07	.01	-.08	.08	.31**	-.11*	.01	-.04	-.11*	1	
15. Opportunity	.58	.49	.04	-.02	.01	-.03	-.10*	.04	.10*	-.16**	-.22**	-.11*	.01	.01	-.01	-.04	1

** Correlation is significant at the 0.01 level (2-tailed); * correlation is significant at the 0.05 level (2-tailed)

Table 3: Logit Estimation Results - Accessibility of Start-Up Resources

	(1) Financial Support	(2) Informational Support	(3) Other Contact Support	(4) Emotional Support
Network Size: (Number of Contacts)	0.0545**	0.0750**	0.0619**	0.119**
	(4.42)	(4.93)	(4.42)	(5.31)
Network Size: (Quadratics)	-0.000236**	-0.000381**	-0.000352**	-0.000580**
	(-2.60)	(-3.82)	(-3.07)	(-4.63)
Networking Activity: (Average Hours per Week/Contacts)	0.719**	0.886**	0.628**	1.245**
	(3.92)	(4.59)	(3.74)	(4.66)
Networking Activity: (Quadratics)	-0.0746**	-0.0591**	-0.0422**	-0.0766**
	(-3.02)	(-3.90)	(-3.05)	(-3.59)
Controls				
Gender: (1=Male)	0.380[+]	0.177	-0.142	-0.305
	(1.68)	(0.72)	(-0.61)	(-1.03)
Marital Status: (1=Married)	-0.0376	0.524[+]	0.232	0.504
	(-0.15)	(1.89)	(0.91)	(1.52)
Age: (in years)	-0.0171	-0.0383**	-0.0234[+]	0.00885
	(-1.30)	(-2.66)	(-1.74)	(0.52)
Education: (in years)	-0.0793[+]	0.0787[+]	0.0448	0.0269
	(-1.84)	(1.69)	(1.02)	(0.50)
Industry-Specific Experience: (1=Yes)	-0.0215	0.306	0.245	-0.0300
	(-0.09)	(1.23)	(1.05)	(-0.10)
Self-Employment Experience: (1=Yes, Success)[a]	0.153	-0.260	0.0885	0.0302
	(0.44)	(-0.68)	(0.24)	(0.06)
Self-Employment Experience: (1=Yes, Failure)[a]	-0.903*	0.0818	-0.0707	-0.423
	(-2.00)	(0.17)	(-0.16)	(-0.81)
Necessity: (1=Yes)	0.00327	-0.343	0.145	-0.388
	(0.01)	(-1.39)	(0.62)	(-1.32)
Opportunity: (1=Yes)	0.0653	-0.133	0.0498	-0.0336
	(0.29)	(-0.55)	(0.22)	(-0.12)
Constant	0.560	-0.668	-0.333	-0.932
	(0.67)	(-0.74)	(-0.39)	(-0.89)
LR-Chi² Test	64.22***	77.88***	49.07***	100.33***
Pseudo R^2	0.109	0.145	0.088	0.219

t statistics in parentheses; [+] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$; [a] Reference: No Self-Employment Experience

Note. all regressions include dummies indicating economic environment
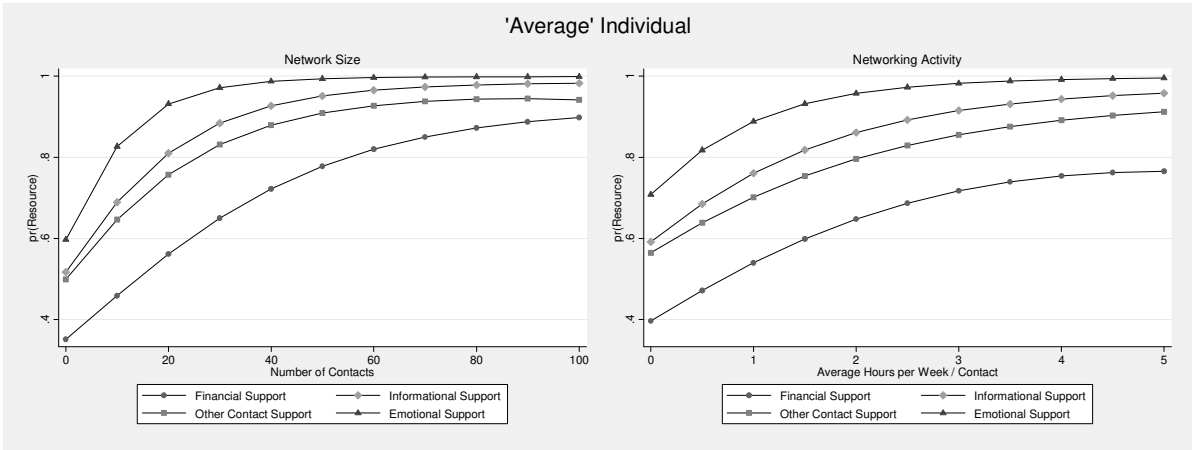
Figure 1: Effects of network investments on access to start-up resources (type A)
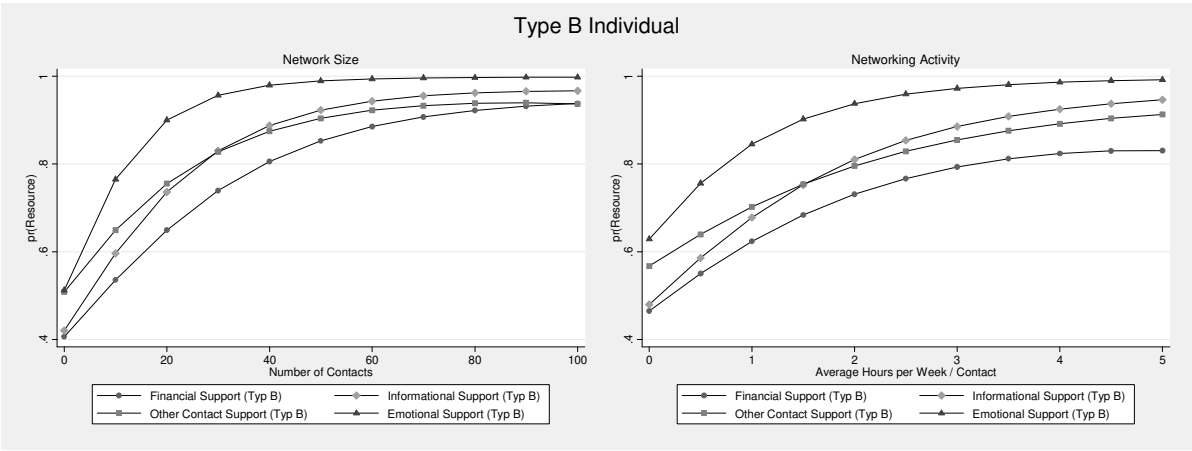

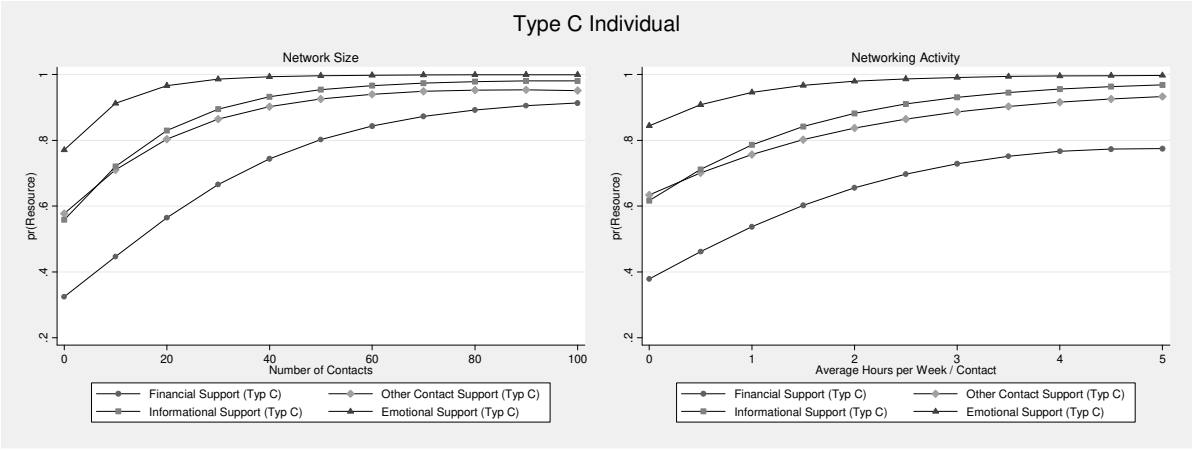Figure 2: Effects of network investments on access to start-up resources (type B)

Figure 3: Effects of network investments on access to start-up resources (type C)