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Why Networks Enhance the Progress of New Venture Creation: The Influence of Social Capital and Cognition

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Why does social capital influence the progress of new venture creation for some entrepreneurs more than others? Our investigation suggests that social capital is not enough; that the type of person involved in network relationships matters to new venture creation. We test the effects of the interplay of social capital and cognition on a sample of 269 entrepreneurs. Our results confirm that social networks and relational capital enhance levels of illusion of control, which is directly related to the progress of new venture creation. We find marginal support for the relationship between social capital and risk propensity.

Introduction

Entrepreneurship is a field of business that seeks to understand how opportunities to create something new are discovered or created by individuals who then use various means to exploit or develop them, and in doing so produce a wide range of outcomes (Baron & Shane, 2005). This perspective of entrepreneurship reflects the core of entrepreneurship research—the investigation into how and why opportunities are discovered and exploited. Entrepreneurship is significant on many levels as evidenced not only in public policy initiatives that encourage new business development but also within established organizations that actively encourage the development and pursuit of new opportunities. While the impact of entrepreneurship to economic progress is apparent, knowledge of the factors that encourage opportunity exploitation remains ambiguous. This ambiguity has spawned a vast theoretical and empirical literature that seeks to identify the antecedents to individual entrepreneurial behavior—seeking a model of new venture creation.

Research has pointed to the importance of networking and building social capital to the new venture creation process (e.g., Baron & Markman, 2003; DeCarolis & Saporito, 2006;

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Liao & Welsch, 2005; Ostgaard & Birley, 1996). In particular, it has been argued that new venture creation is the result of the interplay of entrepreneurs' social networks and cognitive biases. As the presence of entrepreneurial opportunities in a network increase, the odds of entrepreneurial behavior increase, but *only if* someone is inclined toward entrepreneurial behavior (Burt, 1992; DeCarolis & Saporito, 2006). Accordingly, DeCarolis and Saporito argued that cognitive biases may explain why social capital has a greater effect on the progress of new venture creation for some entrepreneurs but not others. Social cognitive theory (Bandura, 1986; Wood & Bandura, 1989) posits that social environments play an important role in shaping individuals' cognition, and ultimately, their behavior. This perspective appears to support Shane and Venkataraman's (2000, p. 218) view of entrepreneurship as "the nexus of two phenomena: the presence of lucrative opportunities and the presence of enterprising individuals." Thus, we examine how external (social capital) and internal factors (cognition) affect new venture creation and progression. We expect that individuals with the greatest social capital, coupled with the enhanced propensity to enterprise, will make the greatest progress in creating a new venture.

Drawing from DeCarolis and Saporito's (2006) work on the importance of social capital and cognition in explaining the exploitation of entrepreneurial opportunities, we develop and test a model of new venture creation that incorporates the influence of social capital and cognition on the progress of new venture creation. Accordingly, this paper makes several contributions to the entrepreneurship literature. First, we extend research on the progression of new venture creation by exploring the impact of social capital on individual cognition. Second, this paper helps to explain why social capital may encourage some individuals to start new ventures but not others. Third, we show how two specific types of social capital—social networks and relational capital—contribute to the progression of new venture creation. We believe this is an important distinction in the literature as our model suggests that networks and cognition impact the activities undertaken by entrepreneurs to build their businesses. Finally, this study adds to the understanding of entrepreneurial cognitive factors by applying social cognitive theory (Wood & Bandura, 1989) to examine how behavior (the progress of new venture creation) is influenced by the interplay between social capital and cognition. Specifically, we consider two cognitive biases—illusion of control and risk propensity—that may be particularly salient to the new venture creation process. Illusion of control might help to explain entrepreneurs' tenacity in building businesses given that research on new product development has found that it has a profound effect on problem recognition and escalation of commitment to a failing course of action (Keil, Depledge, & Rai, 2007). Risk propensity focuses on how individuals frame decisions under conditions of uncertainty (Kahneman & Tversky, 1979), and therefore may explain why only certain individuals choose to exploit opportunities identified in their environment.

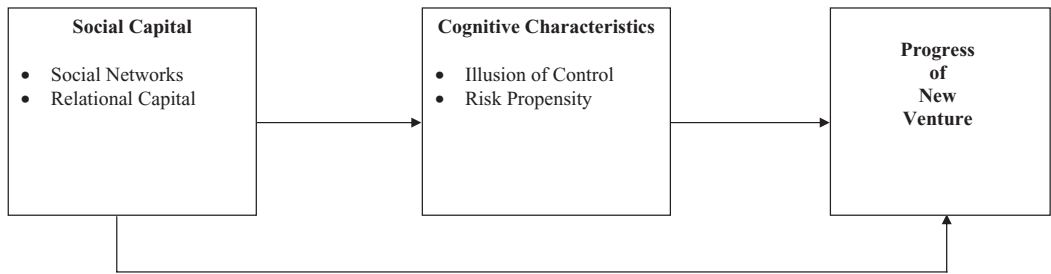
In the following sections, we review relevant literature and formulate hypotheses regarding social capital and cognitive characteristics, as well as the progress of new venture creation. We then test the hypotheses using a sample of 269 entrepreneurs, who are alumni of a major U.S. Eastern university. A discussion of the results is followed by suggestions for future academic research and implications for entrepreneurs.

Model Development and Hypotheses

The model presented in Figure 1 suggests that social capital will influence the progress of new venture creation directly and indirectly through the cognitive attributes illusion of control and risk propensity.

Figure 1

Social Capital, Cognitive Characteristics, and the Progress of New Venture



Social Capital and the Progress of New Venture Creation

Social capital is the good will created through social relations that can be mobilized to facilitate the attainment of needed resources, influence, and sponsorship (Adler & Kwon, 2002). Social capital is embedded in relationships that facilitate collaboration and cooperation to achieve mutual benefits. Network relationships include feelings of gratitude, reciprocity, respect, and friendship. Being embedded in a network promulgates mutual knowledge and recognition (Bourdieu, 1985). They are sources of information and opportunities and in certain circumstances may be used as a form of social status or reputation. Networks have been identified as important to firm growth (Zimmerman & Zeitz, 2002), mitigating the liability of newness (Stinchcombe, 1965), providing legitimacy (Aldrich & Fiol, 1994; Zimmerman & Zeitz), and preventing failure (Miner, Amburgey, & Stearns, 1990; Westhead, 1995). Networks connect the entrepreneur with opportunities critical to a firm's success (Bull & Willard, 1993; Ellis, 2000); facilitate innovation and spread risks (Lipparini & Sobrero, 1994); and provide support, credibility, and contact for entrepreneurs (Ostgaard & Birley, 1996).

Two broad types of social capital have been identified: “bonding” social capital and “bridging” social capital. The former perspective of social capital focuses on the *collective* as the unit of analysis and investigates the network of relationships within that collective (Adler & Kwon, 2002; Leana, 1999). Dense connections among parties within a group or collective enhance self-enforcing values and behaviors. This allows the group to function and achieve common goals.

The “bridging” form of social capital focuses on the individual as the unit of analysis. Theory building in this stream investigates the individual's social ties and networks and how social capital, within that network, is used for the individual's private benefits. The “bridging” form of social capital explains how an individual's success is related to the contacts and connections that social capital brings to them (Adler & Kwon, 2002; Leana, 1999).

The bridging form of social capital is most prominent in the entrepreneurship literature given its relevance to the formation of new ventures. Burt has suggested that social capital creates an advantage in “. . . the way in which social structure renders competition imperfect by creating entrepreneurial opportunities for certain players and not for others” (Burt, 1992, p. 57). Both the entrepreneurship (Aldrich & Zimmer, 1986; Birley, 1985; Uzzi, 1996; Walker, Kogut, & Shan, 1997) and social capital literatures (Adler & Kwon, 2002; Burt; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998) have emphasized the importance of connections and networks to the establishment of new ventures and innovation in general.

Entrepreneurs use network connections to build their new ventures—the “bridging approach” to social capital. Thus, we define social capital in the context of entrepreneurship as the good will and resources that emanate from an *individual’s* network of social relationships. This good will and resources are manifested in the information, influence, and solidarity that become available to the individual (Adler & Kwon, 2002).

There are two direct benefits of the bridging form of social capital: information and influence. Social capital may facilitate access to information, which is a critical component of entrepreneurial opportunities (Shane & Venkataraman, 2000). Social capital accelerates the timing, relevance, and quality of information (Adler & Kwon, 2002; Burt, 1992). For instance, individuals with close ties to universities, perhaps through alumni associations, may develop relationships with researchers and thus have access to information about emerging technologies that can be commercialized. These individuals then have early access to promising technologies before this becomes public knowledge. Another benefit of social capital is influence. Individuals may accumulate obligations from others in their network and then leverage these obligations at a later time.

Nahapiet and Ghoshal (1998) describe social capital as multidimensional. In particular, they discuss the structural and cognitive dimensions of social capital. The structural dimension describes the network’s overall pattern of connections between actors. *Social network* refers to the number of informal and formal ties that an individual has. Entrepreneurs with networks that are comprised of a large number of contacts (extensive social networks), are better able to respond to environmental opportunities and to acquire the resources they need to manage their businesses (Dubini & Aldrich, 1991). The relational dimension of social capital, *relational capital*, concerns the nature of the personal relationships people have developed through a series of interactions and connections (Granovetter, 1992). In the context of entrepreneurship, relational capital refers to the extent to which “an entrepreneur is actually able to receive informational, physical and emotional support in the venture creation process” (Liao & Welsch, 2005, p. 350). For example, relational capital has been found to differentiate entrepreneurs from non-entrepreneurs (Liao & Welsch). As such, relational capital appears to facilitate the new venture creation process by fostering trust and communication between parties (DiMaggio, 1992) which thereby encourages the offering of physical and emotional support (Liao & Welsch).

We postulate that individuals who are “well connected,” that is, who have numerous social and professional relationships, will experience more success in starting new ventures, given the existence of a rich network. Indeed, it is often argued that entrepreneurs must network in order to survive (Huggins, 2000). In addition, we further postulate that the information and resources embedded in these networks are valuable to the formation and progression of new ventures. Networks facilitate access to critical resources, such as suppliers (e.g., manufacturers, marketers, venture capitalists, universities, and attorneys), employees, and customers.

Hypothesis 1: Social networks and relational capital are positively related to the progress of a new venture.

The Effect of Cognitive Characteristics on the Progress of New Venture Creation

Research that focuses on how cognitive biases make some entrepreneurs more successful than others seems promising (Baron & Markman, 2003; DeCarolis & Saporito, 2006; Gatewood, Shaver, & Gartner, 1995). Cognitive biases represent “the way in which entrepreneurs think, reason, and reach decisions” (Baron & Markman, p. 43). Recent

theoretical and empirical work in entrepreneurship investigates the impact of variations in cognition and decision processes to explain entrepreneurial behavior (Bird, 1992; Busenitz & Barney, 1997; Krueger & Brazeal, 1994; Shaver & Scott, 1991). In particular, cognitive biases affect individual perceptions of situations, i.e., each of us experiences and interprets the same situation differently. This notion has been applied to entrepreneurial behavior; specifically, entrepreneurs experience and interpret situations differently, leading them to recognize and create new ventures (Baron, 1999; Busenitz & Barney; Gatewood et al.; Palich & Bagby, 1995; Shaver & Scott; Simon, Houghton, & Aquino, 2000). As such, cognitive biases are expected to influence new venture creation because the asymmetries in the cognitive properties of individual entrepreneurs may encourage them to recognize and adequately value entrepreneurial opportunities (Shane & Venkataraman, 2000).

Illusion of Control

Illusion of control impacts an individual's estimation of the extent to which his or her skills, abilities, and knowledge are suited for a particular situation. In uncertain situations, an illusion of control provides not only a sense of certainty but also a degree of comfort. This is because individuals convince themselves that they can control and predict outcomes. Indeed, illusion of control results from the combination of skills and chance; people believe that their actions have an impact on the situation despite its random nature (Langer, 1975).

Entrepreneurs may be more prone to illusion of control than other individuals (Duhaime & Schwenk, 1985; Schwenk, 1984; Simon et al., 2000). By believing that they can control and predict outcomes individuals will evaluate the hazards inherent in situations in a more favorable light. Specifically, illusion of control causes an inaccurate estimation of facts of a particular situation. For example, entrepreneurs have an illusion of control regarding the odds that their businesses will be successful (Cooper, Dunkelberg, & Woo, 1988). Research on new product development has shown that illusion of control affects problem recognition and escalation of commitment to a failing course of action (Keil et al., 2007). Simon et al. provided empirical support for the impact of illusion of control on new venture creation. Therefore, illusion of control may affect how an individual assesses the viability of a potential new venture and can therefore influence the progress of new venture creation.

Risk Propensity

Risk propensity—an individual's tendency to take or avoid risks—can influence the way individuals frame decisions under conditions of uncertainty (Kahneman & Tversky, 1979). Previously thought of as a static personality trait, risk propensity has recently been conceptualized as a cognitive disposition susceptible to contextual and historical influences (Sitkin & Weingart, 1995). For example, different populations of entrepreneurs (e.g., those with high aspirations for growth vs. small business owners) may vary in their risk-taking propensities (Stewart & Roth, 2001, 2004). Additionally, entrepreneurs' propensity toward risk may change as a result of entrepreneurial experience (Sitkin & Weingart, 1995); that is, successful entrepreneurs may be less inclined to take risks because they have more to lose (Stewart & Roth, 2004).

There is a vast amount of research in the entrepreneurship literature that addresses the issue of why entrepreneurs start new ventures in spite of the risk level of those ventures. Several studies have investigated the proposed link between risk-taking propensity and

entrepreneurial behavior (Brockhaus, 1980; Brockhaus & Horowitz, 1986; Busenitz & Barney, 1997; Palich & Bagby, 1995), and the results have been equivocal. Yet, in two recent meta-analyses of empirical studies of risk propensity and entrepreneurs, Stewart and Roth (2001, 2004) found that in certain circumstances, the risk propensity of entrepreneurs is indeed greater than that of non-entrepreneurs.

Accordingly, individuals with a high propensity toward risk may make greater progress in creating a new venture; they may be more prone to seeing situations as less risky than others causing them to focus more time, energy, and resources in starting their businesses. This would explain why entrepreneurs are more apt to not only recognize an opportunity but also to exploit that opportunity.

Hypothesis 2: Illusion of control and risk propensity are positively related to the progress of a new venture.

Social Capital and its Relationship to Illusion of Control and Risk Propensity

Shared language and vocabulary facilitate the exchange of information, learning, and the conduct of business. Membership in a network or group can shape an individual's consciousness (Moscovici, 1984). For example, individuals' resources and opinions correlate with the resources and opinions of their close contacts because people develop relationships with individuals similar to themselves (Burt, 1992). "Through high-quality social networks, characterized by a high number and variety of relations, certain (individuals) seem to be in a better position to enact their business environment and raise entrepreneurial resources such as motivation and ideas, information, capital and trust" (Kristiansen, 2004, p. 1149).

Social information processing theory (Salancik & Pfeffer, 1978) discusses the role of social influence in the development of individual attitudes and behaviors. The theory suggests that within organizations coworkers influence an individual's attitude and behaviors by providing credible and relevant information about an object or situation. This theory addresses the effects that individuals have on others who come in contact with them. The interpersonal attraction theory (Byrne, 1971) posits that individuals with similar beliefs are attracted to each other, thus reinforcing a shared set of attitudes and behaviors. Both these theories predict that individuals will have attitudes and behaviors similar to those with whom they interact. Applying the implications of these theories to networks, it can be argued that network formation influences individual cognition.

Information sharing is facilitated by being involved with network members who share common vocabularies and ways of thinking. This occurs because knowledge creation rests on the ability to combine and exchange various pieces of information (Nahapiet & Ghoshal, 1998). Boland and Tenkasi (1995) show the importance of a shared vocabulary on the ability of individuals to combine information. Yet, common vocabularies also leave open the possibility for individuals to filter out events for which terms do not exist and to filter in events for which terms do exist. This filtering of information could enhance illusion of control and risk propensity.

Selectively focusing on information that falls into common perceptual categories may distort the reality of that information. Vital information that could challenge an entrepreneur's view of "how the world works" may be filtered out causing the entrepreneur to overestimate their understanding of a situation.

Similarly, relying on shared meanings developed in network relationships can enhance the illusion of control, that is, an individual's belief that their skills can impact the

outcome of a decision. Being immersed in a network that draws on the same mental models of the world around them may lead individuals to overstate their abilities concerning specific undertakings. By relying on the shared meanings in a network, individuals may feel that their decisions can have greater influence over future events.

While it is possible that entrepreneurs may receive information from their networks that would not support their new venture idea thereby leading to the cessation of new venture creation activities, we argue that possible links to tangible resources through relational capital will outweigh this possibility.

Specifically, it is not only the shared attitudes and mental models of the network that enhance illusion of control in the new venture creation process, but also the fact that relational capital provides access to potential customers, suppliers, financiers, and other resources. This “access” acts as a security blanket for the entrepreneur and could bolster not only the sense of control over an uncertain outcome but also augment risk propensity. Indeed, illusion of control has been found to be influenced by situational factors (Keil et al., 2007). Since risk propensity is susceptible to factors in one’s environment (Sitkin & Weingart, 1995), it is argued that one’s network relationships can influence one’s propensity toward risk. Therefore, we propose that social networks and relational capital will directly impact an entrepreneur’s illusion of control and sense of risk regarding new venture opportunities.

Hypothesis 3a: Illusion of control mediates the relationship between social networks and the progress of a new venture.

Hypothesis 3b: Risk propensity mediates the relationship between social networks and the progress of a new venture.

Hypothesis 3c: Illusion of control mediates the relationship between relational capital and the progress of a new venture.

Hypothesis 3d: Risk propensity mediates the relationship between relational capital and the progress of a new venture.

Methodology

Data Collection and Sample Characteristics

The survey instrument for this research was posted as a webpage and completed by the respondents online. Electronic surveys offer efficiencies to the design and implementation of self-administered questionnaires, such as the elimination of paper, postage, data entry errors, and costs (Dillman, 2000). In addition, time required for survey administration can be reduced from weeks to days (Dillman).

The study participants were drawn from a population of alumni from a major U.S. Eastern university. The introductory e-mail was sent to a total of 2,036 alumni. An e-mail screening process was used to identify individuals who recently started a new business, were currently in the process of starting a new business, and those who were planning to start a new business in the near future.

To legitimize the study and encourage participation, the introductory e-mail explained the significance of the study and emphasized voluntary participation and anonymity. In the e-mail, we explained that the purpose of the study was to explore and understand an entrepreneur’s decision to start a venture. An entrepreneur in the process of starting or leading a new venture was identified as a person who answered “yes” to one of the following questions: Have you recently started a new venture? Are you currently involved

Table 1

Descriptive Statistics and Correlations of Study Variables

	1	2	3	4	5	6	7	8	9	10
1 Age	1.00									
2 Gender	.19**	1.00								
3 Marital status	.14*	-.24**	1.00							
4 Education	.09	.08	-.12*	1.00						
5 Financial need	.06	-.14*	-.05	.03	1.00					
6 Social networks	.04	.02	-.07	.01	.08	1.00				
7 Relational capital	.04	.03	.02	.04	.16**	.39**	1.00			
8 Illusion of control	-.05	-.02	.01	.09	.08	.16**	.22**	1.00		
9 Risk propensity	-.02	-.01	.08	.11	.09	.05	.13*	.32**	1.00	
10 Progress of new venture	.01	-.07	.01	.05	.48**	.26**	.36**	.23**	.31**	1.00
Mean	3.29	—	—	4.82	—	2.80	1.78	3.66	4.00	7.87
Standard Deviation	1.13	—	—	.94	—	1.65	.89	.48	.70	3.64
Frequency		52 [†]	229 [‡]		136 [§]					

n = 269

* $p < .05$, ** $p < .01$, *** $p < .001$

[†] Women (19%)

[‡] Married/Living with partner (85%)

[§] Needed financing (49%)

in starting a new venture? Are you planning to start a new venture? Instructions for completing the online survey, along with a hyperlink that took the participants directly to the questionnaire website, were outlined.

When the online surveys were completed, an e-mail containing each response was sent immediately to the researcher and then loaded directly into SPSS for statistical analysis. Three hundred and eighty e-mails were returned—marked as “undeliverable,” leaving a total of 1,656 successful e-mails. After 2 weeks a reminder e-mail was sent requesting that individuals participate if they had not done so previously. After 4 weeks we received a total of 269 usable responses, giving us a response rate of 16%.

The demographic characteristics of the sample are presented in Table 1. The sample is comprised predominantly of men (81%). A majority of the respondents were married or living with a partner (85%). The highest level of education completed for a majority of the sample was a master's degree (43%), with 40% having completed a bachelor's degree. Regarding age, 38% of the sample was between the ages of 25 and 44, 28% of the sample was between the ages of 45 and 54, and 34% of the sample was between the ages of 55 and 64. Given that more than half of the respondents were over the age of 45, we examined whether age had an effect on any of the variables under study. We found no significant differences. Further investigation showed that 33.3% of the respondents between the ages of 25 and 34, 53% of the respondents between the ages of 35 and 44, 43% of the respondents between the ages of 45 and 54, 39% of the respondents between the ages of 55 and 64, and 32% of the respondents over the age of 65 reported that they were currently starting or planning to start a business. The remaining respondents in each age category reported that they had recently started a business. These results alleviated our concern that older respondents may have more established businesses.

Independent Variables

Social Networks and *Relational Capital* were the two measures of social capital employed in this study. The social capital measures were constructed to assess the extent to which each respondent was structurally or relationally embedded in their personal networks. Coding and analysis for the social capital measures was adapted from Davidsson and Honig (2003). Respondents were asked to indicate whether they belonged to trade and business associations, community, political, religious, and alumni organizations. The total number of organizations an individual belongs to represents the individual's *Social Networks*.

The measure for *Relational Capital* seeks to understand the amount of information and influence being part of a social network has provided to an individual. This composite measure is a mean score of three individual items. The first two items asked respondents to indicate to what extent their involvement with these organizations facilitated the start of a new venture or provided a forum to discuss new business ideas on a 5-point Likert-type scale (1 = Not at all; 5 = To a very great extent). The third item asked respondents to indicate whether their involvement in the organizations provided them with greater access to information, suppliers, employees, and customers. The more categories the respondents indicated, the greater the amount of access provided (with four being the greatest). The reliability for this composite measure was acceptable ($\alpha = .76$).

The *Illusion of Control* measure was adapted from scales developed for prior research (Bateman & Crant, 1993; Houghton, Simon, Aquino, & Goldberg, 2000). Respondents were asked to indicate their level of agreement with 10 items on a 5-point Likert-type scale (1 = Strongly disagree; 5 = Strongly agree). Sample items are "I believe I can accurately predict total market demand for my business," "This accuracy would increase as I gain more experience at predicting market demand for my business," and "I can spot a good opportunity long before others can." Reliability for this measure was acceptable ($\alpha = .72$).

We measured risk propensity in the following manner. Respondents were asked to indicate their level of agreement with four items adapted from a generalized measure of risk propensity (Gomez-Mejia & Balkin, 1989) on a 5-point Likert-type scale (1 = Strongly disagree; 5 = Strongly agree). Items were reverse coded. Sample items include "I prefer a low risk/high security job with a steady salary over a job that offers high risks and high rewards" and "I am not willing to take risks when choosing a job or a company to work for." Reliability was acceptable ($\alpha = .77$). Higher scores indicated a greater proclivity toward risk.

Dependent Variables

Progression of New Venture Creation. Respondents were asked to indicate the activities they had participated in to start their new venture from a list of 12 items adapted from prior research (Davidsson & Honig, 2003). Items include "Tested product or service concept on customers," "Gathered information on costs (e.g., raw materials, wages, salaries, leases, equipment)," "Established a price for my product or service," and "Sold the product or service." Items were coded 0 = Have not participated and 1 = Have participated, and were summed. The higher the number the farther along the venture had progressed.

Control Variables

Six demographic control variables were included in this study: age, gender, marital status, education, and financial need. These six variables were included because we

specifically wanted to control for the effect of any of these demographic influences on the variables of interest. Age was measured according to five categories of age ranges (1 = 25–34; 2 = 35–44; 3 = 45–54; 4 = 55–64; 5 = Over 65). Gender was measured as a dichotomous variable (1 = Female, and 0 = Male). Marital status was measured as a dichotomous variable (1 = Married/living with partner; 0 = Not married/not living with partner). Education was measured by asking respondents their education level in terms of seven categories (1 = High school; 2 = Some college; 3 = Associate/technical degree; 4 = Bachelor's degree; 5 = Master's degree; 6 = Professional degree; 7 = PhD). We included financial need (1 = Yes; 0 = No) as a control based upon the assumption that entrepreneurs who need capital may be more motivated to seek networks. The correlation analysis (see Table 1) revealed no significant relationships between the demographic characteristics and any of the cognitive biases and social network variables.

Data Analysis

Descriptive statistics, including means and standard deviations of the study variables, were calculated. For categorical variables, such as gender and marital status, percentages were computed. Pearson product-moment correlation coefficients were computed to assess the general patterns of relationships among the study variables and to identify the presence of multicollinearity. The intercorrelations among the study's variables ranged from $-.24$ to $.48$, which suggests that severe multicollinearity did not exist among the variables (i.e., r 's $\geq .80$) (Hair, Anderson, Tatham, & Black, 1995).

Multiple hierarchical regression analysis was used to test all hypotheses. Additionally, to assess hypotheses 3a–3d, we strictly followed the conventions for testing for the presence of mediators (Baron & Kenny, 1986; Preacher & Hayes, 2004). A variable is considered a mediator if it accounts for the relationship between an independent and dependent variable. There are four criteria which must be met to determine mediation: (1) the independent variable must significantly affect the dependent variable when the mediator is not included in the equation; (2) the mediator must significantly affect the dependent variable; (3) the independent variable must significantly affect the mediator; and (4) the significant effect of the independent variable on the dependent variable must diminish when the mediator is added to the model. Full mediation exists when the influence of the independent variable is reduced to zero with the addition of the mediator; whereas partial mediation occurs when the influence of the independent variable shrinks, but does not disappear. Finally, we applied the more rigorous Sobel large sample test to estimate the statistical significance of the indirect effects (Preacher & Hayes; Sobel, 1982) using an interactive calculation tool for mediation tests (Preacher & Leonardelli, 2001).

Results

Descriptive statistics and correlation analysis are presented in Table 1. The results of the correlation analysis reveal significant relationships between both dimensions of social capital and various other study variables. Social networks was positively related to relational capital ($r = .39$; $p < .01$); illusion of control ($r = .16$; $p < .01$); and progress of new venture ($r = .26$; $p < .01$). Relational capital was positively related to illusion of control ($r = .22$; $p < .01$); risk propensity ($r = .13$; $p < .05$); and progress of new venture ($r = .36$; $p < .01$). Illusion of control was positively related to risk propensity ($r = .32$; $p < .01$) and progress of new venture ($r = .23$; $p < .01$). Risk propensity was positively

Table 2

Hierarchical Linear Regression Results: Predictors of Progress of New Venture

	Model 1		Model 2		Model 3		Model 4	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Control variables								
Age	-.03	-.02	-.02	-.01	-.03	-.02	-.02	-.01
Gender	.01	.01	.01	.01	-.01	.00	-.00	-.00
Marital status	.08	.08	.09	.06	.06	.06	.06	.04
Education	.02	.01	.02	-.01	.02	.00	.01	-.02
Financial need	.46***	.45***	.47***	.45***	.44***	.43***	.45***	.43***
Social capital variables								
Social networks	.19***	.16**	.18***	.16***				
Relational capital					.28***	.25***	.28***	.25***
Cognitive characteristics								
Illusion of control		.16**				.13*		
Risk propensity				.27***				.25***
Model characteristics								
F-value	14.89***	14.31***	14.82***	17.72***	18.12***	16.57***	18.37***	20.49***
R ²	.26	.29	.26	.33	.30	.32	.31	.37
Adjusted R ²	.24	.27	.25	.31	.28	.30	.29	.35
Δ R ²	.04	.02	.03	.07	.08	.02	.07	.06
Δ F-value	15.78***	8.25**	10.32***	26.14***	27.05***	5.36*	26.65***	23.35***

* $p < .05$; ** $p < .01$; *** $p < .001$

related to progress of a new venture ($r = .31$; $p < .01$). Financial need was positively related to relational capital ($r = .16$; $p < .01$) and progress of a new venture ($r = .48$; $p < .01$).

Table 2 contains the results of the four regression models used to test the hypotheses. The results shown in Model 1 (step 1) and Model 3 (step 1) support hypothesis 1 and meet the first criterion in testing for mediation (i.e., the independent variable significantly affects the dependent variable, when the mediator is not included in the model). Specifically, we found a significant positive relationship between social networks and progress of a new venture ($R^2 = .26$, $p < .001$) and between relational capital and progress of a new venture ($R^2 = .30$, $p < .001$). The significant positive relationship between illusion of control and progress of a new venture ($R^2 = .29$, $p < .001$) (see Model 1 step 2) and between risk propensity and progress of a new venture ($R^2 = .33$, $p < .001$) (see Model 2 step 2) meets the second criterion for establishing mediation and provides support for the second hypothesis.¹

Table 3 provides the results of the regressions meant to satisfy the third criterion for establishing mediation: The independent variable must significantly affect the mediator. Results demonstrated a significant positive relationship between social networks and

1. In analyses not shown, each mediating variable was regressed on the dependent variable separately with only the demographic controls in the model. These regressions resulted in a significant positive relationship between illusion of control and progress of a new venture ($\beta = .18$, $p < .001$; $R^2 = .26$, $p < .001$) and between risk propensity and progress of a new venture ($\beta = .28$, $p < .001$; $R^2 = .30$, $p < .001$).

Table 3

Hierarchical Linear Regression Results:
Predictors of Mediating Variables

	Dependent variable			
	Illusion of control		Risk propensity	
Control variables				
Age	-.09	-.10	-.04	-.04
Gender	-.02	-.03	.01	.00
Marital status	.03	.01	.11	.10
Education	.10	.10	.12 [†]	.12 [†]
Financial need	.09	.07	.09	.08
Social capital variables				
Social networks	.15*	.23***	.06	.12 [†]
Relational capital				
Model characteristics				
F-value	2.13*	3.48**	1.37	1.85 [†]
R ²	.04	.08	.03	.04
Adjusted R ²	.03	.05	.01	.02
Δ R ²	.02	.05	.00	.01
Δ F-value	6.18*	14.08***	.95	3.70 [†]

[†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

illusion of control ($R^2 = .04$, $p < .05$), and between relational capital and illusion of control ($R^2 = .08$, $p < .001$). The relationship between relational capital and risk propensity was found to be marginally significant ($R^2 = .04$, $p < .10$). However, the relationship between social networks and risk propensity was not found to be significant ($R^2 = .03$, n.s.), thus hypothesis 3b was not supported. Thus the conditions for the third criterion were met for hypotheses 3a, 3c, and 3d.

A comparison of the coefficients of the social capital variables in Models 1, 3, and 4 was used to satisfy the last step in testing for mediation. Criterion four requires that the effect of the independent variable on the dependent variable is zero while controlling for the mediator to indicate complete mediation; otherwise, partial mediation is indicated. The comparison showed that the coefficient for social networks decreased in magnitude with the addition of illusion of control (see Model 1), providing partial support for hypothesis 3a. Partial support for hypothesis 3c is provided by comparing the decrease in magnitude of the coefficients for relational capital (see Model 3) with the addition of illusion of control. Hypothesis 3d is partially supported by the decrease in magnitude of the coefficients for relational capital (see Model 4) when risk propensity was added to the model.

While the value of the coefficients for hypotheses 3a, 3c, and 3d did not disappear, evidence of partial mediation exists because the magnitude of the coefficients did diminish significantly. We employed the Sobel (1982) large sample test to gain an understanding of the strength of these indirect relationships. The indirect effect of social networks on progress of a new venture through illusion of control was significant ($t(269) = 1.95$,

$p < .05$) as was the indirect effect of relational capital on progress of a new venture through illusion of control ($t(269) = 1.97, p < .05$). The indirect effect of social networks on progress of a new venture through risk propensity was not significant ($t(269) = .98, n.s.$) although the indirect effect of relational capital on progress of a new venture through risk propensity was marginally significant ($t(269) = 1.78, p < .10$). In sum, hypotheses 1 and 2 were fully supported and hypotheses 3a and 3c were partially supported.

Discussion

This paper was motivated by the observation that not all well connected, aspiring entrepreneurs are able to successfully launch a business. As we explored the theoretical and empirical research on new venture creation, we found that two streams of thought existed. One focused on the role that networks play in the facilitation of new venture creation; the other focused on the impact of individual cognition. What was missing was the possible connection between the two streams. We believed that this virtually unexplored connection could explain the fact that social networks do not universally facilitate new venture progress.

Social cognitive theory emphasizes the role that the environment plays in individual behavior and cognition. Applying this perspective to new venture creation, we proposed and found empirical support for the effect that one's network connections have on their view of the opportunity landscape.

In particular, we hypothesized that social networks and relational capital not only directly impact the progress of new venture creation, but they also impact an entrepreneur's illusion of control and risk propensity. Specifically, we proposed that the benefits of social networks and the relational capital contained within those networks indirectly impact new venture creation through the cognitive biases—illusion of control and risk propensity. Our findings suggest that illusion of control is influenced by social networks and relational capital. We also found that relational capital is related to risk propensity. In turn, illusion of control and risk propensity are positively related to the progression of a new venture. These results demonstrate the applicability of social cognitive theory to entrepreneurship.

The social capital derived from being embedded in a network was shown to shape an entrepreneur's cognitive characteristics, thereby affecting their progress in launching a new venture. We have extended prior research on entrepreneurial differences by distilling the nuances associated with individual relationships and the influence these relationships have on the way entrepreneurs view opportunity. For example, the finding that relational capital was related to risk propensity while social networks was not, suggests that not all types of social capital are related to all types of cognitive biases.

Our findings further confirm prior empirical work on the direct relationships between networks and new venture creation. Specifically, we teased out two dimensions of social capital, social networks and relational capital. Having many network connections facilitates the building of new ventures. We also found that the relational capital embedded in networks contributes to new venture progression as entrepreneurs rely on the support and information they receive from these relationships. Thus, our research provides further support to the common perception that entrepreneurs with many contacts and greater accumulated resources and support from these contacts are better able to launch new ventures.

We also found support for the relationship between cognitive characteristics and new venture progression. Illusion of control and risk propensity were both found to influence

individual efforts to start and build new ventures. These findings confirm prior research that suggests that entrepreneurs are more prone to illusion of control and have a higher risk propensity.

Hopefully, our study opens the door to future studies that apply social cognitive theory to entrepreneurship by examining how an entrepreneur's environment, in particular their personal and professional networks, impact cognition, ultimately affecting entrepreneurial behavior. Such models may explain why the proliferation of entrepreneurship is more common in some cultures than in others and why entrepreneurs in cultures that are not conducive to entrepreneurship still decide to start new businesses. Another intriguing area to explore would be how illusion of control and risk propensity (and perhaps other cognitive biases) change over the life cycle of a new venture and the corresponding influence of social capital. For example, illusion of control might be tempered by more realistic expectations as the new venture progresses and the entrepreneur is immersed in actual business challenges. Similar models may also shed light on the new product development process, demonstrating why some entrepreneurs are better able to see the potential for new innovations and technologies, and are better able to exploit the knowledge and resources embedded in their industry.

We believe that our study contributes to entrepreneurship research as it advances a model of new venture progression that includes both networks and cognition. While, hopefully, this study has begun a new stream of investigation, there is much room for future theoretical enhancement and further empirical testing. For example, we found evidence that various dimensions of social capital influence cognitive attributes differently. Future research might test the relationship between dimensions of social capital, such as trust and other cognitive biases. Additionally, since trust is paramount in network relationships (DeCarolis & Saporito, 2006), future studies might explore the extent to which trust (or a lack of trust) may influence the relationship between network characteristics and cognition. While we focused on the cognitive characteristics of risk propensity and illusion of control due to their significance in recent research, there is certainly room for exploring the relationship between social capital and other cognitive biases, such as overconfidence and representativeness. In addition, other network characteristics, such as structural holes, network centrality, and network density, should be considered in future research. For example, networks rich in structural holes appear to encourage entrepreneurial behavior among managers (Burt, 1992).

Consistent with the domain of entrepreneurship research as defined by Shane and Venkataraman (2000), our dependent variable of interest is new venture creation, which we have operationalized as a continuum representing the progress of the creation of a new venture. Since our research focused only on new venture creation and not success, we believe that a ripe area of future research could investigate the extent to which social capital and cognition influence the growth, success, and survival of a new venture. Finally, future studies could investigate the potential impact that past entrepreneurial experience has on the relationship between social capital, cognition, and new venture creation.

Limitations

As with all studies, the present research has certain limitations. The cross-sectional, correlational research design, despite certain benefits, does not permit strong inferences regarding the causal direction of observed relationships. Although our hypotheses were grounded in theory, the actual temporal nature of the relationships can only be assessed using a longitudinal research design. Furthermore, our convenience sample of alumni from one university could limit the generalizability of the findings. Finally, because the

data for this study were collected using a survey, common method variance could have artificially inflated some of the relationships among the study variables.

Implications for Practice

Why is it that, all things being equal, social capital enhances new venture progress for some entrepreneurs more than others? Why are some aspiring entrepreneurs better able to utilize their social capital to facilitate new venture creation? We found evidence that certain cognitive biases facilitate the access and use of resources available from one's network and contributes to the founding of new ventures.

We believe that our findings might offer some insights for those thinking about starting a new venture or those who are in the process of starting new ventures. Both illusion of control and risk propensity are not "bad" things. Their existence can facilitate new venture creation and point to the benefits of cognitive biases in decision making under conditions of uncertainty. For those interested in entrepreneurship, illusion of control may lessen the overwhelming amount of information and huge amounts of uncertainty to facilitate new venture creation. Simply put, social capital helps to increase entrepreneurs' feelings of control in their own abilities to grow new ventures; through networking they believe that they can make their business ideas happen. Knowing that one has a network of people and resources to rely on augments one's illusion of control and makes taking the "risk" of new venture creation easier. On the other hand, an awareness of this influence should also help entrepreneurs to understand the criteria upon which they base their decisions. Entrepreneurs should recognize that feelings of control and risk taking may be affected by social capital factors that ultimately have an influence on their decisions.

For established organizations interested in promoting entrepreneurial behavior, our findings suggest that it takes more than encouraging participation in external activities. It involves individuals who are ready to embrace uncertainty with a degree of confidence. Managers might identify those individuals who are promising candidates and mentor their entrepreneurial efforts. Finally, we believe that entrepreneurship education will benefit from this and future research in this area. As we prepare students to become entrepreneurs, they need to be aware of the advantages and disadvantages of cognitive biases and understand their role in predicting the effectiveness of social capital to the new venture creation process. It is also important for entrepreneurs to understand that networks can influence entrepreneurs' cognitive biases, encouraging them to pursue new ventures that may or may not have market potential.

We are optimistic that the research presented here may mark the beginning of a promising research agenda. Additional research in this area will contribute to our understanding of why social capital appears to benefit some entrepreneurs more than others; and in particular, how entrepreneurs make sense of the information and resources they gather from their networks to facilitate the growth and success of their businesses.

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