

GENDER MODERATES FIRMS' INNOVATION PERFORMANCE AND ENTREPRENEURS' SELF-EFFICACY AND RISK PROPENSITY

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On the basis of upper echelons theory and social learning theory, we examined the direct effects of 2 cognitive characteristics—self-efficacy and risk propensity—on entrepreneurs' innovation in the early stage of entrepreneurial activities. We also investigated the moderating role of gender on these relationships, using data collected from the 2011 Global Entrepreneurship Monitor database, comprising 12,828 entrepreneurs from 44 countries. We found that both self-efficacy and risk propensity were positively associated with innovation. In addition, gender acted as a moderator in the 2 relationships, and both were strengthened when the entrepreneurs were male. We have made 2 main contributions to the literature. First, we investigated the effects of two cognitive factors on innovation from a global perspective. Second, we introduced gender and examined it as a novel moderator in relation to its influence on these relationships.

Keywords: self-efficacy, risk propensity, innovation, entrepreneur, gender.

Innovation is vital to a firm's competitive advantage and long-term survival (Greenhalgh et al., 2005); hence, innovation has been extensively studied. Much of the previous research has been focused primarily on the key factors that influence a firm's innovation, including the external environment, such as market demand and industry structure, as well as organizational characteristics, like size of firm and ownership structure. However, individual factors can also impact on a firm's innovation performance (Chen, Bu, Wu, & Liang, 2015; Tushman & Nadler, 1986). We argued that entrepreneurs' cognitive characteristics are also critical factors that will impact on a firm's innovation level.

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To examine people's understanding of innovation, we turned to a cognitive perspective that has gained strength among researchers over the past decade through which judgments and decisions involving opportunity evaluation, venture creation, and the successful growth of new ventures are all perceived as being influential (Mitchell et al., 2002). Entrepreneurial cognition has long been used in research related to new venture formation (Baron, 2007; Markman, Balkin, & Baron, 2002). However, few researchers have studied the effect of entrepreneurial cognition on firm innovation from a global perspective.

We based our study on upper echelons theory (Hambrick & Mason, 1984), in which it is suggested that a firm's decisions and outcomes can largely be predicted by the psychological and demographic characteristics of the top executives of that firm. From this perspective, we focused on the role of entrepreneurs because they are regarded as critical to the innovation process (Brown & Eisenhardt, 1995; Chen, Liao, Redd, & Wu, 2013), and because they make strategic decisions concerning market investment, project selection, and resource allocation (Cooper, Edgett, & Kleinschmidt, 1999). Specifically, we examined how the cognitive characteristics of self-efficacy and risk-taking propensity influence firm innovation.

Theoretical Development and Hypotheses

Self-Efficacy and Innovation

Self-efficacy is a motivational construct in Bandura's (1997) social learning theory that is defined as people's beliefs in their capabilities to mobilize the motivation, cognitive resources, and courses of action needed to exercise control over events in their lives (Wood & Bandura, 1989). According to prior researchers of the effects of self-efficacy (Bandura, 1977; Wood & Bandura, 1989), although many other factors may serve as guides and motivators, self-efficacy is the most effective predictor of performance because all the other factors undoubtedly stem from the internal belief that one has the power and capability to deal with tasks and produce the desired outcomes. People with high self-efficacy are presumed to show more internal interest in tasks, and to be willing to make greater effort and act more persistently in the face of obstacles and difficulties than are those with low self-efficacy (Wu, Matthews, & Dagher, 2007).

Innovation is a path to a firm's competitive advantage (Lengnick-Hall, 1992), but the innovation process involves uncertainty and risk-taking. An entrepreneur must decide whether or not to implement innovation. As researchers have suggested that self-efficacy is the most powerful predictor of both human behavior and attitude (Maddux & Rogers, 1983), and as it reflects an individual's belief in his/her ability to accomplish certain tasks, we argued that self-efficacy

would determine whether or not, and how, entrepreneurs engage in innovation. Specifically, people with a high level of self-efficacy usually choose to perform challenging tasks (Bandura, 1997) so that, when an innovation opportunity emerges, they will forcefully implement strategies that can lead to innovations. In contrast, people with low self-efficacy avoid challenging tasks because they may feel uncomfortable with what they perceive as too many risks and too much uncertainty. Therefore, we formed the following hypothesis:

Hypothesis 1: Entrepreneurs with a high level of self-efficacy will exert a positive effect on firms' innovation.

Risk Propensity and Innovation

The intention to take risks is a requirement for companies and entrepreneurs who pursue innovation (Kraiczy, Hack, & Kellermanns, 2015). *Risk propensity* is defined as an individual's tendency to take chances, which researchers have suggested affects decision making (Bracha & Brown, 2012). Because choosing an innovation alternative is equivalent to choosing a risky prospect, the level of risk propensity is critical for a firm's innovation performance. Risk propensity influences an individual's view both of a situational threat and of its opportunity, thus leading to biased risk perception (Brockhaus, 1980). In their assessment of a situation, individuals who are risk averse tend to give more weight to negative outcomes and threats than they do to positive outcomes (Schneider & Lopes, 1986), and the overestimation of potential loss will, thus, lead the risk averse to neglect potential profitable gains.

Innovation related to a product or technology is a process that often entails huge expense and can demand a large proportion of a firm's assets. As it has been suggested that risk is a component of innovation (Lumpkin & Dess, 1996), entrepreneurs are required to be risk takers when choosing an innovation alternative. Researchers have shown that risk propensity is closely related to creativity and innovation (Das & Joshi, 2007; Shalley & Gilson, 2004). Thus, we hypothesized that entrepreneurs with a higher level of risk propensity will enhance a firm's innovation performance.

Hypothesis 2: The level of entrepreneurs' risk propensity will be positively related to a firm's innovation performance.

The Moderating Role of Gender

Researchers have examined differences between men and women regarding various aspects of behavior. For example, women are believed to have more so-called communal qualities, such as expressiveness, connectedness, relatedness, kindness, and timidity (Moskowitz, Suh, & Desaulniers, 1994). On the other hand, men are believed to be equipped with more of the agentic qualities that are relevant for goal attainment, like assertiveness, persistence,

independence, aggression, autonomy, and courage (Moskowitz et al., 1994). Such differences between males and females may result in the two genders viewing the world in fundamentally different ways (Fischer, Reuber, & Dyke, 1993). Fischer et al. (1993) indicated that, at the start-up stage of a business venture, men have significantly more experience with employee management, the industry, and entrepreneurship than do women. Other empirical researchers have also suggested that, compared to women, men have more experience with organizations and management at start up (Boden & Nucci, 2000; Srinivasan, Woo, & Cooper, 1994). Some scholars have also studied the effect of gender difference on innovation. For example, DiTomaso and Farris (1992) found that in a group of research and development engineers, women tended to rate themselves lower than men did on innovativeness. Nissan, Carrasco, and Castaño (2012) found that women tend to specialize in business sectors where innovation is less common. Further, Ahuja and Thatcher (2005) showed that overload and autonomy are positively related to male-dominated innovation in the information technology field. The research model is depicted in Figure 1.

Therefore, we predicted that the relationship between self-efficacy and innovation in a firm would be stronger when the entrepreneur was male, rather than female. In addition, the relationship between risk propensity and a firm's innovation performance would be stronger when the entrepreneur is male, rather than female.

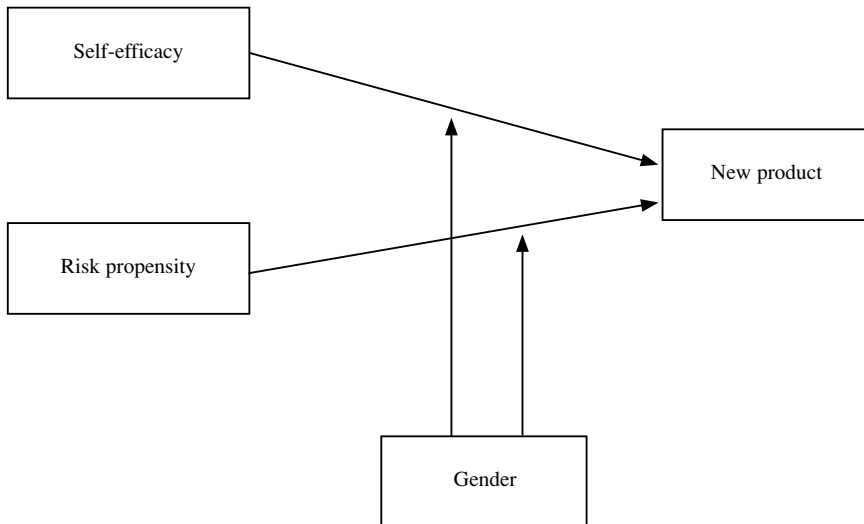


Figure 1. *Research model.*

Hypothesis 3: When an entrepreneur is male, compared to female, the relationship between self-efficacy and a firm's innovation will be strengthened.

Hypothesis 4: When an entrepreneur is male, compared to female, the relationship between risk propensity and a firm's innovation will be strengthened.

Method

Data and Sample

Data were collected from the Global Entrepreneurship Monitor (GEM, 2011) database. The GEM is compiled from an annual, international survey on entrepreneurship that generates data obtained from within different kinds of firms and sectors regarding individuals' perceptions of entrepreneurship, their involvement in entrepreneurial activities, and their aspirations to be entrepreneurial. The data are based on the work of about 200 entrepreneurship scholars across the globe, and the GEM is regarded as one of the most authoritative entrepreneurship databases, with high validity and reliability. Details about the procedures used to collect GEM data can be found in Reynolds et al. (2005).

The full sample in this study comprised 12,828 observations from 44 countries around the world.

Participants were entrepreneurs who were involved in early-stage entrepreneurial activities, including nascent entrepreneurs involved in setting up a business, and owner-managers of new firms that were less than 3.5 years old. The entrepreneurs in the sample were between 17 and 85 years old ($M = 38$ years, $SD = 12$) and 40% were women, 60% were men.

Measures

Dependent variable. We used new product development as the dependent variable to measure innovation. The associated GEM survey question is "Do all, some, or none of your potential customers consider this product new and unfamiliar?" Following the criterion used by Reynolds et al. (2005), we assigned a value of 1 when the product offered by an entrepreneur is new to all or some of the clients, and otherwise the assigned value was 0.

Independent variables and moderating variable. Self-efficacy is a dichotomous variable that was coded as 1 when the respondent replied affirmatively to the question "Do you have the knowledge, skills, and experience required to start a business?" and 0 when the response was negative. Further, risk propensity was coded as 1 when the respondent replied negatively to the question "Would fear of failure prevent you from starting a business?" and 0 when the response was positive. For the measurement of gender, female was coded as 1 and male as 0.

Control variables. We controlled for the following variables because they might have confounded the results. Age was measured as the respondent's actual age at the time of the survey. Higher education was treated as a dichotomous variable and we assigned a score of 1 when the respondent's highest education level was equal to, or higher than, tertiary education; otherwise, the score for higher education was 0. For export rate, our aim was to measure the quantity of the entrepreneur's products that were being exported. We assigned the value of 1 if the export rate was equal to, or higher than, 25% of total production, and 0 if less than 25%. We ascertained the gross domestic product per capita for each country from the World Bank database to measure their economic level. We gave the technology level a value of 1 if the firm fell into the medium to high level of the technology sector, and 0 if it did not. We assessed news media exposure as being equal to 1 when the respondent replied affirmatively to the question "You will often see stories about successful new businesses in the news media," and 0 otherwise. We assessed total early-stage entrepreneurial activity (TEA) as equal to 1 when the respondent was involved in TEA; if they were not, the assigned score was 0.

Data Analysis

Because the new product is a binary dependent variable, we used a logit regression analysis to test for direct relationships among self-efficacy, risk propensity, and new product. Then, we tested for the moderating effect of gender by including an interaction effect in the model.

Results

Table 1 shows the means, standard deviations, and correlation coefficients among the variables. All of the variables were significantly correlated with the focal new product.

Results in Table 2 show the logit regression estimates of the impact of entrepreneurs' self-efficacy and risk propensity on their innovation. In Model 1 in Table 2, all of the control variables and the moderating variable were included. In Model 2, we tested the main effect of the key independent variable: i.e., self-efficacy. The coefficient was significant and positive, which supports Hypothesis 1. This relationship was consistent across all models. In Model 3, we tested another main effect of the other key independent variable, i.e., risk propensity. The coefficient result shows that risk propensity had a significantly positive relationship with new product, which supports Hypothesis 2. We entered the moderating variable, gender, into Models 4 and 5, respectively, to test Hypotheses 3 and 4. In Model 4, we tested the effect of the interaction between self-efficacy and gender. The coefficient of the interaction term was

Table 1. Means, Standard Deviations, and Correlations Among Variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
New product	0.5369	0.4987										
Age	37.5763	11.6987	-.0312**									
Higher education	0.2500	0.4330	.0571**	.0266**								
Export rate	0.1157	0.3199	.0827**	.0147	.0811**							
Gross domestic product per capita	9.3015	0.9552	-.0176*	.1438**	.2175**	.1131**						
Technology level	0.0465	0.2105	.0446**	-.0240**	.1035**	.0672**	.0984**					
News media	0.6399	0.4801	.0340**	.0045	-.0754**	-.0277**	-.1145**	-.0419**				
TEA	0.7028	0.4571	.0944**	-.0749**	.1230**	.0411**	.0844**	.0309**	-.0004			
Gender	0.4037	0.4907	.0499**	.0162	-.0205*	-.0328**	-.0185**	-.0835**	.0378**	-.0656**		
Self-efficacy	0.8216	0.3828	.0541**	.0303**	.0536**	.0323**	.1276**	.0109	-.0144	.0868**	-.0238**	
Risk perception	0.7179	0.4500	.0554**	-.0096	-.0070	.0003	.0890**	.0198*	-.0134	.0847**	.0059	.1908**

Note. N = 12,828; TEA = total early-stage entrepreneurial activity; * p < .05, ** p < .01, *** p < .001.

Table 2. Logit Estimates of New Product

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age	-.0037* (.0016)	-.0039* (.0016)	-.0036* (.0016)	-.0040* (.0016)	-.0035* (.0016)	-.0038* (.0016)
Higher education	.2322*** (.0432)	.2283*** (.0432)	.2421*** (.0433)	.2280*** (.0433)	.2414*** (.0433)	.2364*** (.0434)
Export rate	.5295*** (.0587)	.5262*** (.0588)	.5347*** (.0588)	.5301*** (.0588)	.5363*** (.0588)	.5356*** (.0589)
Gross domestic product per capita	-.0877*** (.0197)	-.1001*** (.0199)	-.0983*** (.0198)	-.1035*** (.0199)	-.1025*** (.0199)	-.1134*** (.0200)
Technology level	.4176*** (.0894)	-.1134*** (.0895)	.4125*** (.0895)	.4240*** (.0896)	.4129*** (.0896)	.4187*** (.0897)
News media	.1487*** (.0377)	.1488*** (.0377)	.1502*** (.0377)	.1512*** (.0378)	.1482*** (.0378)	.1503*** (.0378)
TEA	.3997*** (.0397)	.3841*** (.0399)	.3820*** (.0399)	.3822*** (.0399)	.3813*** (.0399)	.3694*** (.0400)
Gender	.2562*** (.0369)	.2605*** (.0369)	.2540*** (.0369)	.5424*** (.0863)	.4589*** (.0693)	.6645*** (.0976)
Self-efficacy	.2655*** (.0473)	.2655*** (.0473)	.2655*** (.0473)	.4136*** (.0627)	.4136*** (.0627)	.3466*** (.0639)
Risk perception			.2358*** (.0401)		.3510*** (.0520)	.2972*** (.0530)
Self-efficacy × gender				-.3451** (.0953)		-.2870** (.0969)
Risk perception × gender					-.2859** (.0817)	-.2400** (.0831)
Constant	.4897** (.1875)	.4040* (.1882)	.4235* (.1879)	.3153+ (.1900)	.3806* (.1884)	.2512 (.1906)
Pseudo R ²	.0187	.0204	.0206	.0212	.0213	.0230

Note. $N = 12,828$; TEA = total early-stage entrepreneurial activity; * $p < .05$, ** $p < .01$, *** $p < .001$.

found to be negative and significant, which supports Hypothesis 3. In Model 5, the results show the interaction effect between risk propensity and gender, which supports Hypothesis 4. Model 6 is the full model, in which all of the independent variables as well as the moderating variable are included. The results show that self-efficacy and risk propensity were still significantly and positively related to the new product. Further, the interaction effects between self-efficacy/risk propensity and gender remained significant and negative.

To illustrate the patterns of significant interaction effects that supported the hypotheses, we plotted these (see Figures 2 and 3) using one standard deviation below and above the mean to represent the low and high levels of the independent variables (Aiken, West, & Reno, 1991). In Figure 2, the slope is far steeper when the entrepreneur is a man than when the entrepreneur is a woman. In other words, when self-efficacy increases from one standard deviation below the mean to one standard deviation above the mean, male entrepreneurs offer more new products than do female entrepreneurs. In Figure 3, the pattern is the same as in Figure 2, which indicates that there tends to be more innovation carried out by male entrepreneurs than by female entrepreneurs, as risk propensity rises from one standard deviation below the mean to one standard deviation above the mean.

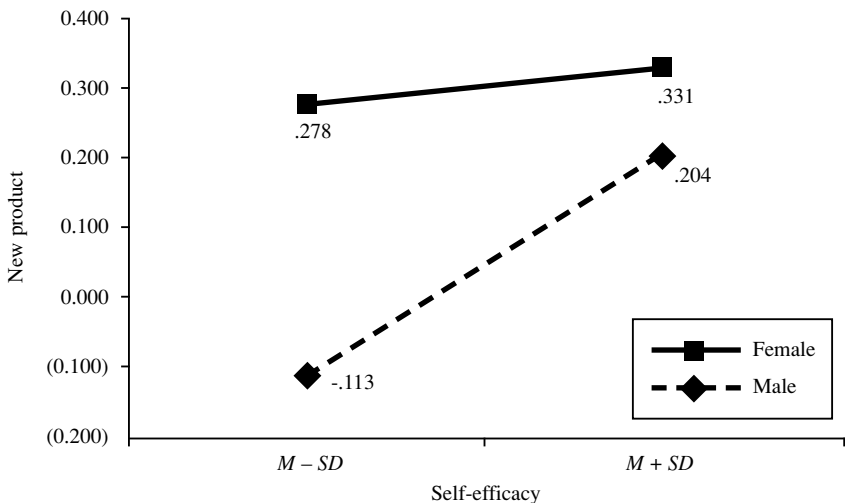


Figure 2. Moderating effect of gender on self-efficacy.

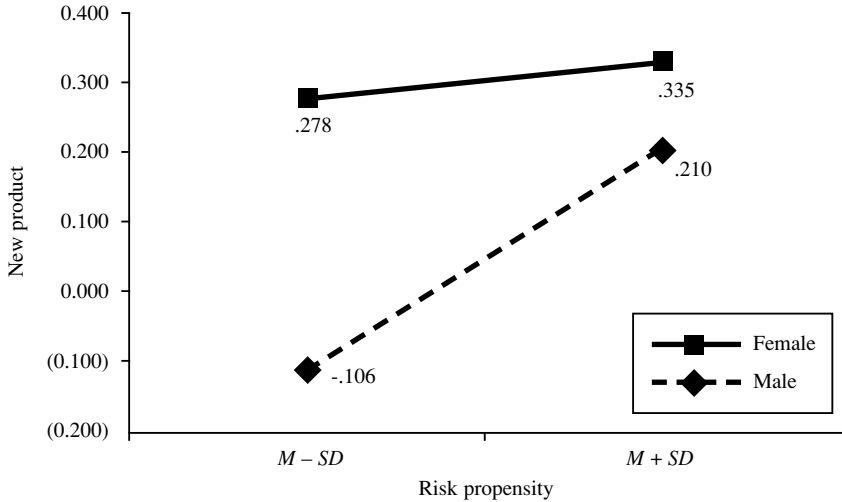


Figure 3. Moderating effect of gender on risk propensity.

Discussion

The objective of this study was to ascertain whether or not entrepreneurs' cognition can predict their innovation performance in the early stage of a venture start-up. Given that, to our knowledge, few studies have been conducted on this topic, we are some of the first to focus on entrepreneurs' innovation during the early stage of entrepreneurial activities, using a global sample. In addition, we examined the moderating role of gender on the relationships between innovation and the two cognitive characteristics of self-efficacy and risk propensity.

Our research has several theoretical implications for the existing literature on entrepreneurship, innovation, self-efficacy, and risk propensity. First, our empirical results show that an entrepreneur's self-efficacy level can predict his/her ability to offer new products to the market. The cognitive factor of self-efficacy has been widely studied from the perspective of entrepreneurial intention (Zhao, Seibert, & Hills, 2005), but few researchers have linked self-efficacy with innovation. The positive relationship between self-efficacy and innovation performance that we found illustrates one way in which self-efficacy may be a useful influential factor in the domain of entrepreneur functioning. In addition, contrary to the view expressed by Vancouver, Thompson, and Williams (2001) and Yeo and Neal (2006), that adverse performance increases self-efficacy, we found that a higher level of self-efficacy is related to improved innovation performance.

Second, we found that the cognitive characteristic of risk propensity is positively related to entrepreneurs' innovation. This finding is consistent with

that reported in the risk-propensity literature, in which researchers have found that risk propensity has a positive impact on undertaking risky decisions and new ventures, such as innovation (Das & Joshi, 2007; Weber & Milliman, 1997).

We also examined the moderating effect of gender on the relationships among self-efficacy, risk propensity, and innovation performance. The results showed that innovation tended to be stronger when the entrepreneurs were male than when they were female, when the entrepreneurs had the cognitive characteristics of self-efficacy or risk propensity. Prior study findings on the effect of gender on innovative level have been mixed (DeTienne & Chandler, 2007). However, we found that men tended to outperform women in terms of innovation strength.

Limitations and Directions for Future Research

The first limitation in our study is that it was not longitudinal so that we could not determine whether the effects of the two cognitive factors on new product development remain stable over time. Future researchers should employ a longitudinal approach and introduce more cognitive factors to test the effects of these on innovation. The second limitation is that we did not take the effect of culture into account. As the data we tested were drawn from 44 countries, the different cultures of those countries may have different effects on innovation. Future researchers could test the moderating effect of culture on the relationship between entrepreneurs' cognition and innovation in a new venture.

References

- Ahuja, M. K., & Thatcher, J. B. (2005). Moving beyond intentions and toward the theory of trying: Effects of work environment and gender on post-adoption information technology use. *MIS Quarterly*, *29*, 427–459.
- Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*, 191–215. <http://doi.org/cgp>
- Baron, R. A. (2007). Behavioral and cognitive factors in entrepreneurship: Entrepreneurs as the active element in new venture creation. *Strategic Entrepreneurship Journal*, *1*, 167–182. <http://doi.org/dmt285>
- Boden, R. J., Jr., & Nucci, A. R. (2000). On the survival prospects of men's and women's new business ventures. *Journal of Business Venturing*, *15*, 347–362. <http://doi.org/br5pdh>
- Bracha, A., & Brown, D. J. (2012). Affective decision making: A theory of optimism bias. *Games and Economic Behavior*, *75*, 67–80. <http://doi.org/cctxwb>
- Brockhaus, R. H., Sr. (1980). Risk taking propensity of entrepreneurs. *Academy of Management Journal*, *23*, 509–520. <http://doi.org/b2fkbt>
- Brown, S. L., & Eisenhardt, K. M. (1995). Product development: Past research, present findings, and future directions. *Academy of Management Review*, *20*, 343–378. <http://doi.org/dxkv2m>
- Chen, S., Bu, M., Wu, S., & Liang, X. (2015). How does TMT attention to innovation of Chinese firms influence firm innovation activities? A study on the moderating role of corporate governance. *Journal of Business Research*, *68*, 1127–1135. <http://doi.org/74k>

- Chen, S., Liao, Z., Redd T., & Wu, S. (2013). Laotian entrepreneurs' optimism and new venture performance. *Social Behavior & Personality: An international journal*, *41*, 1267–1278. <http://doi.org/sjb>
- Cooper, R. G., Edgett, S. J., & Kleinschmidt, E. J. (1999). New product portfolio management: Practices and performance. *Journal of Product Innovation Management*, *16*, 333–351. <http://doi.org/b7dx4r>
- Das, S. R., & Joshi, M. P. (2007). Process innovativeness in technology services organizations: Roles of differentiation strategy, operational autonomy and risk-taking propensity. *Journal of Operations Management*, *25*, 643–660. <http://doi.org/bp99bx>
- DeTienne, D. R., & Chandler, G. N. (2007). The role of gender in opportunity identification. *Entrepreneurship Theory and Practice*, *31*, 365–386. <http://doi.org/ddv5v4>
- DiTomaso, N., & Farris, G. F. (1992). Diversity in the high-tech workplace: Diversity and performance in R&D. *Spectrum, IEEE*, *29*, 21–24. <http://doi.org/fpv6k8>
- Fischer, E. M., Reuber, A. R., & Dyke, L. S. (1993). A theoretical overview and extension of research on sex, gender, and entrepreneurship. *Journal of Business Venturing*, *8*, 151–168. <http://doi.org/dchdzb>
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., Kyriakidou, O., & Peacock, R. (2005). Storylines of research in diffusion of innovation: A meta-narrative approach to systematic review. *Social Science & Medicine*, *61*, 417–430. <http://doi.org/cp6678>
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, *9*, 193–206. <http://doi.org/fd8kv9>
- Kraiczy, N. D., Hack, A., & Kellermanns, F. W. (2015). What makes a family firm innovative? CEO risk-taking propensity and the organizational context of family firms. *Journal of Product Innovation Management*, *32*, 334–348. <http://doi.org/74m>
- Lengnick-Hall, C. A. (1992). Innovation and competitive advantage: What we know and what we need to learn. *Journal of Management*, *18*, 399–429. <http://doi.org/cgc6zf>
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, *21*, 135–172. <http://doi.org/d65799>
- Maddux, J. E., & Rogers, R. W. (1983). Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *Journal of Experimental Social Psychology*, *19*, 469–479. <http://doi.org/cbzjj7>
- Markman, G. D., Balkin, D. B., & Baron, R. A. (2002). Inventors and new venture formation: The effects of general self-efficacy and regretful thinking. *Entrepreneurship Theory and Practice*, *27*, 149–165. <http://doi.org/bxztpp>
- Mitchell, R. K., Smith, J. B., Morse, E. A., Seawright, K. W., Peredo, A. M., & McKenzie, B. (2002). Are entrepreneurial cognitions universal? Assessing entrepreneurial cognitions across cultures. *Entrepreneurship Theory and Practice*, *26*, 9–32.
- Moskowitz, D. S., Suh, E. J., & Desaulniers, J. (1994). Situational influences on gender differences in agency and communion. *Journal of Personality and Social Psychology*, *66*, 753–761. <http://doi.org/bxsrnd>
- Nissan, E., Carrasco, I., & Castaño, M.-S. (2012). Women entrepreneurship, innovation, and internationalization. In M.-A. Galindo & D. Ribeiro (Eds.), *Women's entrepreneurship and economics* (pp. 125–142). New York, NY: Springer.
- Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, ... Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998–2003. *Small Business Economics*, *24*, 205–231. <http://doi.org/bvm4tb>
- Schneider, S. L., & Lopes, L. L. (1986). Reflection in preferences under risk: Who and when may suggest why. *Journal of Experimental Psychology: Human Perception and Performance*, *12*, 535–548. <http://doi.org/fqk2h5>

- Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *The Leadership Quarterly*, *15*, 33–53. <http://doi.org/drd7pw>
- Srinivasan, R., Woo, C., & Cooper, A. (1994). Performance determinants for male and female entrepreneurs. In W. D. Bygrave, S. Birley, N. Churchill, E. Gatewood, F. Hoy, R. Keeley, & W. Wetzel, Jr. (Eds.), *Frontiers of entrepreneurship research* (pp. 43–56). Wellesley, MA: Babson College.
- Tushman, M., & Nadler, D. (1986). Organizing for innovation. *California Management Review*, *28*, 74–92. <http://doi.org/rnm>
- Vancouver, J. B., Thompson, C. M., & Williams, A. A. (2001). The changing signs in the relationships among self-efficacy, personal goals, and performance. *Journal of Applied Psychology*, *86*, 605–620. <http://doi.org/cg8q9k>
- Weber, E. U., & Milliman, R. A. (1997). Perceived risk attitudes: Relating risk perception to risky choice. *Management Science*, *43*, 123–144. <http://doi.org/drqc59>
- Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review*, *14*, 361–384. <http://doi.org/bnw8s5>
- Wu, S., Matthews, L., & Dagher, G. K. (2007). Need for achievement, business goals, and entrepreneurial persistence. *Management Research News*, *30*, 928–941. <http://doi.org/74n>
- Yeo, G. B., & Neal, A. (2006). An examination of the dynamic relationship between self-efficacy and performance across levels of analysis and levels of specificity. *Journal of Applied Psychology*, *91*, 1088–1101. <http://doi.org/b2pph3>
- Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, *90*, 1265–1272. <http://doi.org/br8fb6>

