

ERROR ORIENTATION AND ENTREPRENEURIAL DECISION MAKING IN CHINESE ENTERPRISES: OPPORTUNITY IDENTIFICATION AS MEDIATOR

XUEYAN WEI
Jiangnan University
ROBERT D. HISRICH
Kent State University

We examined how error orientation and opportunity identification behavior relate to entrepreneurial decision making in Chinese small and medium enterprises (SMEs) and how these perceptions of opportunity identification mediate the effects of error orientation on entrepreneurial decision making. We analyzed 187 questionnaires from participants in SME firms in China. The results indicated that perceived error orientation and opportunity identification were related to and explained variance in entrepreneurial decision making. Opportunity identification also fully or partially mediated the relationship between error orientation and entrepreneurial decision making. Elevating opportunity identification beliefs and clarifying an entrepreneur's understanding of the importance of opportunity identification for the functionality and effectiveness of his/her firm can help promote entrepreneurial decision making. Alertness to error orientation can contribute to the development of stronger perceptions of entrepreneurial opportunity identification and lead to better entrepreneurial decision making.

Keywords: error orientation, opportunity identification, entrepreneurial decision making, entrepreneurial identification behavior, Chinese small and medium enterprises, error management.

Xueyan Wei, College of Tianjiabing Education, School of Business, Jiangnan University; Robert D. Hisrich, Graduate and International Programs, Kent State University.

This research was funded by the National Science Foundation of China (71371086, 71102094), Foundation of Jiangsu Social Science Program (15GLB001), Foundation of Jiangsu Educational Plan Program (D20131103), and by the Fundamental Research Funds for the Central Universities of China (JUSRP1506XNC). Support was also provided by Kent State University.

Correspondence concerning this article should be addressed to: Robert D. Hisrich, Kent State University, Kent, Ohio, 44242, United States of America. Email: rhisric1@kent.edu or Xueyan Wei, College of Tianjiabing Education, Jiangnan University, 1800 Lihu Avenue, Wuxi, Jiangsu 214122, People's Republic of China. Email: D05weixueyan@zju.edu.cn

The purpose of this research was to investigate the differences of entrepreneurs from small and medium enterprises in recognizing entrepreneurial opportunity and making a qualified decision. Previous researchers of opportunity identification have primarily explored antecedents of opportunity identification, such as entrepreneurial alertness (Uy, Chan, Sam, Ho, & Chernyshenko, 2015; Valliere, 2013), prior experience (Li & Gustafsson, 2012), human capital (González & Husted, 2011), and entrepreneurial orientation (Dai, Maksimov, Gilbert, & Fernhaber, 2014). However, it is still unclear how different entrepreneurs make use of opportunity identification and how these differences influence entrepreneurial results. Recent researchers have suggested that there are still underresearched factors that contribute to opportunity identification, such as the entrepreneurial personality or abilities (Rădulescu, Marian, & Moica, 2014).

One such factor is *error orientation*, which, to the entrepreneur, means a special learning process. In fact, “entrepreneurship is [itself] a process of learning, and a theory of entrepreneurship requires a theory of learning” (Minniti & Bygrave, 2001, p. 7). We explored how different decision-making results regarding error orientation occurred in a sample of entrepreneurs. Recent researchers have focused on the tendency to avoid errors and error management (e.g., Arenas, Taberero, & Briones, 2006). Guo and Zhao (2010) proposed error orientation as a determinant of individuals’ decision making, through their learning from errors to avoid future failure. In our focus on error orientation, we illustrated how the attributes of error orientation itself may drive the opportunity identification process and entrepreneurial results, thereby explaining the entire entrepreneurial decision-making process.

Literature Review and Hypotheses Development

Entrepreneurship

Recent researchers have evaluated both the entrepreneur’s role in cognitive decision making and opportunity identification, and pattern matching using an individual difference approach (Baron, 2009; Guo & Zhao, 2010; Mathieu & St-Jean, 2013; Suddaby, Bruton, & Si, 2015). The redefinition of entrepreneurship with an individual opportunity connection highlights the importance of entrepreneurial opportunity and how this opportunity may impact on the entrepreneurial process. The person-centric and situation-centric approaches are both used in the evaluation.

Error Orientation

Previous researchers have found that error orientation, a personal disposition, is “associated with the ability to reflect on the occurrence of errors, the need to communicate them” (Arenas et al., 2006, p. 570) and a coping strategy within a general coping concept (Hong & Wang, 2000). We defined *error orientation*

as a cognitive strategy that a person uses in error management for realizing the achievement in terms of both emotions and actions.

This definition broadens both the trait and resource orientation approaches. As error management is related to goal orientation, error orientation is an effective strategy to obtain an entrepreneurial goal. Error orientation is composed of eight dimensions: error competence, learning from errors, error communication, thinking about errors, error strain, covering up errors, error anticipation, and error risk taking (Guo & Zhao, 2010; Hong & Wang, 2000; Rybowskiak, Garst, Frese, & Batinic, 1999).

Opportunity Identification

Opportunity identification is defined as a process of rendering ideas, beliefs, and actions to realize an entrepreneurial goal. Entrepreneurs engage in opportunistic behavior (Chell, 2000). *Opportunity identification behavior* consists of “knowledge acquisition, competitive scanning, proactive searching, innovative behavior, and collective action” (Miller, 1987, p. 16). To be an entrepreneur is “to act on the possibility that one has identified an opportunity worth pursuing” (McMullen & Shepherd, 2006, p. 132). Opportunity identification is a proactive and deliberate search for opportunity (Zietsma, 1999). As an opportunity is valuable, it must be perceived, recognized, and acted on.

A common theme in previous studies is that opportunity identification depends on entrepreneurial attributes such as entrepreneurial alertness (Tang, Kacmar, & Busenitz, 2012) and creativity (Ahlin, Drnovšek, & Hisrich, 2014). Effective antecedents enhance the probability of identifying opportunity. Error orientation itself is also such an attribute. Arenas et al. (2006) found that individuals with higher scores on the Error Communication Scale had a better performance. Chwolka and Raith (2012) found that successful entrepreneurs had realistic plans depicting the necessary steps to achieve their goals. Frese (2009) indicated the importance of an action theory to help entrepreneurs adopt different steps in the active entrepreneurial action sequence in order to be successful. Accordingly, Guo (2008) indicated types of action sequence such as complete planning versus critical point planning, opportunistic strategy versus reactive strategy; entrepreneurs would adopt different forms of action dealing with error or potential error. Focusing on detail, feasibility, proactiveness, amount of planning, and past actions are active and effective ways for entrepreneurs to cope with errors. In Guo’s study, the error learning orientation of Chinese entrepreneurs had an effect on both the details and proactiveness of the action strategies.

Tang et al. (2012) proposed that entrepreneurial action will evolve from hints, information gathered, and evaluation, to realize practical opportunity. Learning from errors and achievement orientation could help entrepreneurs reduce further errors. Error orientation is characterized as action orientation with high

initiative and learning orientation, plan orientation, achievement orientation, self-controlling ability, and a realistic orientation in terms of managing error. As covering up errors is a controlled rejection, this indicates that most but not all of the error orientation attributes are likely to have a positive relationship with entrepreneurial identification behavior. Therefore, we proposed the following hypothesis:

Hypothesis 1: Error orientation will be positively related to entrepreneurial identification behavior.

Entrepreneurial Decision Making

Entrepreneurial decision making refers to “the choices made by entrepreneurs when faced with entrepreneurial opportunities” (Miao & Liu, 2010, p. 357). Results of a previous study showed that successful entrepreneurial behavior requires error orientation traits (Frese, 2009). The objective of good error management is to attempt to reduce the probability of failure or undesirable results of decision making (Frese, 1991; Guo & Zhao, 2010). Detecting and dealing with errors assists entrepreneurs to make good decisions, particularly when they have high error orientation and communicate errors effectively. In addition, a high orientation to learn from, and actively cope with, errors is part of Chinese culture (Guo, 2008; Wu, 2014).

All these traits are exploratory in orientation and indicate that learning from errors is the ability to prevent errors in the long term by learning from them, planning, and changing work processes (Rybowiak et al., 1999). In sum, higher error orientation is helpful for reducing decision-making risk in opportunities. Thus, we proposed the following hypothesis:

Hypothesis 2: Error orientation will be positively related to entrepreneurial decision making.

Previous researchers have also found that opportunity identification is a critical factor in decision making (Miao & Liu, 2010). Opportunity identification includes filtration, selection, and refinement (Bhave, 1994). Acquisition of valuable entrepreneurial knowledge is needed for better decision making. Entrepreneurs use relative information to determine whether they will accept or reject an opportunity. Researchers of decision making have confirmed the information collection, processing, and implementing aspects of entrepreneurial intention (Maine, Soh, & Dos Santos, 2015). Miao (2006) found that profitability and feasibility recognition were significant predictors of entrepreneurial decision making.

Successful entrepreneurial decision making requires an effective opportunity identification process, including: (a) *knowledge acquisition*, that is, collecting information that includes active orientation; (b) *competitive scanning*, that is, active scanning behavior focusing on the competitive world, and (c) *collective*

action, which is most likely to be interactive resulting from an entrepreneur's need to evaluate opportunity (Miller, 1987; Puhakka, 2006). Thus, we proposed the following hypothesis:

Hypothesis 3: Opportunity identification behavior will be positively related to entrepreneurial decision making.

Mediating Effects of Entrepreneurial Opportunity Identification

Few researchers have explored the mediating effects of entrepreneurial opportunity identification. When we reviewed the literature, three research paths were evident. First, market equilibrium, specific information, and perception process were emphasized in Kirzner's (1999) Austrian theory. Second, opportunity was viewed as a multistage process (Schumpeter, 1934), that is, searching, discovery, and creating opportunity. Third, Davidsson (2015) discussed opportunity-based behavior. We integrated these theories through a different lens. We felt that there was an indication in Kirzner's (1999) theory that error orientation would have a critical effect on entrepreneurial opportunity identification and decision making. We thus constructed the relationship among the three variables to explore the mediating effects of opportunity identification behavior, based on our belief that it directly affects decision making. Therefore, we proposed the following hypothesis:

Hypothesis 4: Opportunity identification behavior will mediate the relationship between error orientation and entrepreneurial decision making.

We did not focus on predecision making but rather decision making during the entrepreneurship process. Miao (2006) found that opportunity identification empirically mediated entrepreneurial alertness and decision making. During the decision-making process, entrepreneurs analyze information, learn from errors, and clarify goals through opportunity identification behavior in an uncertain environment. Individual differences in error orientation are related to entrepreneurial learning, performance, innovation, decision making, entrepreneurial progress, and other important entrepreneurial variables (González & Husted, 2011). Entrepreneurs with different error orientation levels exhibit different entrepreneurial identification behavior. The higher the level of opportunity identification behavior, the more entrepreneurs have confidence in making decisions. Although empirical researchers have established several decision-making theories, how practical and realistic orientation further affects opportunity identification behavior needs to be tested. Therefore, we proposed the following hypotheses:

Hypothesis 4a: Opportunity identification behavior will mediate the relationship between error orientation and speed of decision making.

Hypothesis 4b: Opportunity identification behavior will mediate the relationship between error orientation and identity of decision making.

Hypothesis 4c: Opportunity identification behavior will mediate the relationship between error orientation and decision-making accuracy.

Method

Participants and Procedure

Participants were 220 volunteers from the Entrepreneurial Cluster Garden and the Chinese Foreign Trade Association (Zhejiang and Jiangsu Provinces). They were Chinese entrepreneurs in both small and mid-sized firms, and were invited by a letter that provided the necessary information about this study. Completed questionnaires were returned from 187 participants (57% men and 43% women, $M_{\text{age}} = 29$ years, $SD = 5.12$), with a valid response rate of 77%. Of the participants, 81% held a college diploma or higher academic qualification. The mean of participants' entrepreneurial experience was 4.3 years, ($SD = 2.85$), and 58% had entrepreneurial training experience.

Participants were recruited through social networks using the snowball technique. We used the sampling method based on the operational definition of entrepreneurs according to the Global Entrepreneurship Monitor (GEM; Reynolds et al., 2005): top managers were engaged in new business venture decision making for established enterprises, for example, the service industry, information technology industry, and manufacturing industry, for more than 42 months. Each participant received a gift valued at RMB150 (about US\$30) when they had finished the questionnaires.

Measures

Error Orientation. Error orientation was assessed using Hong and Wang's (2000) 33-item Chinese version adapted from the Error Orientation Questionnaire (EOQ) of Rybowskiak et al. (1999), on a 5-point Likert scale ranging from 1 (*definitely not*) to 5 (*definitely*). Hong and Wang reported satisfactory evidence of validity with Chinese samples. There are seven dimensions in the EOQ: error competence (five items, $\alpha = .72$), learning from errors (four items, $\alpha = .86$), error strain (five items, $\alpha = .77$), error anticipation (five items, $\alpha = .73$), covering up errors (six items, $\alpha = .85$), error communication (four items, $\alpha = .67$), and thinking about errors (four items, $\alpha = .73$). The α coefficients in our study were .89 for the overall EOQ. Confirmatory factor analysis (CFA) results were: $\chi^2 = 185.55$, $df = 129$, $p < .01$; $\chi^2/df = 1.43$, $p < .01$; goodness-of-fit index (GFI) = .94, adjusted goodness-of-fit index (AGFI) = .94, normed fit index (NFI) = .93, comparative fit index (CFI) = .95, incremental fit index (IFI) = .95, root mean square residual (RMR) = .02, root mean square error of approximation (RMSEA) = .04.

Opportunity identification behavior. Opportunity identification behavior was rated by entrepreneurs on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*) with 29 items from Xie and Wang (2010), adapted by Puhakka (2006). Xie and Wang, (2010) reported evidence of validity for the scale when used with Chinese samples. Knowledge acquisition (6 items, $\alpha = .79$), competitive scanning (6 items, $\alpha = .74$), proactive searching (6 items, $\alpha = .78$), innovative behavior (4 items, $\alpha = .71$) and collective action (7 items, $\alpha = .76$). The alpha coefficients in our study were .89 for the overall Opportunity Identification Scale. Opportunity identification was also analyzed by using CFA and showed the following: $\chi^2 = 110.33$, $df = 66$, $p < .01$, $\chi^2/df = 1.67$, $p < .01$, GFI = .93, AGFI = .90, NFI = .90, CFI = .95, IFI = .95, RMR = .06, and RMSEA = .06.

Entrepreneurial Decision Making. Entrepreneurial decision making was assessed using the three-dimension Entrepreneurial Decision-Making Questionnaire developed by Miao (2006) and Miao and Liu (2010), with items rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The three dimensions are: speed of decision making (four items, $\alpha = .73$), degree of identity (four items, $\alpha = .72$) and decision-making accuracy (four items, $\alpha = .79$). Miao (2006) and Miao and Liu (2010) reported evidence of validity with Chinese samples. The α coefficients in this study were .80 for the overall Entrepreneurial Decision-Making Questionnaire. CFA results were: $\chi^2 = 34.64$, $df = 21$, $p < .05$, $\chi^2/df = 1.65$, $p < .01$, GFI = .96, AGFI = .92, NFI = .90, CFI = .96, IFI = .96, RMR = .06, and RMSEA = .06.

Data Analysis

Data were analyzed using SPSS version 15.0. Descriptive statistics and Pearson correlations were used to examine the relationships among the measured variables. Hierarchical multiple regression analyses were used to assess the relationships among the seven subscales of error orientation, four subscales of opportunity identification behavior, and the three decision-making subscales. AMOS version 15.0 software was used to test the CFA of the measured variables.

Results

Bivariate Correlation Analysis

Correlation analysis was conducted to examine the association between the major variables. We found that error orientation was significantly related to decision making, and that opportunity identification behavior was also significantly related to decision making (see Table 1).

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

	<i>M</i>	<i>SD</i>	1	2	3
1 Error orientation	112.65	15.22	—		
2 Opportunity identification	103.84	14.50	.543***	—	
3 Decision making	41.23	6.96	.540***	.642***	—

Note. *N* = 187. *** *p* < .001, two-tailed.

Regression Analysis and Mediating Effect Analysis

We tested Hypotheses 1, 2, and 3 using regression analysis (see Tables 2 and 3). Because there were significant error orientation differences in the study variables, we took into consideration the effects of the seven levels by conducting various independent random coefficient modeling analyses. Specifically, we created different mixed models, with five opportunity identification facets as a Level 1 variable and entrepreneurial decision making as a Level 3 variable. Error orientation was significantly related to the outcome of opportunity identification behavior. Opportunity identification behavior was significantly associated with speed of decision making, degree of identity, and decision-making accuracy. Hypothesis 3 was thus fully supported.

Table 2. Regression Analysis of Error Orientation on Opportunity Identification Behavior

	Entrepreneurial opportunity identification behavior		
	<i>B</i>	<i>SEB</i>	β
Error communication	1.84	.35	.35***
Thinking about errors	1.12	.45	.21*
Error anticipation	.89	.21	.22***
Covering up errors	-.54	.13	-.20***
Learning from errors	.91	.44	.18*

Note. *N* = 187. * *p* < .05, *** *p* < .001.

Table 3. Regression Analysis of Opportunity Identification Behavior on Speed of Decision Making, Degree of Identity, and Decision-Making Accuracy

	β	<i>R</i> ²	F	β	<i>R</i> ²	F	β	<i>R</i> ²	F
Control: demographics		.02	2.07		.04	.129		.03	2.29
Main effect:									
Opportunity identification	.42***	.18***	39.57***	.41***	.17***	38.58***	.65***	.42***	136.38***

Note. *N* = 187. * *p* < .05, ** *p* < .01, *** *p* < .001.

To test the mediation effect of error orientation, we conducted a series of hierarchical regression analyses. After controlling for the effects of the control

variables, we employed Baron and Kenny's (1986) criteria: A variable functions as a mediator when the independent variable (error orientation) is correlated with the mediator (opportunity identification behavior) and the dependent variable (entrepreneurial decision making). The independent variables were regressed on the dependent variable after controlling for the effects of the mediator. Full mediation would be established if the relationship between the independent and dependent variables became nonsignificant. Partial mediation would be established if the variance explained by the independent variables was reduced in absolute size but was still different from zero after the inclusion of the mediator (Baron & Kenny, 1986; see Table 4).

In this study, opportunity identification behavior partially mediated the relationship between error orientation and speed of decision making. Therefore, Hypothesis 4a was supported. Opportunity identification behavior partially mediated the relationship between error orientation and the degree of identity. Thus, Hypothesis 4b was supported. Opportunity identification behavior fully mediated the relationship between error orientation and decision-making accuracy, supporting Hypothesis 4c. In general, Hypothesis 4 was supported.

Table 4. *Testing Mediation Effect on Entrepreneurial Decision Making*

	Speed of decision-making		Degree of identity		Decision-making accuracy	
	Model 1 β	Model 2 β	Model 1 β	Model 2 β	Model 1 β	Model 2 β
Main effect: EO	.480***		.406***		.346***	
Testing mediation effect						
Error orientation		.358**		.276**		-.011
EOI		.226**		.256**		.657***
Total R^2	.230***	.266**	.165***	.219**	.120***	.424***
ΔR^2		.036***		.046**		.304***

Note. $N = 187$. * $p < .05$, ** $p < .01$, *** $p < .001$; EO = error orientation, EOI = entrepreneurial opportunity identification.

Discussion

We explained why some individuals tend to pursue entrepreneurial opportunity identification behavior and make high-quality entrepreneurial decisions whereas others do not. We have contributed to the understanding of the effects of error orientation on entrepreneurial decision making through the mediation of opportunity identification behavior in the relationship between error orientation and entrepreneurial decision making.

Theoretical Implications

First, previous researchers have discussed differences in entrepreneurs. For example, the entrepreneur is stereotyped as an overconfident, optimistic, and alert person (Forbes, 2005). In this study, we tested another entrepreneurial trait, error orientation, and its effects on entrepreneurial opportunity identification behavior. As shown in Table 2, error communication, thinking about errors, error anticipation, and learning from errors contribute to opportunity identification behavior. Petkova (2009) indicated that learning from errors would correlate to obtainment of new skills and abilities, especially in an uncertain environment.

Previous researchers have stated that some entrepreneurs are more efficient than others in planning, searching for useful information to evaluate opportunity, and making decisions under different levels of uncertainty, by using effectual logic such as effectuation and causation with caution (Brettel, Bendig, Keller, Friederichsen, & Rosenberg, 2014). Error orientation as an effective factor to predict decision was empirically tested in this study. We also contend that error orientation is an important characteristic of entrepreneurs who make highly successful decisions as it helps them make accurate, timely decisions. Because entrepreneurs direct their attention toward what they want to accomplish, those with high error orientation will select the appropriate entrepreneurial information and make better decisions.

Second, our findings empirically support the mediating effects of opportunity identification behavior on the relationship between error orientation and entrepreneurial decision making. In this study we have extended the research in this area showing that opportunity identification behavior, not opportunity identification pattern/perception/recognition, is the key mediator between error orientation and decision making. Trevelyan (2008) stated that overconfidence is harmful when making decisions in response to setbacks. Error orientation benefits decision making because of the mediating effects of opportunity identification behavior rather than overconfidence.

According to Schumpeterian theory, entrepreneurial opportunity is created, not discovered (Schumpeter, 1934). In addition, other similar entrepreneurs' traits are imitated and the rational orientation trait plays an important role in creating opportunity (Maine et al., 2015; Schumpeter, 1934). Our findings empirically support this theory because we found that the rational trait of error orientation is the successful entrepreneurs' strength in promoting opportunity identification behavior for sound decisions. This is an important new discovery in entrepreneurial research. These findings further the understanding of how entrepreneurs think and act.

Finally, we refined entrepreneurial trait theory and opportunity identification theory. Making a good decision in the entrepreneurial process involves multiple factors. However, error orientation affects the decision-making dimensions in

different ways. To increase speed, identity, and accuracy of decisions and reduce regrettable experiences, entrepreneurs can minimize the uncertainty of decision making with opportunity identification behavior, which has the strongest predictive effect on the accuracy of the decision. This means that the more opportunity identification behavior evolves, the more confident and accurate entrepreneurs will be in decision making. It is not the opportunity identification (i.e., profitability and feasibility recognition) but practical opportunity behavior that generally impacts on and intensifies decisions (Miao, 2006).

Practical implications

Our results support not only the benefits of opportunity identification behavior but also the multiple roles of error orientation in decision making. First, as error orientation influences the accuracy of decision making through opportunity identification behavior, entrepreneurs are able to learn from past events and errors. With this adaptive ability, highly experienced, confident entrepreneurs can change their decision making using effectual logic (Baron, 2009). Error orientation also helps entrepreneurs make accurate decisions in an uncertain environment (Engel, Dimitrova, Khapova, & Elfring, 2014). Second, error orientation affects the speed of decision making through the mediating effect of opportunity identification behavior. Error orientation is a realistic orientation, leading an entrepreneur to evaluate possible factors that could lead to failure. This motivation directs entrepreneurs to employ opportunity identification behavior to check, reassess, and revise the situation and make a decision as quickly as possible. Third, error orientation has a partial impact on the degree of identity of decisions through opportunity identification behavior. Entrepreneurs confidently believe in their decisions.

The results of this study empirically support that an entrepreneur must play multiple roles to achieve entrepreneurial success. Therefore, skill training in error management and learning through opportunity identification behavior are important for entrepreneurs. Our results extend entrepreneurial and decision-making research from both a theoretical and practical perspective.

Limitations and Future Directions

Entrepreneurial opportunity identification behavior has not been widely studied in different cultures. Future studies are needed to measure opportunity identification behavior as a construct different from the opportunity. Sarasvathy, Dew, Velamuri, and Venkataraman (2003), indicated that an allocative, discovering, and creative opportunity represents the three processes of recognition, discovery, and creation. Our findings emphasize the creation process of opportunity. We proposed and tested its relationship with entrepreneurial results in a developing economy. Further research is needed in which the focus is on its evolution by

designing a longitudinal study. Although error orientation's effect on decision making has already been empirically established, future researchers should look at contingencies in the performance model. For different entrepreneurs, could individual distinctions be harmful or beneficial to entrepreneurial success?

As the data were collected only from the Chinese culture, whether this is a specific or global phenomenon needs to be explored. Is it similar or different in different backgrounds of entrepreneurs such as age, gender, ethnicity, firm type, culture and country? Entrepreneurs play a significant role in developing a sustainable competitive advantage. How to realize goals and refine the process for the decision making and performance of the entrepreneur and, consequently, the venture, needs to be evaluated in multiple backgrounds. In future studies, researchers could further explore and test the results of this paper.

References

- Ahlin, B., Drnovšek, M., & Hisrich, R. D. (2014). Entrepreneurs' creativity and firm innovation: The moderating role of entrepreneurial self-efficacy. *Small Business Economics*, *43*, 101–117. <http://doi.org/7pg>
- Arenas, A., Taberner, C., & Briones, E. (2006). Effects of goal orientation, error orientation and self-efficacy on performance in an uncertain situation. *Social Behavior and Personality: An international journal*, *34*, 569–586. <http://doi.org/ctsk72>
- Baron, R. A. (2009). Effectual versus predictive logics in entrepreneurial decision making: Differences between experts and novices: Does experience in starting new ventures change the way entrepreneurs think? Perhaps, but for now, "Caution" is essential. *Journal of Business Venturing*, *24*, 310–315. <http://doi.org/dsx85w>
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182. <http://doi.org/cwx>
- Bhave, M. P. (1994). A process model of entrepreneurial venture creation. *Journal of Business Venturing*, *9*, 223–242. <http://doi.org/btc6fk>
- Brettel, M., Bendig, D., Keller, M., Friederichsen, N., & Rosenberg, M. (2014). Effectuation in manufacturing: How entrepreneurial decision-making techniques can be used to deal with uncertainty in manufacturing. *Procedia CIRP*, *17*, 611–616. <http://doi.org/7nc>
- Chell, E. (2000). Towards researching the "opportunistic entrepreneur": A social constructionist approach and research agenda. *European Journal of Work and Organizational Psychology*, *9*, 63–80. <http://doi.org/bmqw8w>
- Chwolka, A., & Raith, M. G. (2012). The value of business planning before start-up — A decision-theoretical perspective. *Journal of Business Venturing*, *27*, 385–399. <http://doi.org/dgdb4j>
- Dai, L., Maksimov, V., Gilbert, B. A., & Fernhaber, S. A. (2014). Entrepreneurial orientation and international scope: The differential roles of innovativeness, proactiveness, and risk-taking. *Journal of Business Venturing*, *29*, 511–524. <http://doi.org/7m6>
- Davidsson, P. (2015). Entrepreneurial opportunities and the entrepreneurship nexus: A re-conceptualization. *Journal of Business Venturing*, *30*, 674–695. <http://doi.org/7nb>
- Engel, Y., Dimitrova, N. G., Khapova, S. N., & Elfring, T. (2014). Uncertain but able: Entrepreneurial self-efficacy and novices' use of expert decision-logic under uncertainty. *Journal of Business Venturing Insights*, *1–2*, 12–17. <http://doi.org/7nf>

- Forbes, D. P. (2005). Are some entrepreneurs more overconfident than others? *Journal of Business Venturing*, 20, 623–640. <http://doi.org/bmsnt7>
- Frese, M. (1991). Error management or error prevention: Two strategies to deal with errors in software design. In H.-J. Bullinger (Ed.), *Human aspects in computing: Design and use of interactive systems and work with terminals* (pp. 776–782). Amsterdam, The Netherlands: Elsevier.
- Frese, M. (2009). Towards a psychology of entrepreneurship: An action theory perspective. *Foundations and Trends in Entrepreneurship*, 5, 437–496. <http://doi.org/fbz3s7>
- González, M., & Husted, B. W. (2011). Gender, human capital, and opportunity identification in Mexico. *International Journal of Gender and Entrepreneurship*, 3, 236–253. <http://doi.org/chwqtm>
- Guo, W. W. (2008). *The effect of entrepreneurs' error orientation on performance in different cultures basing on action theory* [In Chinese] (Unpublished doctoral dissertation). Zhejiang University, China.
- Guo, W., & Zhao, X. (2010). Cross-cultural differences of entrepreneurs' error orientation: Comparing Chinese entrepreneurs and German entrepreneurs. *2010 International Forum on Information Technology and Applications*, 3, 198–201. <http://doi.org/fvfwfk>
- Hong, Z., & Wang, Z. (2000). Error at work: Conceptualization and management [In Chinese]. *Psychological Science*, 23, 542–546.
- Kirzner, I. M. (1999). Creativity and/or alertness: A reconsideration of the Schumpeterian entrepreneur. *The Review of Austrian Economics*, 11, 5–17. <http://doi.org/d35h6f>
- Li, T., & Gustafsson, V. (2012). Nascent entrepreneurs in China: Social class identity, prior experience affiliation and identification of innovative opportunity: A study based on the Chinese Panel Study of Entrepreneurial Dynamics (CPSED) project. *Chinese Management Studies*, 6, 14–35. <http://doi.org/7m5>
- Maine, E., Soh, P.-H., Dos Santos, N. (2015). The role of entrepreneurial decision-making in opportunity creation and recognition. *Technovation*, 39–40, 53–72. <http://doi.org/7nd>
- Mathieu, C., & St-Jean, E. (2013). Entrepreneurial personality: The role of narcissism. *Personality and Individual Differences*, 55, 527–531. <http://doi.org/7m8>
- McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 31, 132–152. <http://doi.org/cc8m3j>
- Miao, Q. (2006). Research on regulatory focus-based entrepreneurial opportunity recognition and decision-making mechanism [In Chinese]. *Chinese Journal of Applied Psychology*, 12, 232–238.
- Miao, Q., & Liu, L. (2010). A psychological model of entrepreneurial decision making. *Social Behavior and Personality: An international journal*, 38, 357–363. <http://doi.org/df7jvh>
- Miller, D. (1987). Strategy making and structure: Analysis and implications for performance. *Academy of Management Journal*, 30, 7–32. <http://doi.org/bc6qxm>
- Minniti, M., & Bygrave, W. (2001). A dynamic model of entrepreneurial learning. *Entrepreneurship: Theory and Practice*, 25, 5–16.
- Petkova, A. P. (2009). A theory of entrepreneurial learning from performance errors. *International Entrepreneurship and Management Journal*, 5, 345–367. <http://doi.org/ct97hf>
- Puhakka, V. (2006). Effects of social capital on the opportunity recognition process. *Journal of Enterprising Culture*, 14, 105–124. <http://doi.org/b9gj88>
- Rădulescu, E., Marian, L., & Moica, S. (2014). Innovations and opportunities for entrepreneurial rural developments. *Procedia Economics and Finance*, 15, 1495–1500. <http://doi.org/7m7>
- Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., ... Chin, N. (2005). Global Entrepreneurship Monitor: Data collection, design and implementation, 1998–2003. *Small Business Economics*, 24, 205–231. <http://doi.org/bvm4tb>
- Rybowiak, V., Garst, H., Frese, M., & Batinic, B. (1999). Error orientation questionnaire (EOQ): Reliability, validity, and different language equivalence. *Journal of Organizational Behavior*, 20, 527–547. <http://doi.org/bgzvvg>

- Sarasvathy, S. D., Dew, N., Velamuri, S. R., & Venkataraman, S. (2003). Three views of entrepreneurial opportunity. In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of entrepreneurship research: An interdisciplinary survey and introduction*. New York, NY: Springer. <http://doi.org/bmhm39>
- Schumpeter, J. A. (1934). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle*. London, UK: Oxford University Press.
- Suddaby, R., Bruton, G. D., & Si, S. X. (2015). Entrepreneurship through a qualitative lens: Insights on the construction and/or discovery of entrepreneurial opportunity. *Journal of Business Venturing*, 30, 1–10. <http://doi.org/7m9>
- Tang, J., Kacmar, K., & Busenitz, L. (2012). Entrepreneurial alertness in the pursuit of new opportunities. *Journal of Business Venturing*, 27, 77–94. <http://doi.org/chnc37>
- Trevelyan, R. (2008). Optimism, overconfidence and entrepreneurial activity. *Management Decision*, 46, 986–1001. <http://doi.org/c54fsj>
- Uy, M. A., Chan, K.-Y., Sam, Y. L., Ho, M. R., & Chernyshenko, O. S. (2015). Proactivity, adaptability and boundaryless career attitudes: The mediating role of entrepreneurial alertness. *Journal of Vocational Behavior*, 86, 115–123. <http://doi.org/7m4>
- Valliere, D. (2013). Towards a schematic theory of entrepreneurial alertness. *Journal of Business Venturing*, 28, 430–442. <http://doi.org/dcsz7h>
- Wu, R. J. (2014). *A study on the error management climate and employee innovation behavior* [In Chinese] (Unpublished doctoral dissertation). Southwestern University of Finance and Economics, China.
- Xie, G. H., & Wang, G. S. (2010). *The effects of social capital have on entrepreneurial identification behavior* [In Chinese] (Unpublished master's thesis). Central South University, China.
- Zietsma, C. (1999). Opportunity knocks—or does it hide? An examination of the role of opportunity recognition in entrepreneurship. *Frontiers of Entrepreneurship*, 1, 242–256.