Journal of Management
Vol. 41 No. 1, January 2015 11–46
DOI: 10.1177/0149206314541153

Thinking About Entrepreneurial Decision Making: Review and Research Agenda

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Judgment and decision-making research has a long tradition in management and represents a substantial stream of research in entrepreneurship. Despite numerous reviews of this topic in the organizational behavior, psychology, and marketing fields, this is the first review in the field of entrepreneurship. This absence of a review of entrepreneurial decision making is surprising given the extreme decision-making context faced by many entrepreneurs—such as high uncertainty, time pressure, emotionally charged, and consequential extremes—and the large number of studies in the literature (e.g., 602 articles in our initial screen and 156 articles in a refined search). In this review, we (1) inductively categorize the articles into decision-making topics arranged along the primary activities associated with entrepreneurship—opportunity assessment decisions, entrepreneurial entry decisions, decisions about exploiting opportunities, entrepreneurial exit decisions, heuristics and biases in the decision-making context, characteristics of the entrepreneurial decision maker, and environment as decision context; (2) analyze each context using a general decision-making framework; (3) review and integrate studies within and across decision-making activities; and (4) offer a comprehensive agenda for future research. We believe (hope) that this proposed review, integration, and research agenda will make a valuable contribution to management scholars interested in decision making and/or entrepreneurship.

Keywords: *entrepreneurship; decisions under risk/uncertainty; literature review*

Acknowledgments: We appreciate the helpful comments of the editor (Steve Michael) and two anonymous reviewers.

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Introduction

Judgment and decision making are well-established topics of interest in many fields, including management, psychology, sociology, and political science, to name a few (Gilovich & Griffin, 2010; Hastie, 2001). As Hilbert so adequately explained, "Who of us would not be glad to lift the veil behind which the future lies hidden and direct our thoughts towards the unknown future?" (1900: 437). In particular, research that is relevant to the above fields has focused on understanding how individuals make decisions under conditions of uncertainty (Hammond, 1996; Hastie; Tversky & Kahneman, 1974). Given the emphasis on making accurate decisions under uncertain conditions, it comes as no surprise that this topic is of great interest to entrepreneurship researchers who study how, when, where, and by whom opportunities to bring future goods and services into existence are discovered, evaluated, and exploited under uncertainty (Shane & Venkataraman, 2000). Entrepreneurship scholars have been particularly interested in how entrepreneurs think differently from nonentrepreneurs (e.g., Busenitz & Barney, 1997; R. K. Mitchell, 1994; R. K. Mitchell, Busenitz, Lant, McDougall, Morse, & Smith, 2002) and from other entrepreneurs (e.g., Baron, 2004, 2006; R. K. Mitchell et al., 2007) and how the entrepreneurial context of high uncertainty, ambiguity, time pressure, emotional intensity, and/or high risk affects decision making (e.g., Baron, 2008; Busenitz & Barney; Mullins & Forlani, 2005). In addition, entrepreneurship scholars explore how organizing *within* firms or institutions affects individuals' decisions about the desirability and feasibility of exploiting specific entrepreneurial ideas (e.g., Wiklund & Shepherd, 2008).

While advances in research on entrepreneurial decision making are laudable, we fear it has become highly fragmented. This fragmentation makes it difficult to take stock of what we currently understand about entrepreneurial decision making (i.e., where we have been), which limits our ability to explain how it relates to (e.g., encompasses, evolves from, predicts) other relevant constructs. Similarly, fragmentation in entrepreneurship decision-making research makes it difficult to identify future research opportunities (i.e., where we should go) to better understand when, why, where, and how individuals make key decisions in the entrepreneurial process (i.e., opportunity assessment decisions, entrepreneurial entry decisions, decisions about exploiting opportunities, entrepreneurial exit decisions, heuristics and biases in the decision-making context, characteristics of the entrepreneurial decision maker, and the environment as decision context). In this article, we provide an extensive review of the literature to capture and represent the impressive body of work on entrepreneurial decision making. In so doing, we "question our accumulated wisdom and push ourselves to build an even more rigorous research program" (J. P. Walsh, 1995: 302) on the important topic of entrepreneurial decision making by offering a research agenda.

Method

Following Grégoire, Corbett, and McMullen (2011), we used criterion sampling (Patton, 1990) based on keyword searches in general management journals publishing work related to entrepreneurship and corporate entrepreneurship as well as topics on judgment and decision making. These journals include *Academy of Management Journal, Academy of Management Review, Administrative Science Quarterly, Journal of Management, Journal of Management Studies, Management Science, Organization Science*, and *Strategic Management Journal* as well as entrepreneurship-specific journals, such as *Entrepreneurship Theory and*

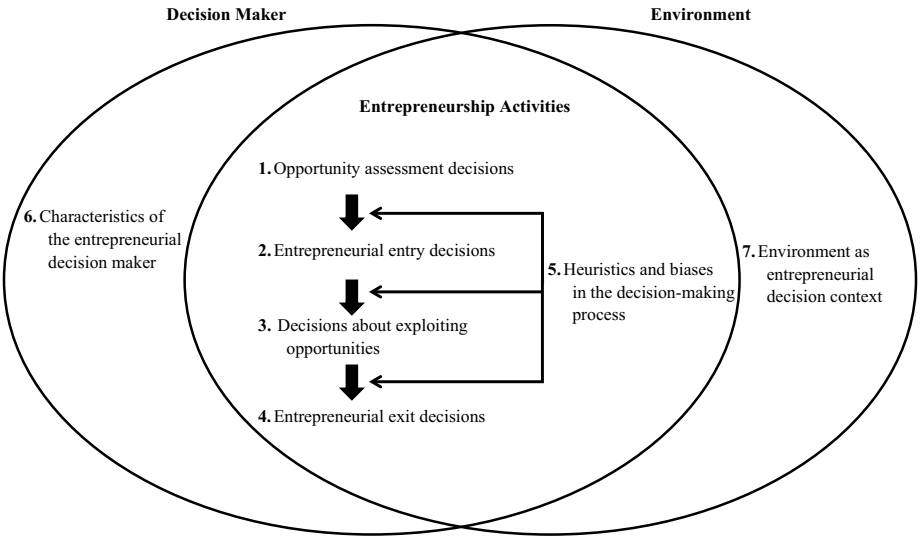
Practice, Journal of Business Venturing, Journal of Small Business Management, and *Strategic Entrepreneurship Journal*. To provide an initial inventory of articles on entrepreneurial decision making, we searched for articles that included our list of keywords in their title, abstract, or keywords. In developing keywords for "entrepreneurial," we followed Grégoire and colleagues but with three substantive exceptions. First, we did not include the term "small business" because while some small businesses are entrepreneurial, others are not; small business is not a defining characteristic of what is entrepreneurial (Guth & Ginsberg, 1990; Shane & Venkataraman, 2000). Second, we included the word "opportunity" because opportunity is argued to be central to entrepreneurship. For instance, Shane and Venkataraman define the field of entrepreneurship as the "scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited" (218). Third, we included the word "founder" as entrepreneurship is often affiliated with the founding or creation of a new venture (de novo, de alio, etc.), which plays an important role in the entrepreneurial process (Gartner, 1985; Katz & Gartner, 1988). We built the list of keywords to capture "decision making" on the basis of Hastie's definition of constructs central to the process: decision making as the "entire process of choosing a course of action;" judgment as "the components of the larger decision-making process that are concerned with assessing, estimating, and inferring what events will occur and what the decision makers' evaluative reactions to those outcomes will be"; and preferences as "behavioral expression of choosing (or intentions to choose) one course of action over others" (2001: 657). On the basis of the above, we searched the journal databases listed earlier for articles containing *any of the words* entrepreneur(s), entrepreneurism, entrepreneurial, entrepreneurship (entrepreneu*), founder(s) (founder*), or opportunity(ies) AND *any of the words* decision(s), decision making (decision*), inference*, preference*, or judgment (judg*). This search generated 602 articles.

We further refined this list by excluding articles that (1) were primarily a review and/or research agenda article, (2) were primarily a research methods article, (3) were not at the individual (as the decision maker) level of analysis, (4) did not investigate the entrepreneur as the individual making the decision, (5) did not focus on decision making as the article's purpose, and (6) did not focus on the "opportunity" as an entrepreneurial opportunity. In total, 446 articles were excluded. The remaining 156 articles were inductively categorized into decision-making topics arranged along the primary activities associated with entrepreneurship (see Figure 1): (1) opportunity assessment decisions, (2) entrepreneurial entry decisions, (3) decisions about exploiting opportunities, (4) entrepreneurial exit decisions, (5) heuristics and biases in the decision-making context, (6) characteristics of the entrepreneurial decision maker, and (7) environment as decision context. This arrangement of the topics into a "map" facilitates our exploration of the various decisions entrepreneurs make, as well as how those decisions fit in the broader context of entrepreneurial decision making. Table 1 lists the articles included in the review and their primary categorization. In the sections that follow, we highlight themes within each of the topics and provide recommendations for subsequent research.

Opportunity Assessment Decisions

Opportunity is at the core of entrepreneurship, so understanding how entrepreneurs arrive at decisions relating to opportunity recognition, evaluation, and exploitation is critical to

Figure 1
Map of Entrepreneurial Decision-Making Research



advancing our knowledge of the field as a whole (Shane, 2003; Shane & Venkataraman, 2000). A variety of factors influence opportunity decisions.

First, *entrepreneurs are heterogeneous in their human capital, and these differences affect decisions related to entrepreneurial opportunity.* Human capital includes an individual's formal education, training, employment experience, background, and skills, all of which are critical resources for entrepreneurs (Davidsson & Honig, 2003; Florin, Lubatkin, & Schulze, 2003) that influence entrepreneurial outcomes. More specifically, human capital can influence decisions related to opportunity recognition and assessment. For example, Westhead, Ucbasaran, and Wright (2005) explored differences between novice, serial, and portfolio entrepreneurs and found a variety of differences related to opportunities, including differences in information sources (for discovery and evaluation), opportunity identification activities, aspirations to establish a business, and the quantity of opportunities identified. Similarly, Haynie, Shepherd, and McMullen (2009) proposed that opportunity evaluation policies are constructed as future-oriented cognitive representations of "what will be," assuming one were to exploit the opportunity under evaluation. They found that entrepreneurs assess opportunities as more attractive when the opportunity is highly inimitable and when it is related to the entrepreneur's human capital. The entrepreneur is more likely to invest in an opportunity when that opportunity has greater potential value, is highly related to the entrepreneur's knowledge, competes with relatively few alternate opportunities, and has a wide time window for exploitation, but this decision policy varies depending on the entrepreneur's fear of failure and entrepreneurial self-efficacy (J. R. Mitchell & Shepherd, 2010). Furthermore, Choi and Shepherd (2004) found that the assessment of an opportunity is

Table 1
Articles Included in Review

Decision context	Articles				
1. Opportunity assessment decisions	Casson & Wadeson, 2007 Choi & Shepherd, 2004 De Carolis & Saparito, 2006	Dewald & Bowen, 2010 Foo, 2011 Haynie et al., 2009	Hayton & Cholakova, 2012 Hsieh et al., 2007 Lee & Venkataraman, 2006	McKelvie et al., 2011 J. R. Mitchell & Shepherd, 2010 Welpe et al., 2012	Westhead et al., 2005
2. Entrepreneurial entry decisions	Amit et al., 1995 Amit et al., 2001 Bates, 1995 Birley & Westhead, 1994 Brush et al., 2008 Burmeister-Lamp et al., 2012	Campbell et al., 2012 Carnahan et al., 2012 Dew et al., 2009 Douglas & Shepherd, 2000 Elfenbein et al., 2010 Fauchart & Gruber, 2011	Gatewood et al., 1995 Gohmann, 2012 Grünhagen & Mittelstaedt, 2005 Jackson, 2010 Krueger et al., 2000	Lévesque et al., 2002 Lévesque & Minniti, 2006 Lévesque & Schade, 2005 R. K. Mitchell et al., 2000 Patel & Fiet, 2009 Podoynitsyna et al., 2012	Román et al., 2013 Townsend et al., 2010 Townsend & Hart, 2008 Zellweger et al., 2011
3. Decisions about exploiting opportunities	Alvarez & Parker, 2009 Brazeal, 1993 Bryant, 2009 Cable & Shane, 1997 Chandler & Hanks, 1998 Chwolka & Raith, 2012 Delmar & Shane, 2003	Ding et al., 2010 Eckhardt et al., 2006 Gruber, 2007 Heavey et al., 2009 Honig & Samuelsson, 2012 Kaufmann & Dant, 1996 Kistruck et al., 2013	Kogut et al., 2002 Koropp et al., 2013 Latham & Braun, 2009 Longenecker et al., 2006 McVea, 2009 Monsen et al., 2010 Patzelt et al., 2008	Poppo, 2003 Romano et al., 2001 Rutherford et al., 2009 Scherpereel, 2008 Schwienbacher, 2007 Seghers et al., 2012 Shane, 1994	Wiklund & Shepherd, 2008 Wright et al., 2000 Zander, 2007 Zubac et al., 2012
4. Entrepreneurial exit decisions	Bates, 2005 Brigham et al., 2007 Collewaert, 2012	Corbett et al., 2007 DeTienne et al., 2008 Garud & Van de Ven, 1992	R. K. Mitchell et al., 2008 Sharma & Manikutty, 2005 Shepherd et al., 2009	Wennberg et al., 2010	
5. Heuristics and biases in the decision-making process	Alvarez & Busenitz, 2001 Burmeister & Schade, 2007 Busenitz & Barney, 1997 Cassar, 2010 Cassar & Craig, 2009	Deligonul et al., 2008 Dushnitsky, 2010 Fern et al., 2012 Forbes, 2005a Hayward et al., 2006	Hayward et al., 2010 Hmieleski & Baron, 2008 Hmieleski & Baron, 2009 Hogarth & Karelaia, 2012 Holcomb et al., 2009	Lowe & Ziedonis, 2006 Manimala, 1992 McCarthy et al., 1993 Moore et al., 2007 Parker, 2006	Parker, 2009 Shepherd et al., 2012 Simon et al., 2000 Simon & Shrader, 2012 Wu & Knott, 2006
6. Characteristics of the entrepreneurial decision maker	Anna et al., 2000 Baron, 2008 Bluedorn & Martin, 2008 Blume & Covin, 2011 Cassar, 2006 Cassar & Friedman, 2009 Cliff, 1998 Dew et al., 2009	Eddleston et al., 2008 Eddlestone & Powell, 2008 Fagenson, 1993 Forbes, 2005b Forlani & Mullins, 2000 Groves et al., 2011 Haynie et al., 2012 Kisfalvi, 2002	Kolvereid, 1992 Langowitz & Minniti, 2007 J. R. Mitchell et al., 2005 J. R. Mitchell et al., 2011 J. R. Mitchell & Shepherd, 2012 Morris et al., 2006 Mullins & Forlani, 2005 Palich & Bagby, 1995	Powell et al., 2010 Ray, 1994 Shabbir & Di Gregorio, 1996 Simsek et al., 2010 Smith et al., 1988 Sonfield et al., 2001 Stewart et al., 2003 Tan, 2001	Teoh & Foo, 1997 Tiessen, 1997 Vincent, 1996 J. S. Walsh & Anderson, 1995 Wright et al., 2008

(continued)

Table 1 (continued)

Decision context	Articles			
7. Environment as entrepreneurial decision context	Bamford et al., 2000 Dahl & Sorenson, 2012 Dorado & Ventresca, 2013	George et al., 2006 Holt, 1997 Lévesque et al., 2009	Lévesque & Shepherd, 2004 Lim et al., 2010 Lu & Tao, 2010	Mullins, 1996 Van Auken et al., 2009 Van Horn & Harvey, 1998

positively associated with perceived knowledge of customer demand and the capability of the management team, and Casson and Wadeson (2007) similarly argued that rational, market-focused business skills, particularly in market sectors (i.e., a practical approach to translate vision into a stepwise plan within a specified market space), will be positively related to the positive evaluation of an opportunity.

Second, *entrepreneurs are heterogeneous in how they respond emotionally to entrepreneurial opportunities,* and these differences affect decisions related to entrepreneurial opportunity. Emotions can reveal information that can influence assessments of opportunity. For example, fear reduces the assessed attractiveness of acting on an opportunity, whereas joy and anger increase the assessed attractiveness of acting on an opportunity (Welpe, Spörrle, Grichnik, Michl, & Audretsch, 2012). Similarly, Foo found that when making decisions, individuals are influenced by their affective state, including both "moods and emotions" (2011: 376), and perceive greater risk when induced by emotions such as fear or hope than when they are induced by anger or happiness. Foo also found that individuals with trait anger or trait happiness prefer a higher-value but uncertain outcome compared to those lower in these traits. Indeed, Hayton and Cholakova have proposed that positive affective states, which include "emotions and moods" (2012: 42), increase the probability of perceiving opportunities, the function of working memory (to store and more readily retrieve opportunity-relevant information), and the probability that information will be combined in an innovative way to produce an entrepreneurial idea.

Finally, *entrepreneurs are heterogeneous in how they perceive environmental conditions, including uncertainty and market conditions, and these differences affect decisions related to entrepreneurial opportunity*. The decision to engage in entrepreneurial activity is influenced by perceptions of the environment. McKelvie, Haynie, and Gustavsson (2011) analyzed more than 2,800 opportunity assessments, focusing primarily on a decision maker's willingness to act on an opportunity in the face of various manifestations of environmental uncertainty. They found that increases in uncertainty, the rate of technological change, and the predictability of the impact of technological change decrease an entrepreneur's willingness to act on an opportunity. Similarly, they found that entrepreneurs are less willing to act when there is lower predictability of the impact of demand change, the likelihood of sustaining innovation, and the likelihood of achieving a lead time over competitors. Along the same lines, Dewald and Bowen (2010) found a relationship between perceptions of the environment, opportunities, and decisions regarding innovations to address opportunities and environmental challenges. They found that perceived environmental threats reduce the likelihood of an entrepreneur choosing a disruptive technology model, whereas perceptions of

opportunity increase the likelihood of choosing a disruptive technology. They also found that these relationships are moderated by positive experiences with risk and perceptions of urgency. Additional research has explored how entrepreneurs vary in decisions relating to opportunity on the basis of individual factors (e.g., cognition and aspirations) *combined* with external factors (e.g., social network, valuation of the market). For example, a variety of network factors (e.g., structural holes in the network, trust in the network) appear to influence perceptions of risk, illusions of control, confidence, and ultimately the decision to exploit entrepreneurial opportunities (De Carolis & Saparito, 2006). Moreover, individuals are more likely to pursue entrepreneurial opportunities when they perceive that their aspirations exceed market offerings in nonentrepreneur careers (and when they possess nonspecific human capital, general skills and qualities, and an extensive social network; Lee & Venkataraman, 2006).

Research Opportunities

First, while we have gained an increased understanding of how entrepreneurs evaluate opportunities and make opportunity-related decisions, previous work has predominantly taken a static perspective that largely ignores the possibility that entrepreneurs' opportunity-related decision policies can change over time. Therefore, *future contributions are likely to come from research that explores the role of time in decisions related to entrepreneurial opportunity*. Studies have shown that novice entrepreneurs' opportunity-related evaluations and decisions differ from those of experienced entrepreneurs; however, we know very little about how evaluations and decisions *within individuals change over time*. For example, as entrepreneurs learn and build up human capital and/or entrepreneurial self-efficacy during the firm-founding process, how does this change their opportunity-related evaluations and decisions? Work on effectual decision making (Sarasvathy, 2001) proposes that entrepreneurs shape opportunities according to their own knowledge and resources, suggesting that there is a mutual relationship between changes in entrepreneurs' knowledge and resources and changes in their assessment of an opportunity and opportunity-related decisions. Therefore, future longitudinal studies that follow *changes* in entrepreneurs' opportunity-related evaluations and decisions over time can enhance our understanding of entrepreneurial learning and entrepreneurs' cognitive processes.

Second, since previous studies have predominantly focused on the economic aspects related to opportunity decisions, *future contributions are likely to come from research that explores the role of noneconomic considerations in decisions related to entrepreneurial opportunity.* Work on social and environmental entrepreneurship suggests that many entrepreneurs are driven by noneconomic motivations, but research has not sufficiently explored how economic and noneconomic (e.g., social and environmental) considerations—and potential trade-offs between the two—affect opportunity-related decisions. For example, in their opportunity assessments, are entrepreneurs willing to accept more economic risk if the opportunity's potential (positive) social or environmental impact increases? Furthermore, what aspects of human capital influence entrepreneurs' decisions related to environmentally and socially impactful opportunities, and how do entrepreneurs' personal situation (e.g., being threatened by a deteriorating natural environment; Patzelt & Shepherd, 2011) and their underlying motivation (e.g., prosocial motivation; Grant, 2007) affect decisions related to noneconomic opportunities?

Finally, although some research has described users (i.e., entrepreneurs who commercialize a product, where the entrepreneur is a user of that product) as an important source of entrepreneurship (Shah & Tripsas, 2007, 2012), more research is needed on this phenomenon. Therefore, *future contributions are likely to come from investigating users' decisions related to entrepreneurial opportunity.* How do these "user entrepreneurs" (Shah & Tripsas, 2007: 123) recognize, evaluate, and decide to exploit an entrepreneurial opportunity based on an initial invention for their own use? What is the role of the user entrepreneur's human and social capital (e.g., knowledge of and involvement in user communities, knowledge of and contact to markets) in this process? When do users decide to make their ideas available to others and then decide to generate economic income (alone or together with others from the user community), and what triggers them to do so? How does this process depend on the nature of the opportunity and the user community? For example, do users who made an invention to address their own medical problem more readily decide to share their idea with other patients compared to users who made an invention with less of a social impact? Do those with medical inventions differ in their opportunity decisions from others? For instance, do they emphasize their own economic gain less and the benefits for others who suffer more?

Entrepreneurial Entry Decisions

Individuals are heterogeneous in both their beliefs and desires, and these differences help explain why some decide to become entrepreneurs and why others choose managerial or other work-related roles. Despite the common assumption that individuals are motivated to create new ventures on the basis of the promise of personal wealth, the decision to pursue an entrepreneurial career is influenced by a number of factors (Amit, MacCrimmon, Zietsma, & Oesch, 2001).

First, *individuals are heterogeneous in their aspirations and attitudes, and these differences help explain the choice to pursue an entrepreneurial career.* For example, in their analysis of 405 principal owner-managers' reasons for starting their business, Birley and Westhead (1994) found that these individuals were motivated to start their own business to satisfy their needs for approval, independence, and personal development as well as for welfare consideration, perceived instrumentality of wealth, tax reduction, and indirect benefits and to follow role models. In addition, an individual's attitudes toward loss influence the decision to become an entrepreneur, which is not surprising given the high uncertainty (Knight, 1921) and risks (Douglas & Shepherd, 2000) associated with pursuing an entrepreneurial career. It appears that individuals who think about uncertainty and risk in terms of an affordable loss (i.e., they pursue opportunities without investing more resources than stakeholders can afford to lose, thereby limiting downside potential) and those who have a *larger* affordable loss are more likely to decide to pursue an entrepreneurial career (Dew, Read, Sarasvathy, & Wiltbank, 2009).

Second, *individuals are heterogeneous in their abilities, and these differences help explain the choice to pursue an entrepreneurial career.* For example, scientists and engineers from small firms are more likely to choose an entrepreneurial career than those from larger firms (the "small firm" effect) on the basis of both preference sorting (e.g., on attitudes for autonomy, consistent with the previous subsection) and ability sorting (e.g., on "jack-of-all-trades" human capital; Elfenbein, Hamilton, & Zenger, 2010). Although the greater an individual's

ability, the more likely he or she will be successful in an entrepreneurial career, it does not necessarily follow that high-ability individuals will choose a career as an entrepreneur or that low-ability individuals will remain in traditional employment. Indeed, individuals with entrepreneurial abilities (and for that matter, attitudes about risk, work, and independence) are also likely to be highly valued by employers and may be offered sufficient financial incentives to remain an employee (Bates, 1995; Douglas & Shepherd, 2000). Furthermore, employees with higher earnings are less likely to make the decision to leave their current employer. However, if they do decide to leave, they are more likely to create a new venture than those with lower earnings who leave their current employer (Campbell, Ganco, Franco, & Agarwal, 2012). These studies suggest that to understand the nature of the relationship between ability and the decision to pursue an entrepreneurial career, we must consider the individual's opportunity cost, to which we now turn.

Third, *individuals are heterogeneous in their opportunity costs, and these differences help explain the choice to pursue an entrepreneurial career.* An opportunity cost refers to "the evaluation placed on the most highly valued of the rejected alternatives or opportunities" (Eatwell, Milgate, & Newman, 1989: 719). As alluded to in the previous subsection, the notion of opportunity cost helps explain how high-ability individuals may be drawn to an entrepreneurial career but nevertheless choose to remain in employment because their salary is likely higher in the short run than their expected payoff from an entrepreneurial career. In addition and on the flip side, opportunity cost helps explain how low-ability individuals pursue an entrepreneurial career because the costs of them leaving employment are low given their initially low salary (Amit, Muller, & Cockburn, 1995). Indeed, high-performing employees are more likely to stay with their current employer (rather than create a new venture) when the employer has considerable pay-for-performance dispersion (relative to competitors) presumably because the opportunity costs of pursuing an entrepreneurial career are even higher for the high-performing employee under a strong pay-for-performance structure (Carnahan, Agarwal, & Campbell, 2012).

Fourth, *individuals' attitudes/aspirations, abilities, and/or opportunity costs can change over time, which helps explain an individual's choice of whether and how to pursue an entrepreneurial career.* First, the importance of an individual's criteria for the entrepreneurial career decision and/or the level of those criteria may change over time. For example, as individuals age, there are often accompanying changes in their personal wealth (Lévesque & Minniti, 2006) and attitudes toward independence, work effort, and risk (Lévesque, Shepherd, & Douglas, 2002), which likely influence their entrepreneurial career decision. Second, although most research focuses on the decision to transition from employment to self-employment, career-related transitions can involve the transition from unemployment to self-employment (for a description of the individuals most likely to make this transition, see Román, Congregado, & Millán, 2013). Finally, the career decision may not be an "either/or" type of decision but may involve *both* an entrepreneurial career and traditional employment, with individuals deciding how to allocate time both between a newly formed venture and a wage job (Burmeister-Lamp, Lévesque, & Schade, 2012; Lévesque & Schade, 2005) and between work and leisure activities (Lévesque & Minniti; Lévesque & Schade).

Fifth, *entrepreneurs are heterogeneous in their motivation, and these differences affect the decision to create an entrepreneurial venture.* A variety of motivating factors influence the decision to initiate an entrepreneurial venture, including both de novo organizations (Birley & Westhead, 1994) and new (or additional) franchises (Grünhagen & Mittelstaedt, 2005).

This idea is consistent with Amit and colleagues' (2001) finding that while entrepreneurs are generally more optimistic about the probability of success, personal wealth creation is not the primary motivator for their decision to initiate a venture. Rather, other motives, such as (1) innovation, (2) vision, (3) independence, and (4) challenge, are more important for entrepreneurs. Therefore, while wealth attainment does factor into the decision to initiate a venture (Birley & Westhead), it is not necessarily the primary factor in the decision-making process.

Sixth, *entrepreneurs are heterogeneous in their self-perception, which affects the decision to create an entrepreneurial venture.* Studies on entrepreneurial self-perception include perceived identity (Fauchart & Gruber, 2011) and ability levels (Gatewood, Shaver, & Gartner, 1995; Townsend, Busenitz, & Arthurs, 2010), such as the ability to manage risk (Podoynitsyna, Van der Bij, & Song, 2012), which can influence the decision to create a new venture. Founding a new venture is an act "infused with meaning" as it is "an expression of an individual's identity, or self-concept" (Fauchart & Gruber, 2011: 935). For this reason, an individual's perceived social identity can influence his or her decision to create a venture, which becomes *an extension* of this identity. Along these lines, Fauchart and Gruber proposed three types of founder identities—Darwinian (focused on the firm's financial success), Communitarian (focused on contributing to customer communities), or Missionary (focused on the firm as an agent for change). These identities generate different approaches to entrepreneurial decisions, including decisions regarding what market segments to serve, customer needs to address, and capabilities and/or resources to deploy. In addition to identity self-perceptions, entrepreneurs are heterogeneous in their perceptions of their abilities. For example, the decision to create a new venture is positively influenced by (1) individuals' anticipated ability to achieve desired results through the venture (Townsend et al.), (2) individuals' perceptions of their business-planning ability (Gatewood et al.), and (3) individuals' perceptions of their personal "fit" with an entrepreneurial career (Gatewood et al.).

Seventh, *entrepreneurs are heterogeneous in their use of decision-making techniques or "tools," and these differences have an impact on the decision to create a new venture.* Several studies have explored the relationship between decision-making techniques or tools, for example, systematic search (Patel & Fiet, 2009) and cognitive scripts (R. K. Mitchell, Smith, Seawright, & Morse, 2000), and the decision to create a new venture. Specifically, the decision to create a new venture is positively influenced by (1) the direct use of systematic search—namely, active scanning of known information sources (Patel & Fiet, 2009: 503); (2) the indirect use of systematic search by the entrepreneur relying on individuals within his or her network for information and resources (Patel & Fiet); (3) the use of an adaptive decision-making style (Patel & Fiet); and (4) the presence and use of different venture-related scripts (R. K. Mitchell et al.). Similarly, some entrepreneurs form the intention to start a business long before they scan for opportunities. Individuals who formulate entrepreneurial intentions by assessing an opportunity in terms of personal attractiveness (i.e., how attractive is this for me), social norms, feasibility, and propensity to act are more likely to decide to create a new venture (Krueger, Reilly, & Carsrud, 2000).

Finally, *entrepreneurs are heterogeneous in their perception of external environmental factors, which influences the decision to create a new venture.* For example, Jackson (2010) found that potential entrepreneurs often abandon entrepreneurial plans when they perceive institutional costs (e.g., health-care mandates) as too threatening, leading to a decrease in firm foundations. Brush, Edelman, and Manolova (2008) theorized and found that the

decision to create a new venture is influenced by the entrepreneur's market focus (i.e., on home- or away-based markets). Specifically, Brush and colleagues found that entrepreneurs who establish home-based businesses are more likely to create a venture (i.e., achieve first sale) and that the entrepreneur's aspirations predict greater levels of resources. Similarly, Townsend and Hart (2008) found that individuals' perception of institutional ambiguity leads to variance in decisions to create new ventures as well as the form of those ventures (e.g., social ventures, for-profit ventures). Specifically, they theorized that the entrepreneur's perception of the institution would influence (1) perceived commitment from external stakeholders, (2) perceived ability to procure "for-profit" versus "nonprofit" resources, (3) perceived informal legitimacy, (4) and perceived formal legitimacy, all of which influence the decision to create a new venture as well as the form of that venture.

Research Opportunities

First, future contributions are likely to come from research exploring the impact of the decision to pursue an entrepreneurial career (or the decision-making process itself) on the attitudes, aspirations, and abilities of the decision maker. For example, the decision-making process related to exploring the possibilities of an entrepreneurial career potentially helps "clarify" individuals' attitudes and aspirations, and perhaps acting on the decision reveals new information that leads to changes in attitudes and aspirations (i.e., refinement or radical changes). Moreover, the abilities an individual develops as a consequence of his or her decision to pursue an entrepreneurial career may increase the array of entrepreneurial alternatives for subsequent career-related decisions. Furthermore, future contributions are likely to come from research investigating the sequences of career decisions (including decisions to pursue an entrepreneurial career) over an extended period. Although we often view an entrepreneurial career as a "destination," future research can make important contributions if it explores when this is not the case. For instance, in a number of developing economies, the decision to enter an entrepreneurial career is only the first step in a more elaborate decision to pursue employment. In addition, future research can explore opportunity costs in the context of a series of career decisions rather than as a one-time decision. Most likely there is heterogeneity in the time horizon of individuals' career decisions (and in the calculation of opportunity cost), and future research can work to explain this heterogeneity.

Second, although existing studies have identified a number of factors that motivate the decision to start a new venture and the sequence of decisions in pursuing an entrepreneurial career, *future contributions are likely to come from research that acknowledges that motivations can change over time, which will affect decisions to create a new venture.* For example, some individuals are nascent entrepreneurs for quite some time and engage in a variety of activities to prepare for starting their venture but ultimately decide against doing so in the end. How and why do different motivational factors related to the decision to create a new venture change over the nascence period? As nascent entrepreneurs acquire knowledge about the different tasks associated with founding and running their venture, their perceptions of their abilities are likely to change. These changes might influence their overall motivation to continue or abandon a nascent venture. Moreover, in deciding whether to create a venture, can perceptions of enhanced ability for some tasks (e.g., finding customers) compensate for perceptions of decreased ability for another task (e.g., finding investors)? Furthermore, whereas motivations, self-perceptions, the use of decision-making tools, and environmental

factors are known to have an impact on the venture-creation decision, *future contributions are likely to come from research that explores the relationships between them.* Since the amount and nature of information received about a business idea depends on environmental characteristics, perhaps an adaptive decision-making style is more strongly related to the decision to start a venture in dynamic and complex environments, while systematic search is more influential in stable environments. Moreover, motivation directs attention to certain aspects of available information (Ocasio, 1997). How do nascent entrepreneurs' different motivations (e.g., economic, prosocial, autonomy, intrinsic) affect their attention to and interpretation of information in venture-creation decisions? Furthermore, failure is frequent among entrepreneurs and is known to stimulate both sense making and negative emotions, both of which influence motivation and decision making. This begs the question of how previous failures change entrepreneurs' self-perceptions, perceptions of the environment, and use of decision-making tools when choosing to create a new venture.

Finally, while existing studies have characterized some entrepreneurs as "visionary" and vision informs the decision to create a new venture, little systematic research is available on this topic. Therefore, *future contributions are likely to come from research that explores the role of entrepreneurial vision in the decision to create a new venture.* A vision is the projected mental image of the product(s), service(s), and organization a business leader wants to achieve (Bennis & Nanus, 1985). One study found that vision attributes and vision content directly and indirectly affect venture growth through verbal and written communication with employees (Baum, Locke, & Kirkpatrick, 1998). How does the nature of an entrepreneurial vision influence the decision to start a venture? Perhaps there are important indirect effects, including communicating the vision to stakeholders, whose feedback in turn influences the entrepreneur's venture-creation decision.

Decisions About Exploiting Opportunities

Individuals are heterogeneous in their beliefs about entrepreneurial opportunities, specifically in terms of how an opportunity might affect people or existing organizations (financially, socially, and/or environmentally). Various factors, including individual knowledge and experience, available modes of entry, processes that inform beliefs, and external influences, are perceived and incorporated differently by individuals, which in turn affects decision outcomes. First, *individuals are heterogeneous in the extent to which their entrepreneurial decision making is planned, but the benefits of this planning are still contested.* Although Honig and Samuelsson (2012) found little evidence for the role of planning decisions on venture-level performance for 623 nascent entrepreneurs over a 6-year period, it is proposed that planning helps entrepreneurs evaluate alternative courses of actions (e.g., to pursue or terminate an idea) and adapt strategies (Chwolka & Raith, 2012). Indeed, Delmar and Shane (2003) found that by engaging in business planning, entrepreneurs reduced the likelihood of their venture disbanding and increased the likelihood of product-development and organizational-formation activities. It appears that the impact of planning decisions on new venture formation and performance depends on the baseline probability of failure (i.e., a good plan does not help in a situation in which failure is imminent) and the quality of the planning (Chwolka & Raith). In this context, the "quality" of planning includes relying on secondary information sources, acknowledging customer relationships, detailing the marketing mix,

and investing time in the planning process (particularly in low-dynamism environments; Gruber, 2007).

Second, *individuals are heterogeneous in their knowledge and experiences, and these differences have an impact on the entrepreneurial decision to internalize or externalize opportunity-exploitation decisions*. For example, on one hand, internalization decisions (i.e., an existing organization offering a new product, service, or expansion into a new geographic region; Wiklund & Shepherd, 2008) are triggered when potential suppliers are unwilling to accept or unable to understand the entrepreneur's opportunity belief (Zander, 2007). On the other hand, the decision to externalize (i.e., creation of a new organization for new entry; Wiklund & Shepherd) two or more opportunities simultaneously (i.e., portfolio entrepreneurship) is more likely for those who (1) are more educated, (2) are habitual founders (i.e., individuals with prior experience as a business founder), (3) more frequently use business networks, and (4) have more links with government support agencies (Wiklund & Shepherd).

Third, *individuals are heterogeneous in their organizational context, and these differences affect entrepreneurial decision making.* There are several organizational factors that encourage individuals to think more entrepreneurially. First, profit-sharing incentives for employees induce greater levels of work effort (Douglas & Shepherd, 2000) and increase the odds of an organization achieving desired behaviors from its employees (i.e., likelihood of participating in a new corporate venture; Monsen, Patzelt, & Saxton, 2010). However, the influence of these incentives is diminished by high pay and job risk (i.e., performance-based variable pay and potential loss of one's job; Monsen et al.) as well as high procedural uncertainty (Poppo, 2003). As expected probability of success and the associated rewards (and, thus, personal utility) diminishes, profit-sharing incentives will be less effective in motivating participation in corporate venturing activities (Monsen et al.). Second, the development and encouragement of champions further urge individuals to think and act more entrepreneurially. Champions make decisions and take actions that "violate the organizational hierarchy," "break organizational rules and violate standard operating procedures," "include all organization members in the innovation decision-making process," "appeal to the strategic goals of the organization" to persuade others, and "provide innovators with a mandate" (Shane, 1994: 401-403). Finally, the decision to invest in innovation in declining organizations is influenced by organizational resource availability as well as managers' personal risk (Latham & Braun, 2009). Specifically, under conditions of organizational decline, the availability of slack resources and more management ownership both individually and jointly decelerate innovation spending (Latham & Braun; i.e., enhance "threat rigidity" toward innovation spending).

Fourth, *entrepreneurs are heterogeneous in their decision making about the sources for and the timing of funding their entrepreneurial endeavors.* Entrepreneurs face choices between different funding alternatives, which somewhat obviously depend on their knowledge of these alternatives. Seghers, Manigart, and Vanacker (2012) found that entrepreneurs with higher levels of specific human capital and those with a strong network in the financial community have greater knowledge of finance alternatives. One such alternative is between internal and external sources. It appears that entrepreneurs are likely to decide to have personal investment as a higher proportion of the capital invested when there is less initial capital required in the industry and when the entrepreneur has a stronger perception of his or her ability to take advantage of quality opportunities (Chandler & Hanks, 1998). However, entrepreneurs are more likely to seek external funds when they have a more positive assessment

of their venture in terms of market competition, market growth, and employment growth (Eckhardt, Shane, & Delmar, 2006). Another funding alternative is related to timing—that is, between waiting until one has raised enough money before completing their project (conservative choice) or using current resources to achieve an intermediate milestone before seeking external funding (adventurous choice; Schwienbacher, 2007). Although franchising is a funding alternative, one study suggested that it is a last-resort option for many entrepreneurs (Kaufmann & Dant, 1996).

Fifth, *entrepreneurs are heterogeneous in their attitudes, and these differences have an impact on venture funding decisions.* Entrepreneurs need to decide how much initial capital to raise, and this decision appears to be influenced by attitudes toward firm risk (Van Auken, Kaufmann, & Herrmann, 2009). Moreover, the entrepreneur's attitude toward retaining (or "giving up") managerial control in the venture influences entrepreneurial funding decisions. For example, owners of family businesses who prefer retaining family control of the business are more likely to raise capital through family loans and are less likely to raise capital by offering equity to nonfamily members (Romano, Tanewski, & Smyrnios, 2001; see Koropp, Grichnik, & Kellermanns, 2013, for more on how attitudes about debt are influenced by experience and family commitment). Indeed, entrepreneurs need to decide how to allocate (as well as change) ownership control rights, which researchers argue differ under conditions of risk relative to those under conditions of uncertainty (Alvarez & Parker, 2009). Control rights in the form of governance modes include firm governance (which creates a nexus of contracts for future options), market governance (which creates a nexus of options for future contracts), and hybrid governance (which creates a nexus of options for contracts for future options; Scherpereel, 2008).

Finally, although there appears to be a trend toward more ethical behavior by managers of small and large firms (Longenecker, Moore, Petty, Palich, & McKinney, 2006), *entrepreneurs are heterogeneous in their perception of moral behavior, and these differences influence decisions pertaining to doing good.* In ethical decision-making contexts, entrepreneurs are able to use *moral imagination* and *self-regulation* to guide their decisions on how best to exploit an opportunity. Entrepreneurs with high moral imagination in the decision process tend to consider problems from an ethical standpoint, take the perspective of a wide range of stakeholders, and consider unconventional alternatives (by challenging the facts and by using personal narratives or analogous stories; McVea, 2009). Moreover, entrepreneurs with stronger self-regulation (in the form of self-efficacy and regulatory pride) are more morally aware and focus their moral awareness on personal integrity and building interpersonal trust, whereas those with weaker self-regulation focus their moral awareness on issues relating to failure and loss (Bryant, 2009). Similarly, entrepreneurs may engage in questionable ethical behavior (e.g., intentional misrepresentations) when attempting to gain legitimacy with key stakeholders, where acceptability of this behavior varies according to one's "personal ethical philosophy" (Rutherford, Buller, & Stebbins, 2009). Rutherford and colleagues concluded that this type of behavior is not "wrong" according to a utilitarian ethical view as "many entrepreneurs have high levels of self-confidence and enthusiasm and do ultimately achieve goals that many stakeholders might deem unattainable" (960). However, such behavior is wrong according to other ethical philosophies (i.e., a deontological perspective) that view any misrepresentation of facts as being unethical.

Research Opportunities

First, future contributions are likely to come from research that reconciles (and explains) conflicting results on the performance benefits of planning. For example, future research can build on the notion that the planning process is important without necessarily having a formal business plan. However, are there planning processes that are better than others? On one hand, more comprehensive planning may facilitate deeper thinking and more informed decisions. On the other hand, however, perhaps more comprehensive planning contributes to the planning fallacy or slower decision making such that windows of opportunity close, or perhaps it discourages entrepreneurs from adapting their decision making. Each of these latter possibilities is likely to be particularly detrimental in highly dynamic environments.

Second, because research on corporate entrepreneurship typically focuses on the team and the firm as the levels of analysis, *future contributions are likely to come from research that explores the impact of the entrepreneurial decision making of individuals within organizations.* We offer four examples of possible future research opportunities. First, future research could explain heterogeneity in the impact of organizational context on entrepreneurial decision making. For instance, perhaps the aspects of entrepreneurial context that stimulate a middle manager's entrepreneurial decision making are different from those that stimulate a project leader's and/or project worker's entrepreneurial decision making. Second, research could also build on the attention-based view of the firm to explore how individuals in different positions within the firm face different issues and problems as well as have varying information, which affects their entrepreneurial decision making. We believe we have only scratched the surface of understanding how an individual's attention and entrepreneurial decision making interact in the organizational setting. Third, future studies should investigate the decision making of individuals who choose to undertake a champion role as well as how a champion's actions influence employees' (and perhaps managements') entrepreneurial decision making. Finally, future research should explore the decision making of employee inventors who must choose how to exploit opportunities arising from their invention. For instance, perhaps the nature of the invention, the attributes of the current organization, and/or the characteristics of the external environment affect the decision to exploit an invention internally or externally.

Third, although we know a great deal about acquisitions, alliances, and franchising, *future contributions are likely to come from research exploring how entrepreneurial decisions about organizing modes fit within portfolio strategies.* For example, the decision to acquire a specific company may have little to do with improving the acquiring firm's performance and more to do with complementing current R&D efforts in an emerging technology (i.e., acquisition targets are assessed in relation to the firm's strategy and/or existing portfolio composition). Indeed, current research on portfolio, habitual, and serial entrepreneurs signals the importance of research focusing on entrepreneurs' decision making because research at the venture/business level likely ignores decisions about how specific opportunities are exploited. For example, when faced with what is believed to be an opportunity, how do entrepreneurs choose between modes of how that opportunity should be exploited? Moreover, although we know how large organizations make decisions about their portfolio of projects, given the small number of businesses in an entrepreneur's portfolio, decisions about entrepreneurs' portfolio composition are likely to differ from the diversification decisions of large project portfolios.

Fourth, decision making about funding sources depend on knowledge of those sources. A new source and, thus, a new alternative for entrepreneurial decision making, is crowd funding. As such, *future contributions are likely to come from research that explores the relationship between entrepreneurial decision making and crowd funding.* "Crowd funding allows founders of for-profit, artistic, and cultural ventures to fund their efforts by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries" (Mollick, 2014: 1). Future research can contribute to our understanding of entrepreneurial decision making by investigating the assessment of crowd funding as a potential source of venture funding. When is crowd funding preferred to more traditional sources of equity (or even debt) funding? Perhaps entrepreneurs who are younger, more computer literate, and more connected find crowd funding to be a more attractive funding alternative. However, perhaps the nature of the network is critical to the decision. That is, entrepreneurs with a more extensive virtual network (through social media) are likely to be better positioned to assess the crowd necessary for funding and are likely to be more willing to bear the risks associated with this source than those who are less virtually connected or more well connected through "traditional" network mechanisms. Future research can also explore how receiving crowd funding influences subsequent entrepreneurial decision making. For example, a successful crowd-funding experience may affect the entrepreneur's decision about future funding strategies (which may be biased by the entrepreneurs' limited yet successful experience), including the amount of capital raised and the speed with which it was raised. It may also have an impact on entrepreneurs' decisions about the attractiveness of creating new ventures and about the types of ventures to pursue given their beliefs about what would interest the crowd. These decisions may in turn influence the individual's choice to be a portfolio or serial entrepreneur. Perhaps the speed of crowd funding encourages a more rapid form of serial entrepreneurship or changes the size and composition of entrepreneurs' business portfolios. In contrast, how does a failed crowd-funding effort affect entrepreneurial decision making? Perhaps entrepreneurs then emphasize traditional sources of funding or use the negative crowd feedback to inform their termination decision. Moreover, some traditional considerations, such as the amount, timing, and control "given away" through equity fundraising, likely have different implications in the crowd-funding context.

Future contributions on funding entrepreneurial endeavors are also likely to come from research exploring the relationship between entrepreneurial decision making and bootstrapping. Bootstrapping—namely, "finding creative ways to avoid the need for external financing through reducing overall cost of operation, improving cash flow, or using financial sources internal to the company" (Ebben & Johnson, 2006: 851)—is another source of funding used by entrepreneurs, but research on the decision making involved in pursuing and using this source is limited. Future research can explore how entrepreneurs decide on bootstrapping over external sources and the decision making involved in reducing the costs of operation, improving cash flow, and generating other internal sources of funding.

Finally, although recent studies (e.g., those on social entrepreneurship) have provided the first insights into why entrepreneurs decide to commit their effort to doing good, given the predominantly economic perspective on entrepreneurship, this research is still in its early stage. We believe that at least two broad streams of research can further enhance our understanding of this important topic.

Future contributions are likely to come from research exploring how entrepreneurs' decision making pertaining to doing good reflects both economic and social considerations and/or the decision context. For example, research has often emphasized that socially driven entrepreneurs must balance their ventures' economic needs with their intentions to do good for others, but we still do not fully understand how they balance economic and social considerations when making important decisions (e.g., decisions on which market to enter, which products to develop, which employees to hire). Furthermore, the organizational context likely affects entrepreneurs' decisions pertaining to doing good. For example, how do the firm's economic performance, the culture and values prevalent among organizational members, and the organizational structure influence entrepreneurs' decisions pertaining to doing good? In addition, how do entrepreneurs' decisions to do good depend on the venture's environment? For example, are entrepreneurs in benign and stable environments more likely to do good than those in hostile and dynamic environments that tax managerial and other resources? Finally, how do these influences change with time (e.g., when entrepreneurs gain more experience with venture foundation or within their industry or when the venture becomes older)? Perhaps theories and existing work on prosocial motivation (Grant, 2007; Grant & Mayer, 2009) and values disengagement (Bandura, 1999; Shepherd, Patzelt, & Baron, 2013) can inspire future research.

Future contributions are likely to come from research investigating the consequences of entrepreneurs' decisions to (and on how to) do good. Entrepreneurial decisions based on perceptions of moral behavior might have substantial consequences on acquiring resources, developing new products, and performing in the marketplace. The link between corporate social responsibility activities and firm performance (Barnett, 2007) is unclear in existing work, which suggests that the relationship between entrepreneurs' decisions pertaining to doing good and the outcomes of these efforts is complex. Perhaps work on entrepreneurs' symbolic management (Zott & Huy, 2007) will provide a starting point to capitalize on entrepreneurs' and their ventures' intentions to do good as well as on their previous achievements to influence important stakeholder groups and acquire resources. Furthermore, do entrepreneurs who are motivated to do good decide to develop different products or the same products in different ways than more economically motivated entrepreneurs (e.g., in ways that enable them to meet the highest environmental and social standards), and how are these differences in decision making reflected in personal satisfaction and venture performance in the short term and long term? Finally, how do entrepreneurs make decisions in situations in which doing good to some (e.g., the local population or a specific demographic group) comes at the cost of "doing bad" to somebody else (e.g., a locally more distant population or a different demographic group)? How comprehensive—and perhaps biased—are entrepreneurs' assessments of what decision consequences are "good" or "bad"?

Entrepreneurial Exit Decisions

The decision to exit an entrepreneurial firm (i.e., sell the firm, close the firm due to poor performance, sell one's stake in the firm, etc.) involves a number of considerations, including personal and firm circumstances. A variety of factors, such as human capital, prior entrepreneurship experience, and the overarching objectives of a firm combined with general environmental conditions (munificence, volatility, etc.) influence perceptions of firm performance and future potential, as well as the decision to continue, discontinue, or sell the firm.

First, *entrepreneurs face different conditions, and these differences affect entrepreneurs' decisions of whether to exit (or persist with) their entrepreneurial endeavor.* For example, entrepreneurs are more likely to choose to exit their current business when (1) their decision-making style does not "fit" with the organizational demands faced (Brigham, De Castro, & Shepherd, 2007), (2) the entrepreneur is experienced and the firm is older (leading to an exit via selling the business; Wennberg, Wiklund, DeTienne, & Cardon, 2010), (3) a more attractive opportunity arises (Bates, 2005), and (4) there is greater conflict (both task and goal conflict) with the business angel who partly funded the venture (Collewaert, 2012). In contrast, entrepreneurs are less likely to decide to exit their poorly performing firms when they raise additional equity investment (Wennberg et al.), they have made considerable personal investment in the firm, there are low personal career options, the firm has achieved high performance in the past, there is high collective efficacy amongst organizational members, there is high environmental complexity, and there is high environmental dynamism (with some relationships moderated by the entrepreneur's extrinsic motivation; DeTienne, Shepherd, & De Castro, 2008). Similarly, individuals are less likely to terminate their poorly performing projects when there is high ambiguity and considerable slack (Garud & Van de Ven, 1992). However, *entrepreneurs' decision to exit represents more than simply a choice between termination and persistence.* Indeed, entrepreneurs have a number of choices on ways (or modes) of exiting. Specifically, entrepreneurs can decide to exit their businesses through a harvest sale or liquidation, or they can be somewhat forced to exit their business through distress liquidation or distress sale (Wennberg et al.). Entrepreneurs who have more experience and/or those who are older are more likely to exit through harvest sale than the other exit modes, and entrepreneurs who take on an outside job are less likely to exit through distress than the other exit modes (Wennberg et al.).

Second, *entrepreneurs are heterogeneous in the timing of their decision to exit a poorly performing firm (or project), and the timing of this decision has important implications for the entrepreneur.* Entrepreneurs differ from each other in their mind-sets (R. K. Mitchell, Mitchell, & Smith, 2008) and in whether they are embedded in a family firm and/or a collectivistic culture (Sharma & Manikutty, 2005), all of which affect the decision of when to terminate a poorly performing firm. Moreover, exit decisions not only encompass closing a business but also include terminating poorly performing entrepreneurial projects within organizations. Along these lines, Corbett, Neck, and DeTienne (2007) proposed that organizational members differ from each other in their activation of different termination scripts and that different scripts have varying implications for termination timing and organizational learning from the experience. Furthermore, the decision of when to "pull the plug" on a poorly performing firm or project has important implications for the entrepreneur. For example, Shepherd, Wiklund, and Haynie (2009) proposed that by delaying the decision to "pull the plug," entrepreneurs likely increase the financial cost of failure. However, the delay also provides time for anticipatory grieving, which enables the entrepreneur to emotionally prepare for the loss. In this context, there appears to be an optimal period of delay that maximizes the entrepreneur's recovery for a given cost of delay. In terms of poorly performing projects, Garud and Van de Ven (1992) proposed that when ambiguity is high, and slack resources are available, entrepreneurs are likely to persist despite poor outcomes. In contrast, when ambiguity is low (i.e., increased involvement of corporate sponsor) or when slack resources are not available, entrepreneurs are more likely to use trial-and-error learning and, thus, make changes to address the poor performance (Garud & Van de Ven).

Research Opportunities

First, although we have a good understanding of the biases in setting up and running entrepreneurial projects, future contributions are likely to come from research that moves beyond the notion of escalation of commitment to explore the nature, use of, and consequences of entrepreneurs' heuristics on the persistence/termination decision. For example, how do entrepreneurs decide on stage gates, why do some entrepreneurs decide to ignore their previous stage-gate decisions, and why do some entrepreneurs decide to modify their stage gates (i.e., their previous decision on how to assess sufficient progress)? These decisions may not necessarily represent an escalation of commitment, and we do not sufficiently understand the reasoning behind decisions to modify stage gates given performance feedback. Similarly, decisions about stage gates, performance, and persistence are likely influenced by a range of emotions from hope and excitement to fear and anticipated regret. How do configurations of emotions (positive with positive, negative with negative, and positive with negative) influence the use of particular heuristics in making persistence decisions?

Second, *future contributions are likely to come from research that explores the emotional antecedents and/or consequences of the decision to exit a business.* For example, the negative emotional reactions to the failure of a business (e.g., grief; Byrne & Shepherd, in press; Shepherd, 2003) are likely to influence subsequent decisions to pursue an entrepreneurial career. Future research can investigate how the different types of negative emotions influence entrepreneurial reentry decisions and how these emotions (and their influence on entrepreneurial decisions) change over time and/or through different coping mechanisms.

Finally, although we are starting to develop a deeper understanding of the decision to persist or terminate a poorly performing firm (or project), *future contributions are likely to come from research investigating the process of assessing and choosing between sources of exit.* For example, what is the entrepreneurial decision-making process in exiting a successful venture? Perhaps the level of venture success and other venture attributes (e.g., number of employees, benefits generated for other stakeholders, tie to personal identity, presence of a family member successor) influence the exit mode. Moreover, it is likely that entrepreneurs have different reasons for exit and different career/lifestyle options after exit, both of which likely affect the likelihood, timing, and/or exit mode. There is also an opportunity to investigate the emotional consequences (i.e., types of emotions as well as intensity of emotions) of the different sources of entrepreneurial exit. What are the emotional consequences of successful exit—are they positive emotions (as anticipated by the entrepreneur) and/or negative emotions over the loss of a (successful) business? Is there variance in the intensity of emotional reaction, and does this variance influence subsequent outcomes (decision to venture again, retreat to corporate life, etc.)? It could be that feelings of grief are greater for those entrepreneurs exiting successful rather than failing businesses and for those entrepreneurs who have more discretion over when the decision to exit is made than those with less discretion. We hope future research explores these important relationships.

Heuristics and Biases in the Decision-Making Process

For entrepreneurs, the entrepreneurial environment is characterized by high levels of uncertainty about the markets they enter or create, the outcomes of the technological developments they pursue, and their competencies to successfully run a venture (Wu & Knott,

2006). Given these conditions of uncertain and complex environments, "biases and heuristics can be an effective and efficient guide to decision-making" (Busenitz & Barney, 1997: 9). Research has highlighted both differences between entrepreneurs and nonentrepreneurs and differences between groups of entrepreneurs in explaining how heuristics and biases influence decision making. While this review focuses primarily on differences between entrepreneurs, we briefly highlight research themes that explored entrepreneur/nonentrepreneur differences.

First, research has found that *entrepreneurs rely on heuristics (and have biases) in their decision making more so than managers of established firms* (Busenitz & Barney, 1997; Deligonul, Hult, & Cavusgil, 2008). While cognitive biases refer to "thought processes that involve erroneous inferences or assumptions" (Forbes, 2005a: 624), heuristics are "rule-of-thumb" decision-making "toolsets" that are "frugal." Namely, "they ignore part of the information. Unlike statistical optimization procedures, [they] do not try to optimize (i.e., find the best solution), but rather satisfice (i.e., find a good-enough solution) . . . choosing the first option that exceeds an aspiration level" (Gigerenzer, 2008: 20). Given the uncertainty associated with entrepreneurship, founders of new firms must make quick decisions where they frequently lack adequate information. Thus, heuristics are used more frequently to increase the speed of a decision and effectiveness of addressing emerging challenges or opportunities (Busenitz & Barney).

Second, a considerable number of studies have found that *entrepreneurs are more biased in their decision making than nonentrepreneurs.* Specifically, compared to nonfounders, entrepreneurs tend to (1) evaluate equivocal business situations more optimistically (Palich & Bagby, 1995), (2) overestimate their ability to make correct predictions (i.e., overconfidence), (3) overgeneralize from limited information at hand (i.e., representativeness bias; Busenitz & Barney, 1997; Forbes, 2005a; Simon, Houghton, & Aquino, 2000), (4) focus more on their own competencies while neglecting the competitive environment (i.e., egocentric bias; Moore, Oesch, & Zietsma, 2007), (5) select previously chosen alternatives disproportionally more often (i.e., status quo bias; Burmeister & Schade, 2007), and (6) expand their firms despite negative market feedback (i.e., escalation bias; McCarthy, Schoorman, & Cooper, 1993). Although these differences *between entrepreneurs and others* are important and interesting, research on decision making has made additional contributions by explaining *variance within samples of entrepreneurs*.

Third, although studies highlight how *heuristics can facilitate entrepreneurial decision making* (Busenitz & Barney, 1997), research on heuristics in entrepreneurial decision making has been relatively sparse, with a few important exceptions. These exceptions include propositions that heuristics trigger the perception of new opportunities, faster learning, and innovation (Alvarez & Busenitz, 2001; Holcomb, Ireland, Holmes, & Hitt, 2009) and that the search for confirming information (i.e., a confirmation heuristic) can be a superior strategy for testing entrepreneurial conjectures when entrepreneurs overestimate the potential of an opportunity (Shepherd, Haynie, & McMullen, 2012). In a detailed analysis, Manimala (1992) identified a list of 109 different heuristics entrepreneurs use in their decision making, and these differences helped distinguish between highly innovative and less innovative entrepreneurs.

Fourth, *entrepreneurs are heterogeneous in their optimism, and these differences affect entrepreneurial decision making.* Optimism refers to "the tendency to expect positive outcomes even when such expectations are not rationally justified" (Hmieleski & Baron, 2009:

473). Optimism has been found in nascent entrepreneurs' assessments of the probability that they will actually launch their current concept-stage venture (Cassar, 2010). Nascent entrepreneurs are also optimistic in sales projections and in assessments of their venture's success prospects (Cassar). Moreover, entrepreneurs are optimistic in their valuation and investment projections for their inventions (Dushnitsky, 2010). This optimism appears to be generated by a self-serving bias (Parker, 2009) and the preparation of plans and financial projections (Cassar). While optimism may enhance the effort entrepreneurs invest in their ventures (Parker, 2006), it appears to delay the decision to terminate nonsuccessful projects (Lowe & Ziedonis, 2006), encourage the selection of optimistic cofounders (Parker, 2009), and—at least for dispositional optimism—lower performance (especially in dynamic environments; Hmieleski & Baron, 2008).

Fifth, *entrepreneurs are heterogeneous in their overconfidence, which influences entrepreneurial decision making*. Overconfidence refers to "overestimating the probability of being right" (Busenitz & Barney, 1997: 10) and appears to be higher for entrepreneurs who are young, run ventures with lower levels of decision comprehensiveness, run ventures that are not financed by external equity (Forbes, 2005a), and perceive the uncertainty surrounding their abilities and market demand to be equivalent (Wu & Knott, 2006). The consequences of overconfidence are largely negative. For instance, overconfident entrepreneurs tend to enter industries despite equivocal information (Deligonul et al., 2008; for an alternate explanation, see Hogarth & Karelaia, 2012), expand their venture despite negative market feedback (McCarthy et al., 1993), and deprive ventures of necessary resources, all of which can result in failure (Hayward, Shepherd, & Griffin, 2006). However, there appear to be some potential positives. For example, Hayward, Forster, Sarasvathy, and Fredrickson (2010) proposed that high confidence can trigger positive emotions or affect as an important by-product, which promote entrepreneurial resilience in the face of obstacles and, thus, increase the entrepreneur's ability to found subsequent ventures.

Finally, *entrepreneurs are heterogeneous in their reliance on experience, which again influences entrepreneurial decision making.* For example, Parker (2006) showed that despite continuous market signals and new information about changes in the market, entrepreneurs—relying heavily on their prior beliefs—show little change in their expectations of unobserved productivity. However, this reliance on prior beliefs (and corresponding lack of decision-making adaptability) is greater for older entrepreneurs (i.e., older entrepreneurs were less influenced by changes in the environment than young entrepreneurs and instead relied on prior experience). Furthermore, entrepreneurs tend to overly rely on their historical industry experiences when crafting initial venture strategies; however, entrepreneurs with more diverse experiences tend to rely on such historical industry experience less frequently (Fern, Cardinal, & O'Neill, 2012). Indeed, when assessing their experiences, nascent entrepreneurs have been found to exhibit a hindsight bias: They systematically recall a lower initial assessment of venture success after the decision to quit than before this decision (Cassar & Craig, 2009).

Research Opportunities

Although some have argued that biased decision making is most likely to occur in the entrepreneurial context, future contributions are likely to come from research exploring heterogeneity within the different dimensions of the entrepreneurial context to gain a deeper

understanding of when, how, and why bias is introduced into entrepreneurial decision making. For example, to what extent do stress levels associated with the entrepreneurial context contribute to biased entrepreneurial decision making? The same question applies to environmental or task complexity, uncertainty, dynamism, time pressures, and the emotion surrounding the decision. Indeed, recognizing the prevalence of biases is particularly useful if future research can explore the means by which individuals can (or should) reduce these biases. For instance, perhaps there can be training on the conditions under which one is most susceptible to a bias, the development and use of decision aids, team involvement in decisions (although we are aware that the team context can introduce additional biases), and the mechanisms for capturing, interpreting, and communicating decision feedback.

Furthermore, although we know entrepreneurs use mental shortcuts in their decision making, *future contributions are likely to come from research detailing the types of heuristics used, how these are formed and triggered, and the benefits generated.* For example, future research can explore the decision-making speed generated by heuristics and the contexts in which speed is highly important (perhaps more important than accuracy). To the extent future research reveals benefits from heuristics, we can worry less about biases and focus more on when to use heuristics and how one develops, learns, adapts, and communicates heuristics. However, there is also the possibility to further explore the positive outcomes arising from biases while simultaneously acknowledging their negative consequences. For instance, it could be that after a business failure, overconfidence provides a basis for ego protection, initial sensemaking efforts, and emotional recovery—benefits of overconfidence that may outweigh its costs.

Characteristics of the Entrepreneurial Decision Maker

Individuals are heterogeneous in their beliefs and desires, and these differences help explain why some choose to become entrepreneurs and why others choose managerial or other employment-related roles. Relative to nonentrepreneurs, entrepreneurs have higher levels of individualism, openness to change, and self-enhancement and lower levels of power, conformity, security (Holt, 1997), and collectivism (Tan, 2001). Compared to nonentrepreneurs, entrepreneurs also appear to have a more versatile thinking style that balances both linear (i.e., analytic, rational, logical) and nonlinear (i.e., intuitive, creative, emotional) approaches to thinking about a situation (Groves, Vance, & Choi, 2011). Moreover, entrepreneurs are more likely to see situations as relating to personal strengths, representing an opportunity, and representing potential for gain than nonentrepreneurs (Palich & Bagby, 1995).

First, *differences associated with gender can help explain variance in decision making across entrepreneurs.* For example, there are differences between male and female entrepreneurs in terms of how many other entrepreneurs they know as well as differences in other perceptual variables (e.g., alertness to opportunities, fear of failure, subjective beliefs in having adequate skills), all of which help explain the gender gap regarding the decision to start a new business (Langowitz & Minniti, 2007). Research has explored the factors that magnify the impact of gender on entrepreneurial decisions (e.g., family background, family structure, family demands, family support, family-related motives, family-related attitudes, and the interdependencies of work and family) and how gender moderates the relationship between family-domain factors and work-domain factors (Powell & Greenhaus, 2010). Additionally,

research has found that *there is heterogeneity among women, which has an impact on entrepreneurial decision making.* For example, women are heterogeneous in their female identity, the equity they hold in their businesses, and their beliefs about gender obstacles (Morris, Miyasaki, Watters, & Coombes, 2006). Differences also arise among women depending on whether they are satisfaction seekers or security seekers (Shabbir & Di Gregorio, 1996) and on whether their business is in a traditional or nontraditional industry for women (Anna, Chandler, Jansen, & Mero, 2000).

Second, *entrepreneurs are heterogeneous in the amount and nature of their experiences, and these differences have an impact on entrepreneurial decision making.* For example, entrepreneurs differ from each other in their (1) start-up experience, which affects decision speed (Forbes, 2005b) and use of effectual logic to frame decisions (Dew et al., 2009); (2) international experience, which influences the decision to locate in a university park (Wright, Liu, Buck, & Filatotchev, 2008); (3) experience with small businesses, which effects decision comprehensiveness (and subsequently organizational performance; Smith, Gannon, Grimm, & Mitchell, 1988); and (4) experience as a supervisor and with a growing firm, which influences decisions about the intended future size of their ventures (Cassar, 2006). Furthermore, entrepreneurial experience can help build entrepreneurial self-efficacy, which is important because *differences in entrepreneurs' level of self-efficacy affect entrepreneurial decision making*. For example, those with greater self-efficacy are more aggressive in their entrepreneurial investment decisions and, therefore, invest more of their personal wealth and time and are more likely to begin and complete the process of creating a new venture (Cassar & Friedman, 2009; for the family business context, see Zellweger, Sieger, & Halter, 2011).

Third, *entrepreneurs are heterogeneous in their metacognitive thinking, and these differences influence entrepreneurial decision making.* For example, entrepreneurs who use more metacognitive thinking appear to (1) be more effective at adapting their decision making (Haynie, Shepherd, & Patzelt, 2012), (2) have lower decision incongruence—that is, "the gap between the decision-making rationale that an individual conveys to others and the rationale that informs his/her actual decisions" (J. R. Mitchell & Shepherd, 2012: 355), and (3) rely more on intuition in making venture-founding decisions (Blume & Covin, 2011). Moreover, *entrepreneurs are heterogeneous in their assessments of risk, which affects entrepreneurial decision making.* For example, those with greater risk propensity, those who perceive lower risk, and those who risk others' money are more likely to choose to start riskier new ventures (Mullins & Forlani, 2005; see also Teoh & Foo, 1997). Additionally, *entrepreneurs are heterogeneous in their emotional reactions, and these differences have an impact on entrepreneurial decision making*. As an example, Baron observed that high positive affect ("feelings and emotions"; 2008: 328) facilitates the adoption of strategies for efficiently making decisions, whereas negative affect facilitates the adoption of slower, more thorough decision-making strategies.

Finally, *entrepreneurs are heterogeneous in their national and cultural heritage, and these differences affect entrepreneurial decision making.* Research has shown that entrepreneurs from distinct national or cultural backgrounds differ in terms of values (i.e., individualism, openness to change, self-enhancement, conformity, values of power, and security; Holt, 1997), innovativeness in decision making (J. S. Walsh & Anderson, 1995), and achievement and/or growth motivations (including propensity for risk; Stewart, Carland, Carland, Watson, & Sweo, 2003). While applicable across nations, there also appears to be cultural differences within nations. For example, Mexican American entrepreneurs differ from Anglo-American

entrepreneurs in their decision-making styles, use of formulated decision making, and reliance on family support, and these differences appear to influence their choice of legal structure and family involvement in the business (Vincent, 1996).

Research Opportunities

First, future contributions are likely to come from research exploring the individual and/or contextual factors that magnify or diminish the effect of specific decision-maker characteristics on entrepreneurial decision making. First, research should explore the conditions under which gender differences in entrepreneurial decision making are magnified (e.g., perhaps specific industries considered nontraditional for women) and/or diminished (e.g., perhaps for men higher in femininity and women higher in masculinity). Second, we also need to move beyond exploring the amount of experience an entrepreneur has and begin to theoretically and empirically explore more about the nature of the experience (e.g., the number of an entrepreneur's previous start-ups that were failures) and its impact on the nature of the relationship between experience and entrepreneurial decision making. Third, more research is needed to explore how the nature of the entrepreneurial task influences the differential effect of metacognitive aspects on entrepreneurial decision making. For instance, perhaps a more emotional event magnifies the role of metacognitive experience on entrepreneurial decision making. Finally, we propose more studies to explore the moderators of the relationship between cultural differences and entrepreneurial decision making. Perhaps, for example, we will find that cultural differences in entrepreneurial decision making are magnified by psychic distance and diminished by cultural sensitivity.

Second, *future contributions are likely to come from research exploring the impact of the entrepreneurial decision-making process (and/or the outcomes of that process) on the characteristics of the entrepreneur.* One area of interest is to explore the consequences of gender-influenced entrepreneurial decisions on the nature of a specific gender gap. For instance, the decision for entrepreneurs to enter gender-traditional industries may serve to strengthen this institutional norm but is also likely to raise entry barriers to nontraditional gender industries. In addition, research should investigate the reciprocal relationship between entrepreneurial decision making and experience. For example, to the extent that start-up experience speeds decision making (Forbes, 2005b), the decision to create a new venture occurs more quickly, enabling the entrepreneur to more rapidly build his or her experience, which could create an experience-speed spiral. Research can also explore the relationship between entrepreneurial decision making and metacognitive thinking (e.g., perhaps more experience with entrepreneurial decision making enhances metacognitive knowledge and/or metacognitive experience) and between entrepreneurial decision making and emotional reactions (e.g., perhaps the entrepreneurial decision-making process generates emotions that lead to a reinterpretation of the original event, thereby changing the emotions generated from it). Finally, research should examine how entrepreneurial decision making can change the cultures (and institutions) from which it was generated.

Finally, *future contributions are likely to come from research that explores how the relationship between the decision maker's characteristics and entrepreneurial decision making changes over time and/or based on events.* One opportunity in this area is to explore how gender differences in entrepreneurial decision making are changing over time. Perhaps, for

example, there is less heterogeneity over time between men and women in their entrepreneurial decision making but more heterogeneity among all entrepreneurs (men and women). In addition, researchers should investigate how entrepreneurial experiences are translated into entrepreneurial expertise that informs entrepreneurial decision making. Are there conditions (or types of experience, such as failure) that accelerate the "conversion" of experience to expertise and, thus, inform entrepreneurial decision making? We also need to explore the temporal aspects of how metacognitive thinking affects entrepreneurial decision making. For example, metacognitive thinking may slow the entrepreneurial decision-making process, but over time (i.e., through repeated use), this "slowing effect" may be reduced. Furthermore, future research should examine how repeated exposure to emotional events influences entrepreneurial decision making. We may find, for instance, that the more an entrepreneur is exposed to events that trigger negative emotional reactions, the less negative the reactions become (consistent with desensitization and habituation), thereby diminishing the effect of such events on entrepreneurial decision making. Finally, future studies can explore how the relationship between culture and entrepreneurial decision making may be changing over time. With the increasing prevalence of global firms (and increasing globalization in general), are cultural differences diminishing, and/or are they less impactful on entrepreneurial decision making?

Environment as Entrepreneurial Decision Context

Individuals are heterogeneous in their perceptions of the environment, including industry, competitive, and institutional factors. These differences influence how individuals assess environmental conditions and ultimately make entrepreneurial decisions. Although most of the above sections involve individuals' perception of their environments, studies in this section have heterogeneity in perceived environment as a central focus of the article.

First, *entrepreneurs are heterogeneous in the industry conditions they face, and these differences influence entrepreneurial decision making.* For example, research proposed that entrepreneurs can decide to delay entry for longer in learning environments that are less hostile (i.e., when relevant information is abundant and when learning from others is more effective than learning from participation), but they cannot delay entry for too long, as delay could allow other entrants to enter and increases costs of venture emergence without generating returns (Lévesque, Minniti, & Shepherd, 2009). Furthermore, it is not so much the objective environment that is an input to entrepreneurial decisions but, rather, the entrepreneur's *perception* of that environment. For instance, environmental shifts (which could be objectively captured) can be perceived as either potential opportunities or threats, and these perceptions influence decisions to respond with isomorphic actions (i.e., actions that are consistent with those of other legitimate actors in the institutional environment) or nonisomorphic actions (i.e., actions that depart from what is considered legitimate in the institutional environment; George, Chattopadhyay, Sitkin, & Barden, 2006: 348). Moreover, when the environment is perceived as hostile and stable, J. R. Mitchell, Shepherd, and Sharfman (2011) found that individuals are more erratic in their decision making. More specifically, they tend to be inconsistent in their judgments that can shape the direction of the firm (the same seems to be the case with individuals who have low metacognitive experience).

Second, *entrepreneurs are heterogeneous in the institutional environments they face, and these differences influence entrepreneurial decision making*. For example, entrepreneurs are

more motivated and likely to decide to address social problems in the presence of crescive conditions (i.e., "institutional conditions and processes that increase the likelihood of entrepreneurial engagement"; Dorado & Ventresca, 2013: 70), including situations with increased public awareness of the social problem, dissonant loyalty (membership in a group), arbitrary time setting (establishing subjective time constraints for action), and the "hiding hand" (i.e., when individuals underestimate challenges, resulting in action; Dorado & Ventresca). Moreover, institutional environments change over time, which could influence entrepreneurial decision making. For example, the institutional environment for entrepreneurship in China has changed since private enterprises were granted legal status in 1988. As a result of this change, individuals are increasingly more likely to choose to become an entrepreneur, especially employees of lower-status publicly owned firms and those who are not members of the Communist party (Lu & Tao, 2010).

Finally, *the outcomes of entrepreneurial decision making depend on the nature of the environment.* For example, the industry conditions at the time of venture founding appear to have an impact on future venture performance (although this impact diminishes over time; Bamford, Dean, & McDougall, 2000). An important founding condition appears to be choice of geographic location. Many entrepreneurs choose to locate their business in the area where they were born or have lived for a long time. The implications of this desire to be close to family and friends appear to provide performance benefits for the firm (Dahl & Sorenson, 2012). Moreover, entrepreneurs who choose to locate their new venture in rural settings likely benefit more from the improved gathering and processing of information than those located in an urban setting (Van Horn & Harvey, 1998). Although entrepreneurs likely have little choice of whether they found their business in a developed or a developing economy, Lévesque and Shepherd proposed that the level of economic development moderates the relationship between the timing decision and the level of mimicry—namely, "the degree to which new ventures imitate the key practices of other referent firms" (2004: 35)—when entering the market.

Research Opportunities

Rather than assume industry conditions are all encompassing and powerful, future contributions are likely to come from research exploring how entrepreneurial decision making influences the industry or environmental context in which the firm is embedded. We offer four examples of possible future research opportunities. First, research should explore how entrepreneurial decision making can change the nature of the industry. For instance, an increase in the speed of entrepreneurial decisions may speed actions that increase industry complexity and/or dynamism. Second, studies should investigate the entrepreneurial decision-making process of assessing potential social and/or sustainable opportunities. As an example, research could examine how decisions related to assessing a potential opportunity to preserve the natural environment differ from those that enhance the socioeconomic status of a disadvantaged community as well as the nature of potential trade-offs in such decisions. Third, future research should explore how entrepreneurial decision making can change institutions. Why do some individuals choose to disrupt the status quo while others do not, how are these decisions made, and what are the opportunity-cost considerations in deciding to "attack" an existing institution? Finally, we need to more fully understand the extent to which founding conditions (determined in part by entrepreneurial decision making) influence

subsequent entrepreneurial decision making and whether this influence decreases over time. Such research will provide a decision-making perspective for our current knowledge of path dependence, for example, how much do opportunities exploited in the past influence assessments of potential opportunities and for how long?

Discussion

Opportunity assessment is the initial entrepreneurial decision central to our map of entrepreneurial decision-making research (see Figure 1). We know that entrepreneurs are heterogeneous in their individual characteristics (such as human capital, affect and emotional reactions), biases, and their perceptions of the environment, and these differences help explain variance in the assessments of the attractiveness of potential opportunities. The second decision detailed in the map is the decision to enter an entrepreneurial career, which could be to become self-employed or to create a new venture. This decision to pursue an entrepreneurial career is influenced by an individual's aspirations and attitudes, abilities, and opportunity costs. As the factors that influence the decision change over time, so might the decision to pursue an entrepreneurial career. Over and above the financial and nonfinancial motivators to create a new venture, we know that perceptions of the self (e.g., identity, abilities, and desires), perceptions of the environment (e.g., hostile, munificent), and decision-making tools (e.g., heuristics) inform and/or motivate the decision to create a new venture.

The third decision detailed in the map is the decision about exploiting opportunities. Although the exploitation of an opportunity may involve the creation of a new venture, it could also occur through other means—opportunities can be exploited in existing organizations. The exploitation decision can be influenced by the degree of planning (although the literature is mixed on its impact), the organizational context in which an individual acts to exploit the opportunity, the source(s) and availability of funding, and the "fit" of the expected outcomes of the exploitation decision with the individual's perception of moral behavior. Just as individuals (alone or in the organizational context) can decide to start exploiting what is believed to be an opportunity, they can decide to exit this process, which is the final decision detailed in the map. Exit can occur because the business is performing poorly—where the decision to exit is often delayed—or when the business is performing well but the entrepreneur decides to exit for a variety of reasons, including changes in personal circumstances or a desire to harvest the investment.

While each of the four entrepreneurial decisions discussed above are influenced by decision-specific factors, they are also influenced by several common factors. The above decisions involve heuristics, which can facilitate and speed the decision-making process but can also reveal biases (e.g., overoptimism, overconfidence, and overreliance on experience). They are also nested in individual-specific differences, such as heterogeneity in gender, experience, self-efficacy, metacognition, assessments of risk, affect or emotions, and national and cultural heritage, all of which can influence the entrepreneurial decision-making process and/or outcomes. These decisions are also nested in environments; entrepreneurial decisions can be influenced by the industry conditions and institutional forces, such as regulations, general economic conditions, and within-organization entrepreneurial culture.

Research has made substantial progress in advancing our knowledge about entrepreneurial decision making, and we hope that our review begins to bring together many of the

disparate pieces to form a big picture of the body of work—albeit a big picture that has some missing or incomplete pieces. The missing pieces represent research opportunities. In this review, we have detailed specific research opportunities for contributions to our knowledge about entrepreneurial decision making, but the overall themes where the opportunities, we believe, are most attractive relate to the role of time, how factors at multiple levels influence entrepreneurial decision making (Shepherd, 2011), and the interaction of cognition and emotion/affect (i.e., hot cognition). To pursue these opportunities and find others that advance our understanding of entrepreneurial decision making will likely require us, as scholars, to be more entrepreneurial in our methods. For example, adopting new methods to explore new empirical terrain can help trigger theorizing about entrepreneurial decision making and lead to interesting contributions. By combining established methods in new ways, we can achieve a similar result. For example, we expect future research will begin to more often combine surveys with experiments, experiments with secondary data, inductive content analysis of secondary data to create panel data sets, and so on. We hope not only that scholars are entrepreneurial in their methods to generate new insights but also that reviewers and editors are "open" to this sort of novelty because this is from where (we believe) the greatest future contribution will come. This contribution will be not only beneficial to the entrepreneurship and management literature but also more far-reaching. Because the context in which entrepreneurial decisions are made is so extreme in a number of ways (e.g., high consequences, emotional anticipation and reactions, time pressures, ambiguity), this provides us the opportunity of extending the boundaries of current theories of decision making and, thus, making a more general contribution to the psychology and behavioral economics literatures.

Conclusion

In a world of increasing uncertainty, complexity, and change, acting entrepreneurially is essential for both individuals and organizations. However, decision making in such environments is a challenging task, which some individuals accomplish better than others. While previous work has made substantial contributions to our understanding of how entrepreneurs make decisions and the factors driving these decisions, we are far from having a comprehensive and coherent story of this phenomenon. Instead, the field has become increasingly fragmented and diverse. We have made an attempt to categorize existing work and from this categorization, have offered suggestions for future contributions. As we mentioned, we encourage research that focuses on entrepreneurial decisions related to "new" phenomena, such as crowd funding, user entrepreneurship, and social entrepreneurship, as well as research that takes a process perspective and/or captures contextual moderators of entrepreneurial decisions. We hope that our review inspires future decision-making studies on both independent entrepreneurs and those acting entrepreneurially within established organizations.

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