

The extent and nature of opportunity identification by experienced entrepreneurs

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Received 1 May 2006; received in revised form 1 May 2007; accepted 1 January 2008

Abstract

Guided by insights from cognitive theories, this article explores the links between entrepreneurs' prior business ownership experience and their opportunity identification behavior. Hypotheses were tested using data from 630 entrepreneurs. Experienced entrepreneurs identified more opportunities and exploited more innovative opportunities with greater wealth creation potential. Entrepreneurs that had owned more than 4.5 businesses, however, identified fewer opportunities. The nature of prior business ownership experience also shaped opportunity identification behavior. An inverse U-shaped relationship was detected between the proportion of failed businesses relative to the number of businesses owned and the number of opportunities identified in a given period. Business failure experience was not associated with the innovativeness of exploited opportunities.

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Keywords: Repeat entrepreneurs; Business ownership experience; Business failure; Opportunity identification; Innovative opportunities

1. Executive summary

There is growing recognition of heterogeneity among entrepreneurs with respect to opportunity identification. Variation in business ownership experience may explain this heterogeneity. Entrepreneurs involved in the ownership of multiple businesses (i.e., habitual or repeat entrepreneurs) may accumulate experience, which can be leveraged to identify subsequent business opportunities. There is inconclusive evidence relating to the benefits associated with business ownership experience. Few studies have specifically explored the relationship between entrepreneurs' prior business ownership experience and their subsequent opportunity identification behavior. Studies have generally

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focused upon positive aspects of experience alone, emphasizing the potential learning benefits associated with experience. The possibility of an optimal level of prior business ownership experience associated with superior business opportunity identification and exploitation outcomes, however, has been ignored. Previous studies have also generally failed to make an explicit distinction between the extent and nature of prior business ownership experience. This study explores gaps in the research and policy knowledge base with regard to the following two research questions: What is the nature of the relationship between an entrepreneur's business ownership experience (i.e., extent and nature of experience) and the number of opportunities for creating or purchasing a business identified in a given period? How does an entrepreneur's business ownership experience relate to the innovativeness of the opportunity exploited? The innovativeness of an opportunity is viewed as a proxy for its wealth-creating potential.

This study builds on cognitive and motivation theories that explore the role of experience in shaping individual cognition and subsequent behavior. These theories provide guidance relating to why and how experience can promote or retard opportunity identification. For example, schema theory suggests that experienced entrepreneurs have more developed opportunity identification schemas (Gaglio, 1997). By directing attention and facilitating the interpretation of information, these schemas can enable the generation of ideas. As schemas develop, however, experienced entrepreneurs may become prone to a set of decision-making biases, such as over-confidence and familiarity bias that hinder their ability to identify (innovative) opportunities. This study also considers how the success or failure of past business ownership experience (i.e., the nature of experience) influences subsequent behavior. Drawing on cognitive and motivation theories, we argue that opposing views on the effects of business failure experience may be reconciled by considering intervening factors such as whether failure relates to self-definitional goals, and the number of failures in an entrepreneur's business ownership portfolio.

Using a sample of 630 entrepreneurs from Great Britain, we show that experienced entrepreneurs identified more opportunities, albeit at a diminishing rate as their experience increased. Further, the greater the extent of business ownership experience, the more innovative was the exploited opportunity. The proportion of failed businesses relative to the number of businesses owned was associated with the identification of more business opportunities. Entrepreneurs who reported that more than a fifth of their prior businesses had failed, however, identified fewer opportunities. Business failure may encourage learning without dampening motivation, but only when it relates to a minority of businesses owned by an entrepreneur. Presented results help develop understanding of when and why the liabilities outweigh the assets of prior business ownership experience. This is important in improving the knowledge base and to provide practical insights.

2. Introduction

Entrepreneurship scholars are seeking to understand 'why' and 'how' some individuals, and not others, identify more opportunities and opportunities with superior wealth-creating benefits (Shane and Venkaraman, 2000; Baron, 2004). Improving understanding of opportunity identification can assist in ensuring that new knowledge is translated into tangible business innovations and practical solutions that contribute to economic and social development. There is growing recognition of considerable heterogeneity among entrepreneurs with respect to how they identify opportunities, the frequency of opportunity identification, and the nature and quality of the opportunities identified (Gaglio and Katz, 2001; Ucbasaran et al., 2006). Variation in business ownership experience may explain this heterogeneity (Shane, 2000; Shepherd and DeTienne, 2005; Baron and Ensley, 2006), which is the focus of this article. McGrath and MacMillan (2000) claim that repeat entrepreneurs have a unique 'entrepreneurial mindset' that prompts them to search for opportunities, and to pursue only the very best opportunities.³ These assertions have not been subjected to empirical scrutiny.

Studies exploring the relationship between business ownership experience and outcomes have tended to focus on whether or not the entrepreneur has experience and/or the amount of experience (Westhead and Wright, 1998; Baron and Ensley, 2006). These studies generally assume that the *extent* of experience will be associated with superior outcomes. Experience can facilitate learning by providing an opportunity for feedback about past decisions (Bazerman, 1990). Due to delays or bias in this feedback, however, individuals may be prone to errors when seeking to learning from experience (Northcraft and Neale, 1987). Given the difficulties associated with learning from experience, a more balanced view of the role experience plays in opportunity identification and exploitation is needed. Studies have

³ Entrepreneurs with multiple business ownership experience, also known as habitual entrepreneurs; throughout we use the term repeat entrepreneurs.

neglected to consider whether there is a threshold level of prior business ownership experience associated with superior business opportunity identification and exploitation. In addition, previous studies have generally ignored how the *nature* of experience (i.e., whether past experience is associated with failure or success) may impact on opportunity identification and exploitation. Despite growing interest in the opportunity conceptualization of entrepreneurship, the latter issues have received scant theoretical or empirical attention. These omissions are important in the context of efforts to stimulate entrepreneurship through education programs and other support mechanisms.

Cognition theories (Fiske and Taylor, 1991) can explain how individuals' cognitive profile determines how they handle complex information in order to identify and exploit opportunities. Prototype theories, expert information processing theories and heuristic information processing theories (Baron, 2004) suggest that an individual's cognitive profile can be shaped by experience. Within the expert cognition literature, it is acknowledged that prior experience may improve performance but only up to a certain point. Beyond a certain experience threshold, biases in thinking may retard the behavior and performance of an entrepreneur (Baron and Henry, 2006). The theoretical entrepreneurship cognition literature provides insights into the effects of the nature of prior experience on behavior. Prior failure can hinder learning and restrict the motivation to try again (Shepherd, 2003). Conversely, prior failure may stimulate learning and adaptation (McGrath, 1999). The general cognition literature suggests that the nature of prior failure needs to be considered regarding the number of failure experiences (Brunstein and Gollwitzer, 1996) and the relevance of failure experience to an individual's self-identity (Schultheiss and Brunstein, 2000).

This study provides fresh insights into the relationship between business ownership experience and opportunity identification behavior, and addresses several gaps in the knowledge base. The following two novel research questions are tested: What is the nature of the relationship between an entrepreneur's business ownership experience (i.e., extent and nature of experience) and the number of opportunities for creating or purchasing a business identified in a given period? How does an entrepreneur's business ownership experience relate to the innovativeness of the opportunity exploited? Although, several factors probably play a role in the wealth-creating potential of an opportunity, we adopt here the innovativeness of an opportunity as a proxy for its wealth-creating potential.

We seek to make several conceptual and empirical contributions. Guided by cognitive and motivational theories, four theoretically derived hypotheses are presented. A balanced view which considers the 'assets' (i.e., advantages) and 'liabilities' (i.e., disadvantages) of experience (Starr and Bygrave, 1991; Baron and Henry, 2006) is presented. Most notably, hypotheses that suggest a threshold of experience above which disadvantages of experience outweigh the advantages are explored with regard to opportunity identification and innovativeness. This threshold is confirmed with reference to a representative sample of entrepreneurs. Second, the *nature* of experience was considered with regard to the proportion of failed businesses relative to the number of businesses owned. In doing so, this study provides conceptual insights into the debate relating to the link between business failure and subsequent behavior (Sitkin, 1992; McGrath, 1999; Shepherd, 2003). Integrating insights from cognitive and motivation theories, this study attempts to reconcile opposing views by considering several intervening factors with regard to whether failure relates to self-definitional goals, and the number of failures in an entrepreneur's business ownership portfolio. Evidence from the representative sample of repeat and novice entrepreneurs is suitable to examine questions relating to the extent, nature and limits of prior business ownership experience, which may not be feasible in an experimental setting. Findings relating to a sample of practising entrepreneurs may provide fresh insights that need to be considered in cognitive theories.

The article is structured as follows. In the next section, insights from cognitive theories suggesting links between an individual's experience and behavior are drawn upon to derive four hypotheses. This is followed by a discussion of the data collected and the research method. Results are then reported. In the following section, key findings are discussed. Finally, conclusions are presented.

3. Theory and hypothesis development

In this section, hypotheses concerning the relationship between the extent and nature of business ownership experience and opportunity identification behavior and the innovativeness of opportunities are presented.

3.1. The extent of experience

Debate surrounds how entrepreneurs identify business opportunities. Whether it is the result of entrepreneurial alertness (Kirzner, 1973) or a creative, imaginative process (Ward, 2004), opportunity identification involves knowledge

and aspects of cognition such as perception and creativity. Cognitive theories offer various tools for understanding the processes underlying opportunity identification, many of which emphasize the role of mental frameworks that guide the process. [Gaglio and Katz \(2001\)](#) draw on schema theory to explain how entrepreneurs identify opportunities. Schemas, also known as knowledge or cognitive structures, represent the content and organization of knowledge, and develop as a result of the cumulative experience, learning and meanings an individual has encountered and constructed about a specific domain ([Gaglio, 1997](#)). Schemas determine how individuals respond to new information. For example, individuals possessing an alertness schema are able to search for and notice change and market disequilibria, and can respond to this new information ([Gaglio and Katz, 2001](#)). Similarly, drawing on prototype theory, [Baron \(2004\)](#) highlights the role of prototypes in explaining opportunity identification. Through experience, individuals acquire prototypes that serve as templates for concepts such as opportunity identification. A prototype for an opportunity may include features such as novelty, practicality, market appeal, and the ease with which necessary resources can be obtained. New ideas can be benchmarked against prototype criteria. A new idea that is closely matched against an existing prototype of an opportunity is more likely to be identified as an opportunity.

[Gaglio and Katz \(2001\)](#) argue that a limitation of existing approaches to opportunity identification is that they ignore the heterogeneity of entrepreneurs. Variations in experience may explain why entrepreneurs differ with regard to opportunity identification. Expert information processing theory highlights that experts process information differently than novices. Experts have more developed schema, shaped by individual experience, which allow them in a particular domain to unify superficially disparate information and make more sophisticated critical judgments ([Glaser and Chi, 1988](#)). Moreover, experts appreciate the relevance of information and notice patterns which may be overlooked by novices ([Lord and Maher, 1990](#)). The cognitive structure of a repeat entrepreneur's knowledge may resemble that of an expert. Repeat entrepreneurs' relatively developed opportunity identification schema can direct their attention, expectations, and interpretations of market stimuli, as well as enabling the generation of ideas ([Gaglio, 1997](#)). This group of entrepreneurs is able to 'connect the dots' between seemingly unrelated changes or events and detect meaningful patterns to a greater extent than inexperienced entrepreneurs ([Baron and Ensley, 2006](#)).

Despite the benefits of experience discussed above, the relationship between experience and performance can plateau ([Baron and Henry, 2006](#)). Beyond a certain level, experience-related benefits may diminish ([Ericsson and Lehman, 1996](#)). Experienced individuals may perform no better or even worse than novices. A key finding in the literature on expertise is that performance plateaus unless individuals engage in deliberate practice. This is consistent with the domain of entrepreneurship, where scholars have been unable to find that experienced entrepreneurs perform better than novice entrepreneurs ([Westhead and Wright, 1998](#)).

Greater levels of experience can be associated with 'assets' and 'liabilities' ([Starr and Bygrave, 1991](#)). Some of these liabilities stem from the greater reliance on heuristics by repeat entrepreneurs ([Ucbasaran et al., 2006](#)). As repeat entrepreneurs develop a repertoire of experiences to draw on, they may develop heuristic principles or decision-making shortcuts. This can lead to biases ([Tversky and Kahneman, 1974](#)), including: thinking that enough is known; inferring too much from limited information; becoming constrained by the familiar; and becoming overconfident ([Baron, 1998](#)). Entrepreneurs prone to these biases may find it difficult to identify new opportunities. The liabilities of business ownership experience may stem from attempts to repeat previously successful 'recipes' in changed circumstances ([Wright et al., 1997](#)). Constrained by these recipes, some repeat entrepreneurs may be unable to think beyond past exploited opportunities. Some repeat entrepreneurs may be overly dependent on past contacts ([Starr and Bygrave, 1991](#)), which may hinder their ability to acquire new information and ideas.

This discussion suggests that at low levels of experience, entrepreneurs will identify few opportunities. The number of opportunities identified is expected first to increase as ownership experience increases and opportunity identification schemas develop but as the level of business ownership experience increases further, repeat entrepreneurs may become increasingly prone to decision-making biases that retard opportunity identification. A linear relationship between business ownership experience and subsequent opportunity identification behavior should not, therefore, be assumed. This discussion suggests the following hypothesis:

Hypothesis 1. There will be an inverse U-shaped relationship between an entrepreneur's business ownership experience and the number of opportunities identified in a given period.

The innovativeness of an opportunity is a proxy of its wealth-creating potential ([Shane, 2000; Fiet, 2002](#)). Experience can encourage the flow of creative ideas, which can subsequently become innovative opportunities

(Shepherd and DeTienne, 2005). However, there is limited understanding of how business ownership experience shapes an individual's ability to subsequently identify an innovative opportunity.

Diverse experience is crucial for creativity (Simonton, 1999). People must have the ability to detect relationships between the elements of experience and combine them in a creative manner (Ward, 2004). Individual schemas play a central role in this process as they provide a framework for recognizing and evaluating information relevant to an opportunity. As schemas become richer with experience, they facilitate quicker and more effective information processing (Lord and Maher, 1990). This, in turn, reduces the burden on cognitive processing, allowing greater concentration on novel and unique information. Hence, repeat entrepreneurs with relatively more developed schemas may identify not only more opportunities but also more innovative opportunities.

Despite the favorable role of experience, some individuals may be stuck in the past (Ward, 2004). By directing the individual's attention to information relevant to their underlying experience, a well-developed schema can allow experienced entrepreneurs to identify opportunities. By making it difficult for individuals to notice, encode and remember information that is inconsistent with existing schema, a well-developed schema can act as a 'mental blinder' (Baron, 2004). Those with significant experience can become so mechanical they miss new pieces of information, or new connections.

As intimated above, at low levels of experience, entrepreneurs identify opportunities that are less innovative. More innovative opportunities are likely identified with increasing ownership experience. Entrepreneurs may become constrained by their past experience so that, beyond a certain level, experience becomes a liability and they cite lower levels of innovativeness. This discussion suggests the following hypothesis:

Hypothesis 2. There will be an inverse U-shaped relationship between an entrepreneur's prior business ownership experience and the innovativeness of the latest opportunity exploited.

3.2. *The nature of experience: the role of business failure*

The nature of prior experiences, specifically perception of an experience as a failure or success, can shape subsequent activity. Business failure is defined here as the termination of a venture having fallen short of its goals (McGrath, 1999). Experience with failure is associated with a cognitive/functional effect and a motivational effect. Following calls for cognition and motivation to be integrated (Dai and Sternberg, 2004), we consider the effects of business failure experience on entrepreneurial cognition and motivation by examining individual opportunity identification behavior.

There is conflicting evidence on the link between failure experience and subsequent behavior (Brunstein and Gollwitzer, 1996). Failure can reduce subsequent performance due to the creation of motivational and cognitive deficits that generate a sense of 'helplessness', reduction in an individual's belief in their ability to undertake that task successfully in the future, and rumination that hinders task performance (Bandura, 1994). Shepherd (2003) suggests that entrepreneurs' experience with business failure can represent a traumatic event that generates negative emotions (e.g., grief) that interfere with both learning and the motivation to try again. Failure experience may, however, signal a discrepancy between a desired goal and effort that stimulates motivation and yields better subsequent performance (Locke and Latham, 1990). This greater subsequent effort arises because the task is perceived to be more difficult following a prior failure (Brunstein and Gollwitzer, 1996).

A mixture of failures and successes can provide greater cognitive diversity upon which the individual can draw in subsequent activity (Gustafsson, 2006). Failure represents a 'clear signal' that facilitates the recognition and interpretation of otherwise ambiguous outcomes (Sitkin, 1992). This signal can encourage learning because the individual is forced to conduct a post-mortem to understand what led to the failure, aiding the development of an individual's schema. This discussion highlights seemingly contradictory views surrounding the relationship between failure and subsequent behavior. Below, these views are reconciled by focusing on the relevance of failure experience to an individual's sense of self-identity, as well as the number of failure experiences.

The nature of the task at which an individual has failed can influence the consequences of that failure. Some people are motivated by self-defining goals, such as becoming a successful entrepreneur, and may strive to acquire the attributes and skills associated with that particular self-definition. Experiencing failure in a domain relevant to an individual's self-definition can heighten the motivation to compensate for self-definitional shortcomings and reassure themselves that they are capable of achieving the self-definitional goal (Brunstein and Gollwitzer, 1996). Conversely, if they are asked to complete a task that is not relevant to their self-definition, motivation and performance suffers due to a

pre-occupation with the failure relevant to their self-definition. This may explain the contradictory evidence relating to the effects of failure on subsequent motivation and performance. Business failure represents failure in a domain that is highly relevant to an entrepreneur's self-definition. Thus, entrepreneurs who have experienced failure may be highly motivated to try again, and to identify more opportunities than individuals reporting no prior failure experience. The validity of this statement may, however, depend on how many business failures the entrepreneur has experienced.

While a single failure may lead to reactance, whereby a person becomes more motivated to overcome setbacks (McGrath, 1999), multiple failures in the absence of successes may result in a loss of faith, and an inability to conquer adversity (Brunstein and Gollwitzer, 1996). An entrepreneur may maintain confidence in his/her own ability if a business failure is viewed as an anomaly. As the proportion of failures increases, the likelihood of the entrepreneur suffering from dampened motivation may increase.

This discussion suggests that following failure, some entrepreneurs will compensate by becoming more motivated, which will lead to the identification of subsequently more opportunities.⁴ As failure experiences build up, to compensate for the threat to their self-definition, some entrepreneurs will seek to identify even more opportunities. This pattern will continue as long as the total number of failures experienced is not too high vis-à-vis more favorable outcomes. If the proportion of business failures among the entrepreneur's portfolio of all businesses owned becomes too high, they may be less motivated to identify additional opportunities. This discussion suggests the following hypothesis:

Hypothesis 3. There will be an inverse U-shaped relationship between the proportion of failed businesses relative to the number of businesses owned by entrepreneurs and the number of identified business opportunities in a given period.

Prior business failure experience may also shape the innovativeness of subsequent opportunities identified by influencing the cognitive processes needed for creativity (Ward, 2004). Prior failure (and success) experience may shape the way in which current situations/problems are framed. Failure experience may induce creativity by generating behavioral abandonment and the search for new knowledge (Louis and Sutton, 1991); those who have experienced failure may search for an adequate or superior solution. Prior failure may encourage repeat entrepreneurs to develop new ideas and to search for new information, and to subsequently seek to exploit more innovative opportunities. The emotional and motivational side effects of business failure intimated above suggest that some repeat entrepreneurs may subsequently seeking different, although not necessarily more innovative opportunities.

Motivated by the desire to maintain a sense of self-worth, individuals who have experienced failure may refocus on less challenging goals and less risky and innovative opportunities to avoid subsequent failure. Schultheiss and Brunstein (2000), however, found that the subsequent selection of easier tasks only occurred when failure took place in a domain not relevant to self-definition. As intimated above, the motivational effects associated with failure may vary with the number of failures experienced. Repeated failures may neutralize some of the effects posited by Schultheiss and Brunstein. Individuals reporting failure in a domain relevant to self-definition may seek to compensate for the failure by focusing on the identification of more innovative opportunities. This pattern will continue as long as the total number of failures experienced is not too high vis-à-vis more favorable outcomes. If the proportion of business failures among the entrepreneur's portfolio of all businesses owned becomes too high, they may be less motivated to identify additional innovative opportunities. To reduce risk, the entrepreneur may seek to identify less innovative opportunities. This discussion suggests the following hypothesis:

Hypothesis 4. There will be an inverse U-shaped relationship between the proportion of failed businesses relative to the number of businesses owned by entrepreneurs and the innovativeness of the latest opportunity exploited.

4. Data collected and research method

4.1. Sample, data collection and respondents

No list of novice and repeat entrepreneurs is published. Primary information has to be collected to identify types of entrepreneurs relating to their prior business ownership experience. Information was gathered from a survey of firms to

⁴ The implicit assumption here is that heightened motivation leads to enhanced performance. Dramatic increases in motivation may, however, lead to "choking under pressure", and the adoption of inappropriate and ineffective task strategies. We thank a reviewer for making this point.

identify whether the key decision-maker in each firm was a novice or a repeat entrepreneur. The sampling frame of firms was constructed by obtaining sampling quotas by four broad industrial categories (i.e., agriculture, forestry and fishing, production, construction and services) and the eleven Government Official Regions from summary tables detailing the population of businesses registered for Value-Added-Tax in Great Britain in 1999 (Ucbasaran et al., 2006). Names and addresses of private independent firms were purchased from Dun and Bradstreet. Industry and standard region sampling proportions were identified for a stratified random sample of independent private firms. A stratified random sampling frame of 4307 independent firms was drawn from the cleaned list of names.

Given the focus on the quantity and quality of opportunities identified, and the emphasis on the entrepreneur as the unit of analysis, a key informant approach was selected (Kumar et al., 1993). A structured questionnaire was mailed during September 2000 to a single key respondent in each of the firms in the sampling frame. Valid respondents had to have sufficient knowledge and an adequate level of involvement with regard to the issues under investigation. Thus, consistent with prior work, the key respondent entrepreneurs were the principal owners of at least one business they had established or purchased and were key decision-makers in the surveyed business (Cooper and Dunkelberg, 1986; Ucbasaran et al., 2006). To ensure the validity of the survey data, several questions on the questionnaire ascertained the exact status of the respondent. With reference to the validation questions, 54 respondents were identified as not being a founder and/or the principal owner of the business, and were regarded as non-respondents. Although information was not available from multiple respondents in each firm, reliability checks were conducted on key firm-level variables such as business age, employment size and legal status. Strong correlations were detected relating to these variables with reference to the archival data provided by Dun and Bradstreet and the survey evidence provided by key informants. The correlations ranged from 0.77 to 0.88, suggesting the data from the key informant was reliable.

After a three-wave mailing (i.e., two reminders), 767 valid questionnaire returns were obtained. Respondents who had inherited an established business and those that filed missing information returns to any of the selected dependent, independent or control variables were excluded from any further analysis. In total, 637 respondents provided complete data for the selected variables. Seven entrepreneurs indicated they had owned ten or more businesses. Outliers can have a distorting effect on regression models containing power polynomials. Guided by Cohen et al. (2003), outliers were removed from any further analysis. Their exclusion did not alter the strength or direction of reported relationships. The exclusion of outliers, however, altered the inflection points when curvilinear relationships were examined. The final sample included 630 respondents, yielding an effective response rate of 14.6%. This rate is comparable and in many instances better than similar studies (Storey, 1994).

The average age of the respondents was 49 years, and 86.2% (i.e., 543) of respondents were male. The average age of the surveyed businesses was 18.5 years old (standard deviation of 17.9). Firms, on average, employed 10 full-time employees (standard deviation of 40.5). Fifty three percent (i.e., 336) of respondents were repeat entrepreneurs. The average number of businesses owned by the whole sample was 2.1, while repeat entrepreneurs, on average, owned 3 businesses. Thirty two percent of repeat entrepreneurs (i.e., 114) reported that at least one of their prior businesses had failed (i.e., sold or closed because it had not met expectations or due to bankruptcy, liquidation or receivership).

4.2. Sample representation

Using Chi-square and Mann Whitney *U* tests, no statistically significant response bias was detected with regard to industry, standard government official region, legal form, age of the business and employment size between the respondents and non-respondents at the 0.05 level. On these criteria, we have no cause to suspect that this sample of firms is not a representative sample of the population of independent private firms in Great Britain.

4.3. Measures

4.3.1. Dependent variables

Opportunity identification. Consistent with previous studies (Shepherd and DeTienne, 2005), opportunity identification was operationalized in terms of the *number of opportunities identified*. A conservative definition of business opportunities was selected. Respondents were presented with a statement asking them, 'how many opportunities for creating or purchasing a business have you identified within the last five years'. They were presented with eight opportunity identification outcomes (i.e., 0, 1, 2, 3, 4, 5, 6 to 10, or more than 10 opportunities). Some

outcomes were infrequently cited.⁵ Collapsing categories with sparse cell counts can improve estimation (Murad et al., 2003). The eight opportunity identification outcomes were collapsed into three categories, and the number of respondents belonging to each category was more evenly distributed. The best fit model relates to the three category opportunity identification outcome.⁶ Respondents who reported that they had failed to identify any opportunities were allocated a score of '0' (accounting for 316 (50.2%) respondents), those who reported that they had identified one or two opportunities were allocated a score of '1' (accounting for 165 (26.2%) respondents), whilst those who had identified three or more opportunities were allocated a score of '2' (accounting for 149 (23.6%) respondents).

Innovation. The innovation measure operationalized relates to the scale proposed by Manimala (1992) and the cross-cutting theme of 'newness' was considered (Schumpeter, 1934). Respondents were asked to indicate if they had: 1) introduced a new product or a new quality of an existing product; 2) introduced a new method of production or modified an existing method; 3) found a new market or employed a new marketing strategy in an existing market; 4) found a new source of supply; 5) found new ways of managing finance; 6) developed new structures, systems, or procedures; 7) introduced a new culture especially through the introduction of innovative people; 8) found new ways of managing and developing personnel; 9) used new ways of managing quality control and R&D; and 10) found new ways of dealing with government and other external agencies.

Debate surrounds measures of organizational innovation. The following issues were considered in the operationalization of the 'innovativeness' measure: First, the full range of innovative activities (Schumpeter, 1934) were taken into account rather than focusing solely on product innovation. Second, given the scope of this study, a measure of innovativeness that is applicable to firms in several industries (i.e., not just high-technology industries) was needed. Third, a measure of innovativeness should not solely emphasize the inputs into the innovation process. Commonly used measures such as R&D expenditure and patents fail to meet these criteria. These measures emphasize the inputs into the innovation process rather than the outcomes. Further, these measures tend to favor high-tech firms and product innovation, the latter representing only one dimension of innovation. Patents in particular may not be an appropriate gauge of process innovation. While process innovations are technically patentable, they are rarely patented and are often kept as trade secrets (Jensen and Webster, 2004). A self-report measure of innovation was utilized (see DeTienne and Koberg, 2002; Thornhill, 2006). Evidence suggests that key informants generally provide reliable information (DeTienne and Koberg, 2002). On the downside, some respondents may over-report activities that are perceived as socially desirable (e.g., innovativeness). We therefore examined the distribution of responses to the innovation questions and found an even distribution in each category from 0 to 10. Further, our respondents were asked to report whether or not they undertook a particular innovative activity rather than an attitudinal response based on a Likert-type scale. Social desirability bias is expected to be lesser in the former case than the latter.

4.3.2. Independent variables

Three sets of business ownership experience variables were measured.

TOTAL. Respondents were asked to indicate the total number of businesses they had established and/or purchased in which they had minority or majority ownership stakes. TOTAL is a continuous variable.⁷ Curvilinear relationships between business ownership experience and the dependent variables were hypothesized. A polynomial approach was used to test for curvilinearity. Cohen et al. (2003) argue that theory should guide the selection of power polynomials with a meaningful zero value. However, most social science theories suggest quadratic relationships. Similarly, following the arguments leading to the derivation of the hypotheses, a quadratic term of the TOTAL variable was operationalized. TOTAL² represents TOTAL squared.

Since each respondent owned at least one business, the TOTAL variable could not be equal to zero. A centering procedure was conducted, whereby the sample mean is subtracted from the variable (Cohen et al., 2003). Both TOTAL (mean value of uncentered TOTAL is 2.1 businesses) and TOTAL² were centered. Robustness checks relating a cubic

⁵ Three hundred and sixteen (50.2%) respondents had identified no opportunity; 76 (12.1%) one opportunity; 89 (14.1%) two opportunities; 53 (8.4%) three opportunities; 28 (4.4%) four opportunities; 25 (4%) five opportunities; 26 (4.1%) six to ten opportunities; and 17 (2.7%) ten or more opportunities.

⁶ Presented results were not found to be sensitive to the number of categories operationalized (e.g., four or five categories as well as the full eight categories).

⁷ Team ownership is widespread, and consequently both minority and majority ownership stakes were considered. Thirty-six percent of respondents had started/purchased the surveyed business in teams.

relationship (i.e., $TOTAL^3$) were conducted and no significant relationship was detected. Reported models relate to the hypothesized quadratic relationships.

FAILURE. Each respondent cited the total number of failed businesses they had owned as a percentage of the total number of businesses they had owned up to the time of the survey (FAILURE). Business failure was deemed to have taken place if the respondent had closed or sold a business due to bankruptcy, liquidation or receivership, or because it failed to meet the expectations of the entrepreneur (McGrath, 1999). To test the hypothesized curvilinear relationship, the quadratic term of the FAILURE variable was operationalized. As FAILURE has a meaningful zero value (i.e., some respondents have not reported a business failure), both FAILURE and $FAILURE^2$ were not centered.

4.3.3. Control variables

Human capital and prior knowledge can shape the opportunity identification process (Shane, 2000; Shepherd and DeTienne, 2005). Repeat entrepreneurs may be able to acquire a range of skills and knowledge, but the key feature of experience is more focused and refined knowledge structures/schema (Baron and Ensley, 2006). To assess the distinct contribution of business ownership experience relative to other forms of skills and knowledge acquired, the models control for human capital variables considered in previous studies. Education can be an important source of skills, problem-solving ability, motivation, knowledge, etc. (Davidsson and Honig, 2003). The *education* measure relates to the years of education cited by respondents. Traditionally women have been associated with lower levels of human capital (Becker, 1993). They are more likely to work part-time and withdraw, at least temporarily, from the labor force to raise children. Some women may have fewer opportunities to develop relevant experience that allows them to acquire resources necessary for business ownership (Cooper et al., 1994). Female entrepreneurs were allocated a value of '0', whilst male entrepreneurs were allocated a value of '1'. More mature entrepreneurs may have more diverse skills and experience. As part of the ageing process, an individual's human capital stock can depreciate over time and investments may be required to maintain its value. Cressy (1996) argued that if investment decreased exponentially with age, the relationship between human capital and age would be concave. Respondents reported their age in years. To avoid problems with multicollinearity and ensure meaningful interpretation, both the age and age^2 variables were centered because the age variable could not be equal to zero. The age of the owner was measured in terms of the deviation from the mean age (i.e., 50), and age^2 was measured as the deviation from the mean age squared. Experience, skills and training may moderate some of the adverse effects of aging (Meinz, 2000). The interaction between the business ownership experience and age (including the squared terms) variables was monitored. No significant relationships were detected and they are not discussed further.

Self-assessed capabilities are the core of an individual's self-efficacy belief surrounding their ability to exercise control over events (Wood and Bandura, 1989). Entrepreneurs can demonstrate capabilities with regard to the entrepreneurial, managerial and technical functional areas. Respondents were presented with eleven statements relating to their perceived capabilities in these areas (Chandler and Hanks 1998). With reference to the eleven statements, an R-mode Principal Components Analysis (PCA) identified three conceptually meaningful components (i.e., underlying constructs).⁸ Component 1 highlighted the *entrepreneurial capability*, and related to five statements focusing upon the perceived ability to identify and exploit opportunities. Component 2 highlighted the *managerial capability* with four statements focusing upon the ability to manage and organize people and resources. Component 3 highlighted the *technical capability* and related to two statements of technical expertise.

Information can play a key role in the identification and exploitation of opportunities by providing a platform from which to launch a new venture (Fiet 2002). Cooper et al.'s (1995) information search intensity measure was operationalized. Each respondent was presented with 12 sources of information they could have utilized. Respondents indicated which of these information sources they had used. Eight out of the 12 sources were used by at least 60% (as guided by Cooper et al., 1995) of the respondents (i.e., suppliers, employees, customers, friends, family, magazines/newspapers, trade publications and other business owners). Respondents also reported the usefulness of each information source used on a five-point scale ranging from 'not at all useful' (1) to 'very useful' (5). The 'usefulness' ratings for each of the information sources used were added together to produce the *information search intensity* measure.

⁸ KMO measure of sampling adequacy=0.81; Bartlett's test of sphericity significant at 0.001 level; Cumulative % of variance explained is 63.96%. Further details available from the authors upon request.

Six binary industry variables were computed with reference to the widely respected UK Standard Industrial Classification (SIC) codes: agriculture, forestry, fishing, and mining and quarrying (SIC 0 and SIC 2 combined); manufacturing (SIC 3); construction (SIC 5); transport, storage and communication (SIC 7); financial intermediaries, real estate, renting and business activities (SIC 8); and other services (SIC 9). The reference category was entrepreneurs engaged in distribution, hotels, catering and repairs (SIC 6).

4.4. Validity and reliability

Face validity was considered by piloting the questionnaire on two novice entrepreneurs, four repeat entrepreneurs, and two internationally recognized entrepreneurship academics. Comments were incorporated into the revised structured questionnaire. No major problems with the structured questionnaire were detected. Convergent and discriminant validity of perceived capabilities was considered with reference to a PCA. Component loadings ranged from 0.66 to 0.89 for the ‘managerial capability’, ‘entrepreneurial capability’, and the ‘technical capability’ scales, respectively. All component loadings were significant. Convergent validity was confirmed. The pattern of components appeared to be logical and consistent with the literature relating to entrepreneur capabilities. The three capabilities appeared to exhibit discriminant validity as evidenced by each of the 11 statements loading significantly on only one component. The reliability of the ‘entrepreneurial capability’, ‘managerial capability’ and ‘technical capability’ scales was assessed by examining the Cronbach’s alpha scores (0.79, 0.85 and 0.67, respectively). The ‘innovation’ scale had a Cronbach’s alpha of 0.75.

4.5. Common method bias

Several steps were taken to minimize common method bias, including the protection of respondent anonymity; reducing item ambiguity by pre-testing the survey on entrepreneurs (Tourangeau et al., 2000); ensuring items relating to the dependent variables were not located close to the independent variables on the questionnaire; and triangulation from archival sources (Parkhe, 1993) (see Section 4.1). The Harman’s one-factor test (Podsakoff et al., 2003) was conducted. All the statements relating to the dependent, independent and control variables were explored in a single PCA to check whether one component accounted for most of the variance. Eight components with eigenvalues greater than 1.0 were identified. These components accounted for 64% of the variance, with the largest component accounting for only 6.6%. No evidence of common method bias was detected.

4.6. Data analysis

Ordered probit analysis and negative binomial regression were used to test the hypotheses. Due to the ordinal nature of the opportunity identification variable, ordered probit analysis was used to test Hypotheses 1 and 3. Similar results were detected with regard to an ordered logit analysis. The innovation dependent variable relates to count data. A negative binomial approach was used to test Hypotheses 2 and 4.⁹

5. Results

Means and standard deviations for the dependent, independent and control variables are reported in Table 1. The correlation coefficients suggest that the reported regression models will not be seriously distorted by multicollinearity. Table 2 summarizes the results of the ordered probit analysis (Models 1 to 1c) and the negative binomial regression analysis (Models 2a to 2c). Models 1a and 2a relate solely to the control variables. Models 1b and 1c and Models 2b and 2c include the different measures of business ownership experience. The latter full models are discussed below.

There is no agreed goodness-of-fit measure relating to ordered probit and negative binomial regression analysis. Two commonly used coefficients are reported (Cohen et al., 2003). Deviance as indicated by the *log likelihood*

⁹ While in principle an Ordinary Least Squares (OLS) technique could be used, a Poisson regression can produce more reliable results. The latter model can be criticized for assuming equality of the conditional mean and variance functions. A problem arises when there is over-dispersion in the data, that is, where the variance of the dependent variable exceeds the mean. This problem can be addressed by adopting a negative binomial model that allows for over-dispersion. Tests revealed that there was significant over-dispersion in connection with the innovation dependent variable.

Table 1
Descriptive statistics and correlation matrix^{a, b}

	Mean	S. Dev	1.	2. ^c	3.	4.	5.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Opp. identification	0.73	0.82	1.000														
2. Innovation	4.06	2.56		1.000													
3. Education	13.34	2.37	0.104		1.000												
4. Gender	0.86	0.35	0.084	0.059	−0.061	1.000											
5. Age of owner ^d	0.00	10.10	−0.216	−0.117	−0.054	0.181	1.000										
7. Man. capability ^e	0.00	0.99	0.120	0.182	−0.035	−0.083	−0.033	1.000									
8. Ent. capability ^e	0.01	1.00	0.117	0.259	−0.097	−0.014	−0.016	0.004	1.000								
9. Tech. capability ^e	0.00	1.01	0.026	0.135	0.071	0.134	0.031	−0.015	−0.004	1.000							
10. Information search	21.60	9.04	0.138	0.237	−0.001	−0.072	−0.124	0.134	0.195	−0.048	1.000						
11. SIC 0&2	0.07	0.26	−0.058	−0.060	−0.082	0.042	0.087	−0.081	0.034	−0.073	−0.033	1.000					
12. SIC 3	0.11	0.31	−0.025	0.074	−0.033	0.080	0.062	0.010	−0.026	0.177	−0.023	−0.098	1.000				
13. SIC 5	0.09	0.29	−0.051	−0.075	−0.071	0.112	−0.045	0.064	−0.050	0.085	0.044	−0.089	−0.111	1.000			
14. SIC 7	0.02	0.15	0.063	−0.090	0.004	0.002	0.005	−0.014	−0.012	−0.077	−0.004	−0.044	−0.054	−0.050	1.000		
15. SIC 8	0.25	0.43	0.039	0.088	0.123	0.082	0.020	−0.016	−0.090	0.073	−0.037	−0.162	−0.200	−0.184	−0.090	1.000	
16. SIC 9	0.14	0.34	0.005	−0.026	0.122	−0.256	−0.066	0.071	−0.003	−0.022	0.019	−0.112	−0.138	−0.127	−0.062	−0.229	1.000
17. TOTAL ^d	0.00	1.42	0.350	0.175	−0.008	0.090	0.088	0.093	0.050	−0.014	−0.020	0.023	−0.005	0.014	0.072	0.007	−0.009
18. FAILURE ^f	13.79	21.54	−0.001	−0.032	−0.037	−0.047	−0.045	0.005	−0.036	0.014	0.038	0.025	0.128	0.101	−0.009	−0.120	−0.060

^a Correlation matrix relates to largest sample of respondents ($n=630$) unless stated otherwise.

^b Correlations with an absolute value greater than 0.08 are significant at the 0.05 level (two-tailed tests).

^c Relates to a sample of 625 respondents.

^d Variables were centered in order to facilitate interpretation (because a value of zero for these variables is meaningless) and to reduce problems associated with multicollinearity.

^e Relates to standardized and ortho-normalized component scores.

^f Relates to the repeat entrepreneur sub-sample ($n=336$).

Table 2

Regression models relating to the number of business opportunities identified and the innovativeness of the latest exploited opportunity^a

Variables	Number of business opportunities identified			Innovativeness of the latest exploited opportunity		
	Model 1a coefficients	Model 1b coefficients	Model 1c coefficients	Model 2a coefficients	Model 2b coefficients	Model 2c coefficients
Education	0.06**	0.06**	0.02	0.00	0.00	0.01
Gender	0.57***	0.47**	0.34†	0.16*	0.13†	0.15
Age of owner	−0.03***	−0.04***	−0.03***	−0.01**	−0.01**	−0.01**
Age of owner ²	−0.00	−0.00	−0.00	−0.00	−0.00	−0.00
Managerial capability	0.16***	0.12*	0.19**	0.12***	0.10***	0.11***
Entrepreneurial capability	0.13**	0.13*	0.21**	0.16***	0.15***	0.14***
Technical capability	0.03	0.05	0.09	0.08***	0.09***	0.03
Information search	0.01*	0.02**	0.00	0.01***	0.01***	0.01***
SIC 0&2	−0.14	−0.28	−0.17	−0.09	−0.10	−0.14
SIC 3	−0.10	−0.13	−0.19	0.12	0.11	0.21*
SIC 5	−0.37*	−0.47**	−0.38	−0.23*	−0.25**	−0.28*
SIC 7	0.52†	0.39	0.12	−0.35†	−0.38*	−0.40†
SIC 8	−0.02	−0.01	−0.18	0.11†	0.10†	0.08
SIC 9	−0.01	−0.05	−0.09	−0.04	−0.05	−0.08
Constant				0.91***	0.97***	0.89***
TOTAL	—	0.45***	—	—	0.09***	—
TOTAL ²	—	−0.05***	—	—	−0.01	—
FAILURE	—	—	0.04***	—	—	0.00
FAILURE ²	—	—	−0.001***	—	—	−0.00
$\delta_1/\text{Ln alpha}$	1.40	1.28	0.06	−2.35	−2.50	−2.84
δ_2/Alpha	2.18	2.15	1.02	0.10	0.08	0.06
<i>n</i>	630	630	336	625	625	338
Log likelihood	−611.4	−561.60	−335.97	−1400.75	−1390.83	−761.47
Chi ²	84.97***	184.64***	6515***	130.10***	149.94***	86.33***
Pseudo- <i>R</i> ²	0.07	0.14	0.09	0.04	0.05	0.05

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.^a Ordered probit analysis was used for the ‘opportunity identification’ variable, whilst negative binomial regression was used for the ‘innovativeness’ dependent variable.

coefficient is a ‘badness-of-fit’ measure, and weak ‘explanatory’ models generally report higher deviance coefficients. The *pseudo-R*² coefficient provides an indication of the ‘explanatory’ power of the model. While similar in principle to the adjusted *R*² reported in ordinary least squares (OLS) regression models, non-OLS regression models generally report lower pseudo *R*² coefficients (Hosmer and Lemeshow, 2000). The *log likelihood* coefficient and the *pseudo-R*² coefficient are reported in Table 2.

5.1. Hypotheses 1 and 2: the extent of experience

Independent variables relating to the extent of business ownership experience were included in Models 1b and 2b in Table 2. Both models were highly significant. The model fit was improved as a result of the addition of the independent variables. Models 1b and 2b were associated with lower log likelihood and higher pseudo-*R*² coefficients than the respective control models (i.e., Models 1a and 2a). The extent of experience variable, TOTAL, was positively and significantly associated with both the number of opportunities identified and the innovativeness of the latest opportunity at the $p < 0.001$ level. TOTAL² was negatively and significantly associated with the opportunity identification dependent variable suggesting a non-linear relationship with the extent of business ownership experience. Specifically, for entrepreneurs owning up to 4.5 businesses, business ownership experience was positively associated with opportunity identification. In contrast, for entrepreneurs owning more than 4.5 businesses greater business ownership experience was associated with the identification of fewer opportunities. This evidence provides strong support for Hypothesis 1. The TOTAL² variable was not found to be significant in Model 2b. There is no evidence to suggest a non-linear relationship between business ownership experience and the innovativeness of the latest opportunity. This evidence provides partial support for Hypothesis 2, whereby business ownership is positively associated with the innovativeness of the latest opportunity, but not at a diminishing rate.

5.2. Hypotheses 3 and 4: experience of business failure

Independent variables relating to business failure experience were included in Model 1c and 2c in Table 2. Both models were highly significant and the independent variables ‘explained’ a higher proportion of variance in the two dependent variables than the control variables alone (i.e., Models 1a and 2a).¹⁰ Model 1c shows that the proportion of business failure experience to all business ownership experience (FAILURE) was positively and significantly associated with opportunity identification at the $p < 0.001$ level. FAILURE² was negatively and significantly associated with the number of business opportunities identified, indicating a non-linear relationship. Specifically, business failure experience was positively associated with increased opportunity identification as long as the proportion of failures did not exceed 20% of the entrepreneur’s total stock of businesses. For entrepreneurs who cited that more than 20% of their total stock of business had failed, failure experience was negatively associated with opportunity identification. Presented results support Hypothesis 3. Model 2c in Table 2 shows that both business failure experience variables (FAILURE and FAILURE²) were not significantly associated with the innovativeness of the latest opportunity, providing no support for Hypothesis 4.

6. Discussion

6.1. Key findings and implications

Cognitive theorists suggest that experienced entrepreneurs can leverage their prior experience and knowledge to process information more efficiently. Further, entrepreneurs who can process information efficiently generally have more cognitive resources at their disposal, which can allow them to concentrate on more novel material. Consistent with these views, Table 2 shows that experienced entrepreneurs identified more opportunities and exploited more innovative opportunities with wealth creation potential. However, beyond a certain level, the benefits associated with prior business ownership experience may be outweighed by the biases that can stem from experience. As hypothesized, an inverse U-shaped relationship between business ownership experience and opportunity identification was detected. Up to 4.5 business ownership experiences, experience was positively associated with opportunity identification, however, above 4.5 business ownership experiences, experience was negatively associated with the number of opportunities identified.

The cognitive and motivation effects of experience with failure have been the subject of much debate. Failure is viewed as de-motivating and can lead to a pre-occupation with the failure, reducing cognitive effectiveness. Conversely, failure may aid cognitive development by introducing greater diversity into an individual’s schema. Failure at a task which is deemed to be central to an individual’s self-definition can motivate the individual to try harder. The validity of these opposing views may depend on the proportion of failure experiences vis-à-vis more favorable outcomes. Table 2 shows that entrepreneurs who cited higher levels of prior business failure experience identified more business opportunities. Business failure experience does not necessarily lead to more cautious and risk-averse entrepreneurs. As hypothesized, however, some entrepreneurs were only able to ‘stomach’ a certain level of business failure. Most notably, entrepreneurs who cited that 20% or more of their businesses had failed identified fewer business opportunities. Contrary to expectation, prior business failure experience was not significantly associated with the innovativeness of the latest exploited opportunities; entrepreneurs associated with proportionally more business failures did not subsequently exploit more innovative latest opportunities.

These findings should alert entrepreneurs to the potential problems associated with an over-reliance on personal business ownership experience alone. This study has highlighted that beyond a certain level of prior business ownership experience, the ‘liabilities’ of experience can outweigh the ‘assets’ with regard to the identification of additional opportunities. Experience need not peak and end up becoming a barrier to opportunity identification if the entrepreneur engages in deliberate practice, that is, activities designed by a teacher (or mentor) to improve an individual’s performance (Ericsson et al., 1993). Deliberate practice relates to clear feedback on performance and guidance on how to improve performance. Considerable care is required when applying the concept of deliberate

¹⁰ Models 1c and 2c cannot be compared with Models 1a and 2a because the latter two models relate to the full sample, while the former two models relate to the habitual entrepreneur sub-sample. Although not reported here, the goodness-of-fit relating to Models 1c and 2c were compared with the control models relating to Models 1a and 2a with reference to the habitual entrepreneur sub-sample.

practice to entrepreneurship. Tasks performed by entrepreneurs need to be clearly identified and measures of performance relating to each task need to be operationalized (Baron and Henry, 2006). The appropriateness of deliberate practice to hone the skills of experienced entrepreneurs warrants additional research attention.

The findings of this study provide additional guidance to both experienced and novice entrepreneurs wishing to pursue more opportunities and more innovative ones. The results reported in Table 2 suggest that novice entrepreneurs can compensate for their lack of experience by investing in their human capital. This might involve investing in education and training that seeks to develop their entrepreneurial and managerial capabilities; policy support measures may be designed to provide such training. These latter capabilities were found to be positively associated with the identification of more opportunities and the exploitation of more innovative opportunities. A reliance on technical capabilities alone, however, is not advised. Entrepreneurs can also identify more (innovative) opportunities by engaging in more intensive information search. Developing social capital can also help circumvent barriers to innovative opportunity identification and exploitation (Ozgen and Baron, 2007). For example, inexperienced entrepreneurs may find developing ties with experienced successful entrepreneurs particularly useful (Table 2) (Westhead et al., 2004).

Presented findings have implications for financiers. Some venture capitalists suggest that repeat entrepreneurs cite difficulties in finding subsequent (attractive) opportunities. Reported evidence casts doubt on this latter view. Novice entrepreneurs identified fewer opportunities and exploited less innovative opportunities compared to repeat entrepreneurs. Also, entrepreneurs who cited prior business failure experience, up to a certain level, identified more opportunities. Financiers need to appreciate that some entrepreneurs learn from their mistakes and may be highly motivated in subsequent ventures. If financiers solely support entrepreneurs with successful track records, a number of good investment opportunities may be missed.

Our results provide guidance to policy-makers who may be able to tailor support to the needs of different groups of entrepreneurs. By understanding the profiles of entrepreneurs who report greater levels of opportunity identification, those who exploit more innovative opportunities and those who can recover and learn from failure, policy-makers can ‘pick winners’ (Storey, 1994). Alternatively, support and training can be provided to those that are struggling to identify more (innovative) opportunities. Our findings also have implications for the debate concerning the relaxation of bankruptcy laws to enable failed entrepreneurs to start further businesses. There are potential societal benefits associated with more relaxed bankruptcy laws as some entrepreneurs are able to recover from failure experiences and identify subsequent opportunities. However, we find that when the number of failure experiences dominates more favorable experiences, opportunity identification can suffer. Our findings also indicate that experience with failure may not promote the subsequent exploitation of innovative opportunities by repeat entrepreneurs. Considerable care is therefore needed in the design of bankruptcy laws. There may also be a need to develop complementary support to hone opportunity identification skills towards the identification of innovative opportunities.

6.2. Limitations and avenues for future research

Inevitably this study is associated with several limitations, which provide future research opportunities. This study explored self-report statements and doubt may be cast on the wider validity of the operationalized dependent variables. Ozgen and Baron (2007) have asserted that practicing entrepreneur respondents who have ‘experienced’ the process of opportunity identification are able to report reasonably accurate assessment of their own activities. With regard to the innovativeness measure, this study followed a long-standing tradition of analyzing self-report statements. Studies have shown that key informants can provide reliable information about the organizational characteristics of their firms (DeTienne and Koeborg, 2002). Nonetheless, future studies could adopt a broader array of multi-dimensional innovativeness measures.

Several business ownership experience dimensions were considered but additional dimensions should be considered in future studies. This study considered the number of businesses owned by entrepreneurs but no evidence was collected relating to how these firms were related to each other. Repeat entrepreneurs who have owned businesses in a variety of settings may be less prone to the biases associated with repeated experience. They may display less routine behavior and may be able to identify more innovative opportunities because they have more diverse experience to draw upon. Future studies comparing entrepreneurs who acquire experience in a single industry context with those acquiring experience in several industries could provide interesting insights.

This study provides fresh insights into the nature of experience with regard to business failure experience. Future studies may detect illuminating relationships if they operationalize several business failure definitions. Rerup (2006)

has asserted that while some outcomes can be unambiguously classed as successes or failures, many outcomes can only be allocated to a ‘grey-zone’ of near-failures and near-success. What is deemed a failure by one stakeholder may be perceived as a success by another. Business failure needs to be validated with reference to alternative perspectives. Consideration of the timing and magnitude of business failure may also provide a new perspective. Future research could explore whether the emotional and motivational effects of failure diminish over time. The magnitude of the financial and non-financial (e.g., diminished reputation) costs incurred with business failure and the effects on the motivation to start again could be considered. Entrepreneurs losing their life savings in business closures may exhibit greater emotional damage and become less motivated and risk averse.

More generally, the question as to why experiencing failure in previous start-ups reduces or impedes opportunity recognition among experienced entrepreneurs remains an area for further research. For example, is the reason for reduced opportunity recognition a reduction in motivation or a shift toward greater reluctance to take risks? Exploring this question would provide valuable insights into the entire opportunity recognition process.

Our analysis also suggests that future research could focus on the nature of opportunity identification, rather than simply on the number of opportunities identified. What one person believes is an opportunity another may not, yet we know little about this difference. How prior experience affects opportunity identification itself is also a future research topic that emerges from our study. For example, to what extent do experienced and non-experienced entrepreneurs differ in the way they decide whether an idea is an opportunity or not? Do experienced entrepreneurs differ in this respect according to the nature of their previous experience?

Future studies need to recognize that novice (and repeat) entrepreneurs are heterogeneous. In particular, a distinction could be made between novice entrepreneurs who cite an intention to become a repeat entrepreneur and those who do not.

7. Conclusion

We have presented new insights into the under-researched area of why some entrepreneurs identify more and/or better opportunities. Using a unique hand-collected dataset of 630 entrepreneurs, we found that entrepreneurs with business ownership experience identified more business opportunities, and more innovative opportunities. However, above a certain level (i.e., 4.5 businesses), experience was associated with lower levels of opportunity identification. Despite concerns about the traumatic nature of business failure, presented evidence suggests that business failure experience can stimulate entrepreneurs to identify subsequent opportunities. Failure experience, however, does not stimulate the exploitation of innovative opportunities. Further, if failure experience relatively overwhelms more positive experience, the failure experience can reduce the subsequent number of opportunities identified. Presented findings, therefore, help reconcile conflicting views relating to the cognitive and motivation effects associated with the experience with failure.

References

- Bandura, A., 1994. Self-efficacy. In: Ramachaudran, V.S. (Ed.), *Encyclopaedia of Human Behavior*. Academic Press, New York, pp. 71–81.
- Baron, R.A., 1998. Cognitive mechanisms in entrepreneurship: why and when entrepreneurs think differently than other people. *Journal of Business Venturing* 13, 275–294.
- Baron, R.A., 2004. The cognitive perspective: a valuable tool for answering entrepreneurship’s basic “why” questions. *Journal of Business Venturing* 19, 221–239.
- Baron, R.A., Ensley, M.D., 2006. Opportunity recognition as the detection of meaningful patterns: evidence from comparison of novice and experienced entrepreneurs. *Management Science* 52, 1331–1344.
- Baron, R.A., Henry, R.A., 2006. The role of expert performance in entrepreneurship: how entrepreneurs acquire the capacity to excel. Paper presented at the Babson Kauffman Entrepreneurship Research Conference, Indiana University.
- Bazerman, M.H., 1990. *Judgement in Managerial Decision Making*, 2nd Ed. John Wiley and Sons, New York.
- Becker, G.S., 1993. Nobel lecture: the economic way of looking at behavior. *The Journal of Political Economy* 101, 385–409.
- Brunstein, J.C., Gollwitzer, P.M., 1996. Effects of failure on subsequent performance: the importance of self-defining goals. *Journal of Personality and Social Psychology* 70, 395–407.
- Chandler, G.N., Hanks, S.H., 1998. An examination of the substitutability of founders’ human and financial capital in emerging business ventures. *Journal of Business Venturing* 13, 353–369.
- Cohen, J., Cohen, P., West, S., Aiken, L., 2003. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, 3rd Ed. Lawrence Erlbaum Associates, Inc., Publishers, New Jersey.
- Cooper, A.C., Dunkelberg, W.C., 1986. Entrepreneurship and paths to business ownership. *Strategic Management Journal* 7, 53–68.

- Cooper, A.C., Gimeno-Gascon, F., Woo, C., 1994. Initial human and financial capital predictors of new venture performance. *Journal of Business Venturing* 9, 371–395.
- Cooper, A.C., Folta, T.B., Woo, C., 1995. Entrepreneurial information search. *Journal of Business Venturing* 10, 107–120.
- Cressy, R., 1996. Are business start-ups debt-rationed? *The Economic Journal* 106, 1253–1270.
- Dai, D., Sternberg, R., 2004. *Motivation, Emotion and Cognition*. Lawrence Erlbaum Associates.
- Davidsson, P., Honig, B., 2003. The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing* 18, 301–331.
- DeTienne, D.R., Koberg, C.S., 2002. The impact of environmental and organizational factors on discontinuous innovation within high-tech industries. *IEEE Transactions on Engineering Management* 49, 346–364.
- Ericsson, K.A., Lehman, A.C., 1996. Expert and exceptional performance: evidence of maximal adaptation to task constraints. *Annual Review of Psychology* 47, 273–305.
- Ericsson, K.A., Kramps, R.T., Tesch-Romer, C., 1993. The role of deliberate practice in the acquisition of expert performance. *Psychological Review* 100, 363–406.
- Fiet, J.O., 2002. *The Systematic Search for Entrepreneurial Discoveries*. Quorum Books, Westport, Conn.
- Fiske, S.T., Taylor, S.E., 1991. *Social Cognition*, 2nd Ed. McGraw-Hill, Singapore.
- Gaglio, C.M., 1997. Opportunity identification: review, critique and suggested research directions. In: Katz, J.A. (Ed.), *Advances in Entrepreneurship, Firm Emergence and Growth*. JAI Press, Greenwich, CA, pp. 139–202.
- Gaglio, C.M., Katz, J.A., 2001. The psychological basis of opportunity identification: entrepreneurial alertness. *Small Business Economics* 16, 95–111.
- Glaser, R., Chi, M.T.H., 1988. Overview. In: Chi, M.T.H., Glaser, R., Farr, M.J. (Eds.), *The Nature of Expertise*. Hillsdale, Erlbaum, NJ, pp. xv–xxviii.
- Gustafsson, V., 2006. *Entrepreneurial Decision Making*. Edward Elgar, Northampton, MA.
- Hosmer, D., Lemeshow, S., 2000. *Applied Logistic Regression*. Wiley, New York.
- Jensen, P.H. and Webster, E., 2004. Examining biases in measures of firm innovation, Melbourne Institute Working Paper 10/04, University of Melbourne.
- Kirzner, I., 1973. *Competition and Entrepreneurship*. Chicago University Press, Chicago.
- Kumar, N., Stern, L.W., Anderson, J.W., 1993. Conducting interorganizational research using key informants. *Academy of Management Journal* 36, 1633–1651.
- Locke, E.A., Latham, G.P., 1990. *A Theory of Goal Setting and Task Performance*. Prentice Hall, Englewood Cliffs, NJ.
- Lord, R.G., Maher, K.J., 1990. Alternative information-processing models and their implications for theory, research, and practice. *Academy of Management Review* 15, 9–28.
- Louis, M.R., Sutton, R.I., 1991. Switching cognitive gears: from habits of mind to active thinking. *Human Relations* 44, 55–76.
- Manimala, M.J., 1992. Entrepreneurial heuristics: a comparison of high pi and low pi ventures. *Journal of Business Venturing* 7, 477–504.
- McGrath, R.G., 1999. Falling forward: real options reasoning and entrepreneurial failure. *Academy of Management Review* 24, 13–30.
- McGrath, R.G., MacMillan, I.C., 2000. *The Entrepreneurial Mindset*. Harvard Business School Press, MA: Boston.
- Meinz, E.J., 2000. Experience-based attenuation of age-related differences in music cognition tasks. *Psychology and Aging* 15, 297–312.
- Murad, H., Fleischman, A., Sadetzki, S., Geyer, O., Freedman, L., 2003. Small samples and ordered logistic regression: does it help to collapse the outcome? *The American Statistician* 57, 155–160.
- Northcraft, G.B., Neale, M.A., 1987. Experts, amateurs and real estate: an anchoring and adjustment perspective on property pricing decisions. *Organizational Behavior and Human Decision Processes* 39, 84–97.
- Ozgen, E., Baron, R., 2007. Social sources of information in opportunity recognition: effects of mentors, industry networks, and professional forums. *Journal of Business Venturing* 22, 174–192.
- Parkhe, A., 1993. Strategic alliance structuring: a game theoretic and transaction cost examination of inter-firm cooperation. *Academy of Management Journal* 36, 794–829.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., Podsakoff, N.P., 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology* 88, 879–903.
- Rerup, C., 2006. Success, failure and the gray zone: how organizations learn or don't learn from ambiguous experience. *Academy of Management Best Paper Proceedings*.
- Schultheiss, O., Brunstein, J., 2000. Choice of difficult tasks as a strategy of compensating for identify-relevant failure. *Journal of Research in Personality* 34, 269–277.
- Schumpeter, J.A., 1934. *The Theory of Economic Development*. Harvard University, Cambridge.
- Shane, S., 2000. Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science* 11, 448–469.
- Shane, S., Venktaraman, S., 2000. The promise of entrepreneurship as a field of research. *Academy of Management Review* 25, 217–226.
- Shepherd, D.A., 2003. Learning from business failure: propositions of grief recovery for the self-employed. *Academy of Management Review* 28, 318–329.
- Shepherd, D.A., DeTienne, D.R., 2005. Prior knowledge, potential financial reward, and opportunity identification. *Entrepreneurship, Theory and Practice* 29, 91–112.
- Simonton, D.K., 1999. *Origins of Genius: Darwinian Perspectives on Creativity*. Oxford University Press.
- Sitkin, S.B., 1992. Learning through failure: the strategy of small losses. *Research in Organizational Behavior* 14, 231–266.
- Starr, J., Bygrave, W., 1991. The assets and liabilities of prior start-up experience: an exploratory study of multiple venture entrepreneurs. *Frontiers of Entrepreneurship Research*. Babson College, Wellesley, Massachusetts, pp. 213–227.
- Storey, D.J., 1994. *Understanding the Small Business Sector*. Thomson Learning, London.
- Thornhill, S., 2006. Knowledge, innovation and SME performance: contrasts between high- and low-technology regimes. *Journal of Business Venturing* 21, 687–703.

- Tourangeau, R., Rips, L.J., Rasinski, K., 2000. *The Psychology of Survey Response*. Cambridge University Press, Cambridge, UK.
- Tversky, A., Kahneman, D., 1974. Judgement under uncertainty: heuristics and biases. *Science* 185, 1124–1131.
- Ucbasaran, D., Westhead, P., Wright, M., 2006. *Habitual Entrepreneurs*. Edward Elgar, Aldershot.
- Ward, T.B., 2004. Cognition, creativity and entrepreneurship. *Journal of Business Venturing* 19, 173–188.
- Westhead, P., Wright, M., 1998. Novice, portfolio and serial founders: are they different? *Journal of Business Venturing* 13, 173–204.
- Westhead, P., Ucbasaran, D., Wright, M., 2004. Policy toward novice, serial and portfolio entrepreneurs. *Environment and Planning C: Government and Policy* 22, 779–798.
- Wood, R., Bandura, A., 1989. Social cognitive theory of organizational management. *Academy of Management Review* 14, 361–384.
- Wright, M., Robbie, K., Ennew, C., 1997. Venture capitalists and serial entrepreneurs. *Journal of Business Venturing* 12, 227–249.