Business Angel Decision Making

by

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Author's declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

Business Angels (BAs) are wealthy individuals whose investments in entrepreneurial ventures enable them to increase the likelihood of both attracting subsequent Venture Capital (VC) and achieving long-term venture success. Unfortunately more than 95% of entrepreneurs seeking funds from BAs are unable to do so, raising questions about whether this high failure rate might be reduced. Scholars suggest the answer lies in gaining a better understanding of the investment decision process itself and identifying why opportunities are rejected at each stage of the decision process. However, the private nature of the interaction between BA and fund-seeking entrepreneur constrains our ability to observe the multistage nature of the interaction and how rejection reasons change at each stage. As a consequence, much research relies on BA's biased post-decision recollections, which limits our ability to understand the decision process and identify opportunities for improvement.

In this research we overcome these constraints by observing interactions from the reality TV show Dragons' Den, where fund-seeking entrepreneurs pitch their early stage businesses to five BAs. During the interaction, each BA must either make an offer to invest or provide a reason for rejection. We develop hypotheses about why this complex decision evolves over several stages, and why rejection reasons change at each stage, which we then test by coding observations and decision outcomes.

We draw on research in behavioral economics and decision making to propose that BAs use heuristics to reduce their decision making effort at each stage and initially examine the criteria that are easiest to retrieve. They then assesses each opportunity based on the most easily retrieved criteria and reject those they believe unlikely to achieve their aspiration level for required return, or because the risk of failure exceeds the BA's own risk aspiration level.

We propose that during subsequent stages of the interaction, each BA audits the entrepreneur's behaviors to assess performance and relationship risk, rejecting those where the risk level exceeds their aspiration level.

We use trained observers to code the information exchanges and behavioral cues provided by the entrepreneur to find support for our hypotheses. We observe that, during the venture assessment stage, BAs do reject opportunities that fail to reach aspiration levels for investment return or investment risk, however, contrary to normative assumptions we find BAs do not trade off investment risk for investment return. For opportunities not rejected, we observe BAs assess how the entrepreneur's behaviors and decisions inform their assessment of managerial risk and increase the likelihood of venture failure. We note BAs are more likely to reject entrepreneurs whose behaviors indicate low level of capabilities, experiences or traits, while excess traits can also increase this likelihood. For opportunities not rejected at this stage, we observe BAs audit the entrepreneur's trust behaviors to inform their assessment of the relationship risk. We find BAs more likely to reject entrepreneurs who damage or violate trust in comparison to those who build trust. We also observe that BAs invest in entrepreneurs who damage trust, but only if they can introduce appropriate behavioral controls.

Our observations help explain the multistage nature of the decision process and why opportunities are rejected at each stage. We suggest that better prepared entrepreneurs who display appropriate behaviors are less likely to be rejected. Increased understanding of the decision process enables BAs to improve their decision-making, while knowledgeable policy makers will be better able to cost-effectively deploy appropriate resources to enhance funding activities. Our observations should encourage academics to further explore entrepreneurial behaviors, perhaps adapting our research method and coding schema in future research.

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Dedication

This thesis is dedicated to my wife Helen, who made everything possible. Thank you. Thank you for your emotional and financial support. Thank you for your encouragement. Thank you for your patience and the occasional kick in the backside.

I must also recognize each member of my immediate family who had to put up with my behavior, lack of availability and moods, as I struggled with concepts, statistics and deadlines. It is said to take a village to raise a child…well in my case it is took a family to write a thesis. First, I must thank my children; Alexander, Nicholas and Emily, whose belief in me was often the motivation I needed when I was faced with another round of edits, or understanding the results of a logistic regression. I very much appreciate the ongoing encouragement and support of my parents, Zee and Vic, my sister, Karen, my in laws, Anne, Tom and Doris, and Marie-Jude. My family has always had an interest in my work, and provided the support to encourage me from start to finish.

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Although I know she can not read this, I must acknowledge my constant companion on this journey, my dog Kelsey, who sat by me for more hours wondering why I hadn't started yet, and if it was time for a walk or a snack!

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Table of Contents

List of Figures

List of Tables

1 Angel Decision Making

1.1 Introduction – why the interest in financing high growth ventures

The long-term success of high growth ventures, often called Gazelles[1], is important for regional economic wealth creation, they stimulate local infrastructure, develop secondary businesses, launch new technologies, and create high paying jobs (Carree & Thurik, 2010). Their success is not only of interest to entrepreneurs and their stakeholders, but also to governments and economic development agencies (Kelly, 2007: Mason & Harrison, 2000; Mason, 2006). Yet many of these ventures fail to achieve their growth potential because they are unable to find external funding at the early stage of their development (Van Osnabrugge, 2000).

External funding is often required to finance product development and/or infrastructure investment in advance of revenues. While initial funding is often from the entrepreneur and his or her family and friends, equity funding can also be raised from third party investors (Van Osnabrugge, 2000). Equity investors are specifically interested in high potential ventures that offer the opportunity for a high return on investment to compensate for the inherent risk in the business (Riding, 2008). The most frequent investors in early stage ventures are individual Business Angels[2] (BAs) who Sohl (2011) notes invest in twenty times as many ventures than the more frequently researched institutional Venture Capitalists (VCs) (Wong, Bhatia & Freeman, 2009).

Not only do BAs invest more often than VCs, and more money (PWC, 2010; Sohl, 2011), they invest at earlier stages in the venture creation process, in contrast to VCs who

[1] High-growth firms experiencing growth rates of > 20 percent over at least a 3 year period (NACO, 2011).
[2] The term Angel investor originated early in the 20th century, and referred to individuals who invested in Broadway shows (Benjamin & Margulis, 1996).

prefer to invest larger amounts at later stages in the venture creation process that offer shorter exit cycles and lower perceived risk (Sapienza, Manigart, & Vermeir, 1996). BA funding can also be a pre-requisite for VC investment, by demonstrating a track record of performance to a potential future investor (Madill, Haines, & Riding, 2005). BA funding, often accompanied by direct assistance from the BA, also increases the likelihood of achieving a successful exit event (Landström, 1993; Mason & Harrison, 2002b). As Foremski (2008) notes: "venture capitalists … have outsourced much of the seed investing to angels. The angel investors are now a more important generator of the next wave of start-ups than ever before".

Given the potential economic impact of high growth ventures, it is concerning to find that more that 95% of entrepreneurs in Canada who seek BA equity investment fail to attract funding (Riding, Duxbury & Haines, 1997). Similar low rates are observed in the U.S. and the U.K.. While this high failure rate might be due to a lack of investable companies, Frear, Sohl, and Wetzel (2002) suggest that the low success rate may be due to inefficiencies in the process and suggest we focus on understanding the decision process itself. Focusing on the reasons that opportunities fail to attract funding will allow us to identify opportunities to improve the process and increase the number of ventures able to attract funding. While this is the primary motivation for our research we are conscious that government policymakers who wish to stimulate increased levels of BA activity need to better understand the investment process. As Riding, Madill & Haines (2007, p332) note "the design of any such incentives should be grounded in a thorough understanding of Business Angels' motivations, decision-making processes and criteria".

1.2 The Business Angel Investment Decision

Much research on the BA investment decision process assumes that BAs make their

investment decisions in a similar manner to the more frequently observed VCs. As a consequence, they use evidence from VC decisions to propose how BAs make decisions. However this assumption is flawed, as there are differences between BA and VC motivations that influence their decision processes. Further, this incorrect assumption can misinform fund-seeking entrepreneurs pitching to BAs and cause them to interact with and make presentations to BAs that reduce rather than increase their likelihood of attracting investment.

Van Osnabrugge (2000) suggests that the most important difference between BAs and VCs that influences the investment decision is the fundamental agency difference between them. VCs are professional fund managers who must justify their selection and rejection decisions to their investors, while BAs invest their own money and do not need to justify their decisions to anyone. Further, VCs are financially motivated professional fund managers, compensated by a management fee and a share of any increase in equity value (Schwarzkopf, Lévesque, & Maxwell, 2010). In contrast, BAs have both financial and psychic motivations (Wetzel, 1981) and only achieve a financial gain when their shares are sold (Mason, 2006). BAs and VCs also have different views of their portfolio of investments. VCs tend to invest in a number of companies over a set time frame specializing within a certain domain. BAs not constrained by portfolio requirements tend to invest in a more limited number of opportunities but over a broader range of industries (Mason & Harrison, 2002a).

These differences encourage the two types of equity investor to make different decisions, VCs are more likely to look for 'home runs' (Mason & Harrison, 2002b), while BAs look are more interested in making a reasonable return on investment in a venture where they are able to directly contribute to venture growth (Mason & Harrisonb, 2002; Wetzel, 1981). Importantly, VCs view the entrepreneur as replaceable if things don't work

out (Bruton, Fried & Hisrich, 2000), while the BA assumes that making an investment in an early stage venture is the start of a long-term relationship with the entrepreneur. As a result BAs pay closer attention to the entrepreneur and their relationship with them than do VCs.

This research attempts to improve understanding of the BA investment decision by developing hypotheses based on on behavioral economics and decision-making research and evidence from previous BA investment decision research to address the research gap identified by Landström (1998) who notes "[t]here are few studies which have attempted to bring out the nuances in informal investors' decision making criteria" and suggests the development of studies that consider "investment as a process in which decision making criteria may vary in the course of time" (p. 322).

We start by reviewing evidence from previous investigations into how BAs make decisions that identify the multistage nature of the decision process, and the significant number of criteria that influence the decision at each stage. We also provide an overview of decision-making research that enables us to develop specific hypotheses about the different decision techniques used and the decision criteria considered at each process stage. Each chapter of the thesis examines one stage of the process, and combines a theoretical view of how investors make decisions with evidence from previous BA research. This allows us to develop hypotheses that propose how and why opportunities are rejected at each stage. We continue each chapter by explaining the coding schema we develop to find support for each of our hypotheses, and then present our results and analyses, as well as the implications for reducing failure rates at that stage of the process.

Maxwell, Jeffrey & Lévesque (2011) review existing literature to identify 27 criteria that BAs consider when making their investment decision, although they observe that only

eight critical venture factors are considered during the selection stage of the process where the majority of opportunities are rejected. They also observe that at subsequent stages of the interaction other criteria influence the investment decision. Mason and Harrison (2002b) also observe that BAs consider different criteria to reject opportunities at each stage. The observation that the nature of the rejection decision changes at each stage of the process encourages us to break down the decision process into based on the identification of different rejection reasons to help us understand which specific factors impact the rejection decision at each stage. Examining the relationship between factors at each stage will also help us identify which factors are compensatory and which are not (Mason & Harrison, 1996a).

The phase of the investment decision in which we are interested is the evaluation phase when entrepreneur and investor first meet. This phase is part of the overall process as shown in Figure 1.1 that includes: origination, interaction and due diligence, as well as two post-funding activities: management and exit (Duxbury, Haines & Riding, 1997; Paul, Whittam & Wyper, 2007; Riding, Madill & Haines, 2007). Origination is the phase before the entrepreneur and BA first meet when trusted advisors filter opportunities and only refer to the BA those that are appropriate (Paul, Whittam, & Wyper 2007). During the evaluation phase the entrepreneur and investor first meet and various criteria are sequentially retrieved and assessed. During this phase the BA observes the informational and behavioral cues provided by the entrepreneur and make the decision to reject an opportunity or make an investment offer. The subsequent due diligence phase takes place once an investment offer has been made. During this phase the BA looks to confirm the veracity of information provided during the interaction (Haines, Madill & Riding, 2003). Management of the venture occurs once the venture is funded and if successful leads to the point where the BA

can exit from his or her investment by selling equity.

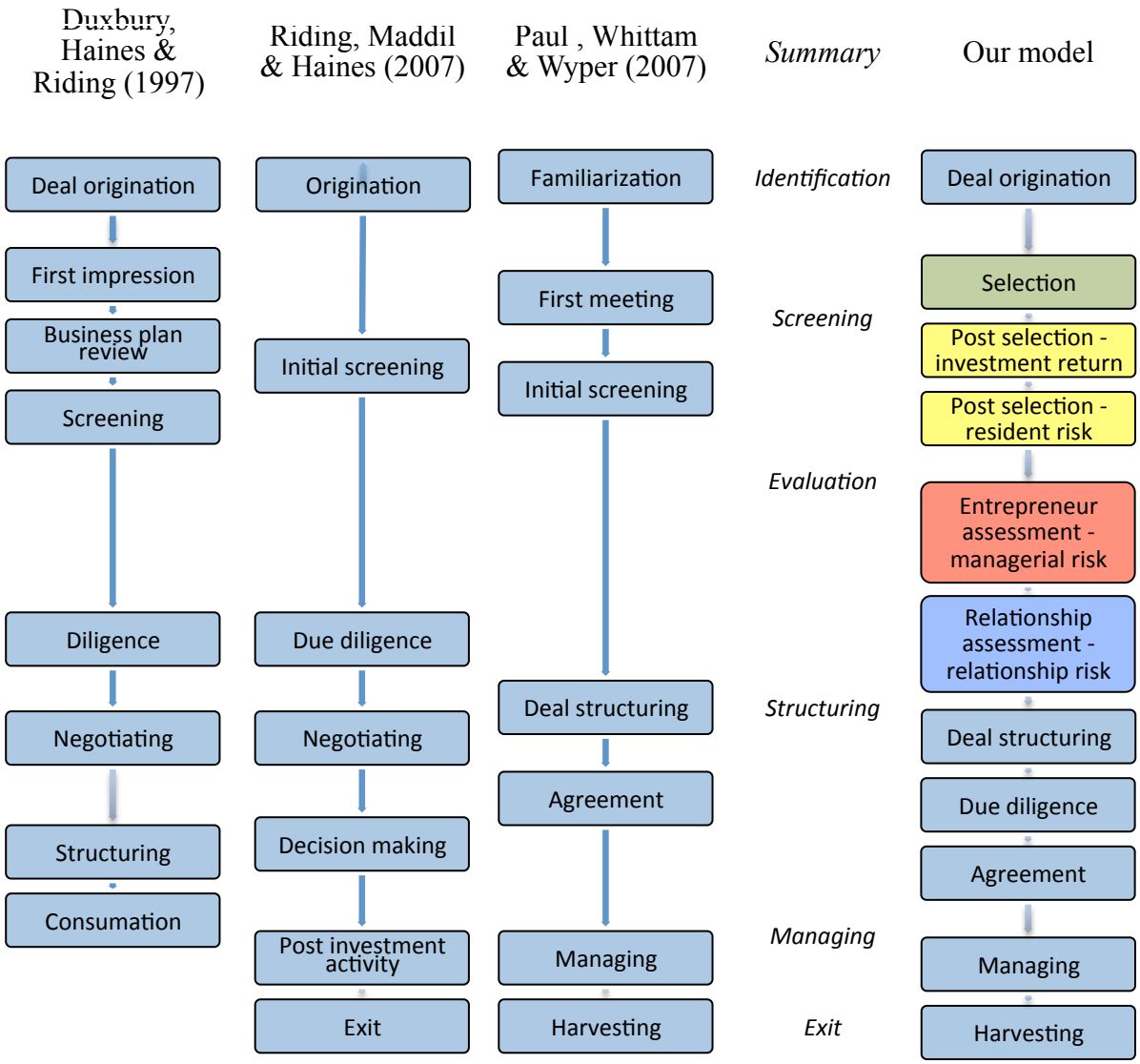


Figure 1-1 Stages of the BA investment process

Despite recognition that the evaluation phase is a complex multistage decision process, there has been limited effort to theoretically explain the nature of the multistage process, how the decision process and reason for rejection changes at each stage. In part this limitation stems from the fact that it is difficult to gather data from real BA interactions due to their private nature and the fact that they take place over several meetings. Difficulties in

observing such interactions, and particularly of identifying the different reasons for rejection at each stage make it challenging to understand how theories from behavioral decision-making might be supported with evidence from the BA investment decision. Yet the ability to understand each stage of the process is critical to an appreciation of the investment decision process as a whole.

In this research, we build on the observations of Maxwell, Jeffrey and Lévesque (2011) who note that time constrained BAs use a multistage decision process based on a desire to minimize the cognitive decision effort required. Mason and Harrison (2003) comment that BAs enter the interaction with a negative mindset and look to reject opportunities at each stage. During the selection stage when BA and entrepreneur first meet, Maxwell et al., (2011) find that BAs use a non-compensatory Eliminations-By-Aspect heuristic (Tversky, 1972) to rapidly eliminate opportunities that are determined by the BAs to have a fatal flaw in any one of eight critical venture criteria[3]. BAs use of heuristics at this stage reduces the retrieval and assessment effort required and allows the BA to allocate his or her limited time to spend on those opportunities that are more promising (Mason & Rogers (1997).

We build on the observations that experienced BAs use heuristics and suggest that at each stage BAs make the most cognitively efficient decision, adapting and deploying rejection techniques to minimize the overall assessment effort required (Payne, Bettman, & Johnson, 1988). Based on a heuristics framework (which we discuss in detail in chapter 4 – Table 4.2) we suggest that BAs use decision techniques that require greater cognitive effort later in the process when fewer opportunities are still being considered. This approach

[3] Rejection reasons may be personal, for example: poor fit or lack of market expertise (Smith, Harrison & Mason, 2010), however in our research we observe five BAs simultaneously making decisions, reducing the impact of individual BA issues on final reason for rejection.

enables us to develop a four-stage model of the investment decision process as shown in Figure 1.2, with different criteria being retrieved and assessed at each stage. In this model, we characterize each stage by the final rejection reason given by the last BA to lose interest in an opportunity. This can be based on the assessment of: critical venture criteria where rejection is due to the presence of a fatal flaw; venture criteria where rejection is due to insufficient investment return or excess performance risk; manifestations of the entrepreneur's behaviors where rejection is due to excess managerial risk; and, the identification of trust behaviors where rejection is due to excess relationship risk. Breaking down the overall process into these four stages allows us to ask our research question: *How do BA's use their assessments of specific venture criteria and observations of entrepreneur behaviors to reject opportunities at each stage of the multistage investment process*?

In this thesis we look to identify reasons why opportunities are rejected after the selection stage. During the previous selection stage, BAs are found to use non-compensatory rejection techniques where the identification of a fatal flaw is sufficient reason for rejection (Maxwell, Jeffrey & Lévesque, 2011). We hope that focusing on the subsequent stages will enable us to address previous research questions about the relationship between the horse (venture) and the jockey (entrepreneur) (Harrison & Mason, 2002; MacMillan, Siegel & Subba Narasimha, 1985). In the thesis we present three core chapters with each focusing on a specific stage of the process, with a conclusion in chapter 5 that includes insights from each aspect of our research. In each chapter we combine insights from behavioral economics and decision making with entrepreneurship research to develop hypotheses about why and how BAs will reject opportunities at each stage of the process, and develop and deploy coding schema to allow us to code and analyze each stage of the interaction to find support for our hypotheses.

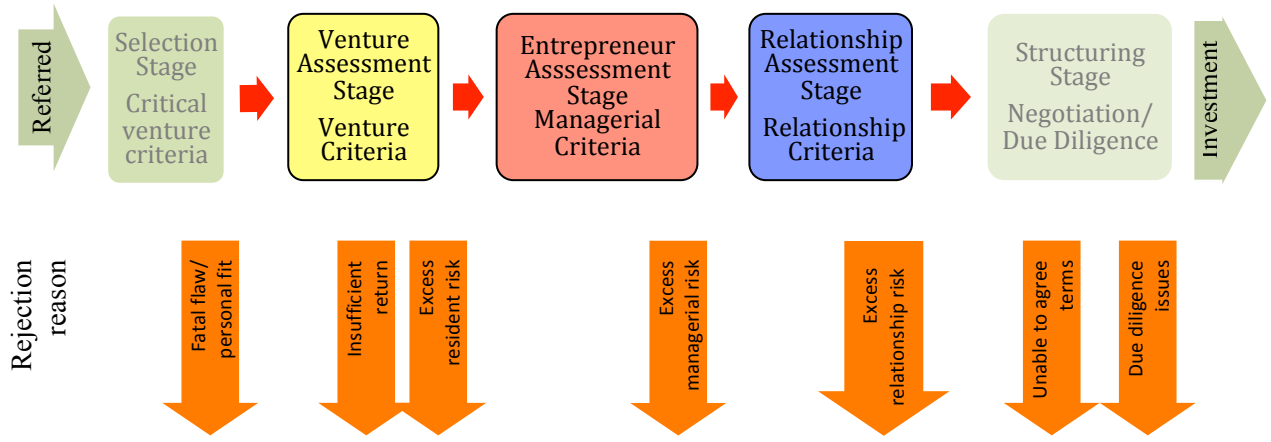


Figure 1-2 Stages of BA and fund-seeking entrepreneur interaction and rejection reason

Our initial observations of the interaction persuaded us to undertake our research in reverse order to the posited interaction sequence. This was because we observed and collected data based on the final rejection reason - excess relationship risk, first and were intrigued to understand why an otherwise promising opportunity was rejected at the end of an extended[4] interaction. Observations of the final stage of the interaction encouraged us to examine information exchanges and behavioral cues at each stage of the process, code interactions based on the reactions of the BA, and record to dichotomous decision outcomes: investment offer, and moving to the next stage of the interaction. In this section we introduce the chapters in reverse order to the way they are written in the thesis, as this helps to explain the interaction context, and specifically how criteria observed at one stage inform the assessment of other criteria at subsequent stages. However, in the thesis, we present the chapters in the order in which they were written as the theory development from one chapter to the next follows that sequence.

[4] During the process of developing the coding schema we coded interaction length, controlling for demonstration time. While we found a strong relationship between the two, this simply confirmed our view of the multistage rejection process and did not improve process understanding.

In Chapter 4 we explore how the BA's examination of the venture criteria informs his or her assessment of the two investment decision criteria: investment return and investment risk and how this influences the rejection decision at the venture assessment stage (Feeney, Haines & Riding, 1999; Modigliani, & Pogue, 1974). The BA's assessment of the investment return is calculated based on the amount the BA will receive back when he or she is able to exit from the investment (usually by selling the equity to an acquirer), divided by the initial amount invested, controlling for time. The amount the BA will receive is a function of the future venture value and percentage equity at the time of sale. Venture value is determined by the marketplace, but increases with higher levels of revenues, profitability and revenue growth. Venture criteria assessed by the BA at this stage are those directly linked to increases in future venture value. The BA's assessment of the investment risk is the assessment of the likelihood of venture failure as this is the most likely alternate outcome to success. At this stage the BA considers the inherent technology, financial, operational and people risks in the venture. As a result, the venture criteria assessed by the BA at this stage are those linked to factors that likely increase the risk of venture failure.

We propose that BAs will minimize the cognitive effort required at the venture assessment stage of the decision process in two ways, first by using the priority heuristic which avoids the need to make complex decisions that trade off risk and return. Second we suggest that BAs will use satisficing techniques rather than the assessment of absolute value when determining whether targets for investment return or risk can be achieved. We propose that the BA will reject an opportunity if they think that there is little likelihood of achieving the required level of investment return, or if they determine that the investment risk is excessive.

In investigating criteria are compensatory and those that are non-compensatory we propose that the four venture sub-criteria that inform the assessment of the investment return are compensatory, as are the four venture sub-criteria that inform the assessment of the investment risk. However we also posit that, contrary to normative assumptions, the relationship between investment return sub-criteria and investment risk sub-criteria is non-compensatory, such that a higher level of investment return cannot compensate for a higher level of investment risk.

In Chapter 3 we propose that BAs reject opportunities due to the assessment of excessive managerial risk. They determine this risk by auditing the entrepreneur's behaviors to assess the entrepreneurs underlying characteristics: capabilities, experiences and traits. Observations of current behaviors are found to be the most accurate predictors of future behaviors (Ouellette & Wood, 1998). We propose that the assessment of managerial risk moderates the initial assessment of the investment risk (in combination the performance risk) such that the BA will reject an opportunity where the combination of the inherent risk in the venture and the managerial risk due to the entrepreneur's anticipated future behaviors, increases the likelihood of venture failure above an acceptable level.

We propose that fewer displays of behaviors seen as manifestations of capabilities, experiences and traits, increase the BA's perception of managerial risk and reduce the likelihood of a obtaining an investment offer, or moving to the next interaction stage. We also suggest that excess displays of these traits will reduce this likelihood (for example excessive confidence). Manifestations of excessive traits cause concerns about the quality of the entrepreneur's future decisions and increase the likelihood of the entrepreneur making an ill-advised decision, which increases the managerial risk and reduces the likelihood of an investment offer.

In Chapter 2, we propose that BAs reject opportunities due to their assessment of excessive relationship risk due to concerns that the entrepreneur will put their own interests ahead of the BA. BAs assess this risk by looking for the entrepreneur's displays of trust damaging or violating behaviors that reduce confidence in the relationship and increase the perception of relationship risk. Confidence in the relationship can also be reduced by the absence of trust building behaviors. Higher levels of trust damaging behaviors and lower levels of trust building behaviors increase the likelihood of the BA rejecting an opportunity at this stage of the process. However, in the case of certain types of trust damaging behaviors, relationship confidence can be restored through the introduction of behavioral controls. However while entrepreneurs who damage trust can still receive an investment offer, trust violation virtually precludes that possibility. The difference between trust damage and violation is one of intent; trust can be damaged through omission or accidentally, trust violation involves intent to deceive (Marsh & Dibben, 2005).

Due to our inability to directly observe due diligence, we exclude from our research the subsequent stage of the interaction. During this stage opportunities that receive an investment offer are subject to due-diligence when previously provided information is verified and a detailed shareholder agreement is drawn up that can include behavioral and other controls. Failures at this stage of the process are usually due to the provision of incorrect information, or the making of inappropriate assumptions during the interaction. Other reasons for failure are related to current venture valuation, or the unwillingness of the entrepreneur to accept control clauses in the shareholder agreement.

1.3 Overcoming the constraints of prior research

Much BA investment decision research has been constrained by the confidential nature of the interaction, which usually takes place in private and evolves over a series of meetings (Harrison, Mason & Robson, 2003). The ability to observe traditional interactions in real time is therefore limited, as a consequence of which, researchers have been forced to gather insights about the investment from the BA once the decision has been made. Yet utilizing investor recollections is unreliable as it can introduce hindsight and confirmation biases that rationalize previous decisions rather than report what actually happened (Mynatt, Doherty, & Tweney 1977). It is also difficult to recount cognitive processes in retrospect (Nisbett & Wilson, 1977) or to gather insights into why opportunities are rejected at each stage of the process.

An alternate approach to understanding the BA investment decision is to use surveys to investigate how BAs think they made previous decisions (i.e. Cressy, & Olofsson, 1997) or to use conjoint analysis to gather data on how investors think they will rank the relative importance of various criteria in a future investment decision (i.e. Landström, 1998). However both of these research techniques cause generalizability concerns because most investors suggest that they consider more decision criteria than they actually use (Zacharakis & Meyer, 1998) and there is limited evidence that investors use the decision techniques they espouse (Shepherd, 1999).

An alternate approach is through the use of verbal protocol analysis (Ericsson & Simon, 1984), where BAs explain their thought processes while they are in the process of making a decision (i.e. Mason & Stark, 2004). While this improves understanding of the overall process, for example by helping to identify the stages of the process, it is often

undertaken as a hypothetical exercise as gathering insights from the BAs while he or she is making an actual decision tends to interfere with the decision process itself. To avoid this, verbal protocol analysis is often used with videotapes of previous interactions, however this creates other validity issues due to the absence of any direct interaction between the entrepreneur and the BA (Mason & Harrison, 2003). In addition, any research method that involves hypothetical rather than actual decisions is likely to record decisions that don't reflect real decisions as Rabin (2000) notes, behaviors and decisions of individuals under conditions actual risk deviate from how individuals predict they will behave under those conditions. The above discussion highlights a concern that insights gathered into the BA decision in previous research may not reflect the actual decision processes used (Mason & Rogers, 1997; Mason & Stark, 2004), which makes it challenging to identify opportunities for process improvement (Wiltbank, Read, Dew, & Saravathy, 2009). As Riding et al. (2007) point out in a review of BA investment research "there remains considerable room for research on the nature of the investment process itself" and "how the various decision criteria are weighted at different points in the process" (p. 336).

A promising approach to overcome some these issues involves recording interactions and using trained observers to code and analyze the results of the interaction (Hall & Hofer, 1993). We extend this approach by recording and coding a series of investment interactions between fund-seeking entrepreneurs and five BAs, where we code for venture criteria, entrepreneur behavior and the reactions of the BA. In Appendix A we explain in more detail the context and population of the 602 entrepreneur/BA interactions that form our data set and were taped for a reality TV show, CBC Dragons' Den. During the show, in which we were directly involved, BAs made real investments at the end of a multistage interaction between

five BAs "The Dragons" and a fund-seeking entrepreneur. The interaction started with the first meeting between the entrepreneur and the BA and ended when one or more of the BAs made an investment offer, or all the BAs reject the opportunity. Coding of this interaction was enhanced by two factors: the requirement that each BA was required to provide a rejection reason; and, because the BAs were experiences and able to rapidly focus on critical issues, asking follow up questions where needed.

Our coding was done in two phases, during the first of which we coded every interaction based on the last rejection reason provided by a BA. This enabled us to break up the data set into three groups based on the three rejection stages shown in Figure 1.2 (venture assessment, entrepreneur assessment or relationship assessment). We then coded each group of opportunities looking to link criteria assessed and retrieved with the rejection reason. The opportunities coded in Chapter 2 were the group that made it through the entrepreneur assessment stage. Our theory development suggested that opportunities were rejected at this stage if the BA lacked confidence in the relationship, which we link to the display of trust behaviors. We developed a trust behavioral coding schema that allowed observers to code for displays of trust building, trust damaging and trust violating behaviors.

The opportunities coded in Chapter 3 were the group that made it through the venture assessment stage. Our theory development suggested that opportunities were rejected at this stage if the BA became concerned about the entrepreneur's capability to achieve the venture's potential or if the BA determines certain characteristics of the entrepreneur would increase the likelihood that the venture will fail. We propose that BAs audit the entrepreneur's behaviors as manifestations of their underlying characteristics: capabilities, experiences and traits, and develop a coding schema to allow the observers to code for each.

The opportunities coded in Chapter 4 were the group that made it through the selection stage, where opportunities were rejected due to the presence of a fatal flaw. Our theory development suggested that opportunities were rejected at this stage if the BA assessed that the likely investment return would fall below their return aspiration level, or that the investment risk exceeded their risk aspiration level. We propose that BAs consider eight venture criteria that inform the assessment of each and deploy an existing coding schema to allow the observers to code for each of eight critical venture criteria.

Through our direct involvement in the show's production we were fortunate to have access to both the live interactions and recorded line tapes of the entrepreneur/BA interactions. This enabled us to adopt a research approach based on Observational Interaction (Bakeman & Gottman, 1997), a technique more frequently used in social psychology to explore interpersonal relationships. This facilitated our research approach and allowed us to look at how presented information exchanges and behavioral cues linked to the rejection decision at each stage.

We are conscious that the use of a reality TV show for academic research raises a number of validity concerns, especially: the *reality* of the observed behavior, whether show participation *influences* entrepreneur behaviors and BA decisions outcomes, and selection *bias*. Given our direct involvement in the show we were able to confirm the reality of the interaction, and are aware of how both BAs and entrepreneurs were chosen. We do not propose that either the BAs or entrepreneurs are representative of their respective populations as a whole, but suggest that this research is exploratory and designed to help us understand why each opportunity was rejected. As Shanteau (1992) points out, using observing how experienced decision makers make real decisions facilitates understanding of

the decision process. In the case of this research, we are able to observe experienced BAs, with a track record of investing, provide reasons to reject specific opportunities which provides important insights into "how individuals arrive at decisions" (Riding, Madill & Haines, 2007: 336). We explain the context of the interaction and address validity concerns in more detail in Appendix A, where we also provide information as to how the observed Dragons' Den interaction differs from more traditional investment interactions.

1.4 Contributions

A limitation of previous research in BA decision-making has been the lack of theoretical underpinning to explain the investment decision process and how decisions are made. Rather most research is descriptive - identifying specific criteria linked to success or failure (Riding, et al., 2007). We address this shortcoming in prior research using a heuristic theoretical framework (detailed in Table 4.2) based on the assumption that experienced BAs adopt decision processes that minimize the cognitive effort required. This allows us to propose the sequence in which BAs examine each criterion and how the assessment of each will inform the rejection decision. Observations that BAs use heuristics that sacrifice decision quality for expediency means that decision outcomes can deviations from normative assumption (Gigerenzer, 2008). A comprehensive understanding of the investment decision process also requires an understanding of these deviations, which we explain in the relevant chapter and restate in chapter 5.

We link the rejection decision at each stage to the assessment of investment return and three components of investment risk, and highlight the fact that the relationship between investment return and investment risk is non-compensatory. We identify how four venture criteria influence the assessment of investment return, and how four venture criteria

influence the resident risk that is inherent in the venture (Yazdipour, 2010). We also link entrepreneur behaviors to the assessment of managerial risk, based on manifestations of the entrepreneur's characteristics; and, relationship risk, based on the entrepreneur's manifestations of trust behaviors. Breaking down the investment risk into three components helps explain how the assessment of each risk component can only occur in a certain sequence based on the retrieval and assessment effort required.

In looking at the investment return and resident risk component of the investment risk, we observe that BAs use satisficing and priority heuristics when assessing risk and return. We find evidence that increased levels of capabilities and experiences reduce the likelihood of rejection due to concerns about managerial risk, but that manifestations of behaviors that indicate traits follow an inverted U shape relationship with the assessment of managerial risk such that insufficient or excessive levels of certain traits can increase the likelihood of rejection. We link the development of relationship confidence to specific trust behaviors (McKnight, Cummings, & Chervany, 1998) in contrast to the assumption of swift trust that develops based on the social environment (Meyerson, Weick & Kramer, 1996). Although we recognize that deep trust does take an extended time to develop, our focus on reasons for rejection allows us to identify how trust damage or violation can lead to the rapid termination of a promising relationship.

Our development of a multistage model of the investment process allows us to identify how specific venture criteria and entrepreneur behaviors inform the BA's assessment of investment return and each component of investment risk. Our focus on identifying the rejection reasons at each stage reinforces the lessons entrepreneurial researchers can learn by understanding the reasons for failure (Shepherd, 2003), and the importance of observing each

stage of a multistage process rather than just the final decision outcome (Svenson, 1979).

Our research highlights the importance of observing how entrepreneurs behave and make context specific decisions using a novel research technique. Our adaptation of Observational Interaction research techniques to the entrepreneurial setting enables us to develop coding schema and a research approach that can be used to investigate "relational exchanges and interpersonal negotiations" in order to provide " a deeper understanding of stakeholder relationships in entrepreneurship" (Sarasvathy & Venkataraman, 2011, p127).

Based on the conclusions from each chapter, in Chapter 5 we provide practical guidance, for fund-seeking entrepreneurs, BAs and government policy makers. Entrepreneurs, cognizant of our recommendations can increase their likelihood of receiving an investment offer through a more open information exchange that directly addresses shortcomings in the venture criteria identified. Entrepreneurs will also be better able to understand how BAs are likely to interpret their behaviors when assessing managerial and relationship risk and thereby avoid displaying the types of behavior that can lead the BA to reject an opportunity. They will also be more willing to accept an investment offer based on increased understanding of how the BA assesses the existing company valuation and why the BA needs to introduce controls in the shareholder agreement.

An improved understanding of the investment decision process will enable BAs to increase their decision-making efficiency and our explanation provides a useful framework that enables them to better explain how specific criteria influence their rejection decisions. This will be useful when communicating with individuals referring opportunities and when meeting fund-seeking entrepreneurs. Conscious of how specific criteria and behaviors inform the assessment of each component of investment risk, BAs will focus more attention on

critical factors early in the process, become more confident in their early rejection decisions, and be better equipped to compensate for identified shortcomings.

Government policy makers armed with a better understanding of the causes of process inefficiency can develop appropriate policies that target resources where they are most likely to have a positive impact on the number of ventures able to attract investment. This will enable more fund-seeking entrepreneurs to attract funding and enable BAs to improve the quality of their investment decisions. In turn, higher efficiencies in the investment decision process will encourage more entrepreneurs to seek funding and more potential BAs to invest.

2 Trustworthiness[5]: A critical ingredient for entrepreneurs seeking investors

2.1 Introduction

Most business ventures with high growth potential require significant amounts of external funding for working capital, fixed asset acquisition, and technology development (van Osnabrugge, 2000). This cash is often obtained through risk capital investments from business angel investors (BAs)—private individuals who invest their own money, on a risk/reward sharing basis, in companies in which they have no direct connection (Kelly & Hay, 2003). Unfortunately, entrepreneurs' success rate in receiving BA funding is less than 5% of all applications submitted, for instance, in Canada (Riding, Duxbury & Haines, 1997). Mason and Harrison (2003) characterize the interaction between BAs and entrepreneurs as a multistage decision-making process, where initial evaluations lead to the rejection of most business opportunities.

This paper examines why BAs reject business opportunities that have passed earlier stages of the investment decision-making process. Mason and Harrison (2003) further observe that the criteria BAs use to accept or reject an opportunity change as the decision-making process evolves, as later in the process the BA focuses on assessing the risk in his/her anticipated relationship with the entrepreneur. That risk rises if the BA perceives that the entrepreneur might spend the BA's money differently than would the BA (van Osnabrugge, 2000), which creates uncertainty on the BA's part about the wisdom of the entrepreneur's future decisions and behaviors. *How, then, does a BA interpret an*

[5] This chapter has been accepted for publication in Entrepreneurship Theory & Practice.

entrepreneur's behaviors during an initial interaction to decide whether or not to make an investment offer?

Research on BA decision-making has been limited and frequently constrained by reliance on data collected at the end of the decision-making process rather than *during* that process (Wiltbank, Read, Dew & Sarasvathy, 2009). Furthermore, much research has relied on investors' recollections of the decision-making process, despite findings that they are often unaware of their own decision-making process (e.g., Zacharakis & Meyer, 1998). Although laboratory-based experiments where external observers record actual decision-making behaviors can explore some of these issues, experiments also suffer from generalizability concerns because they cannot create the actual, essential components of the anticipated relationship between a BA and entrepreneur. Such components include the emotional ownership of the idea (Cardon, Zietsma, Saparito, Matherne & Davis, 2005), actual risk due to the substantive amount of money at stake in the decision-making process (Rabin, 2000), and the potential for long-term relationship development (Kelly & Hay, 2003), which are key in the BA-entrepreneur relationships.

We therefore adopt a research method referred to as observational interaction (Bakeman & Gottman, 1997) to record, code and analyze behaviors during actual BA-entrepreneur interactions. We were inspired by the work of Kelly and Hay (2003) who posit that to achieve confidence in the entrepreneur's anticipated behaviors, the BA must develop a relational contract characterized by an informal relationship with the entrepreneur where trust developed in that relationship can ostensibly replace formal contract clauses. A trust-based relationship is one where "the willingness of a party to be vulnerable to the actions of another party [is] based on the expectation that the other will perform a particular action

important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer, Davis & Schoorman, 1995: 712). We observe how the entrepreneur's trust-based behaviors affect the BA's assessment of the risk in his/her anticipated relationship with the entrepreneur, and hence affect the decision whether to make an investment offer. We develop a behavioral schema (explained in section 2.3) for coding each display of the entrepreneur's trust-building, trust-damaging and trust-violating behaviors and compare such displays with the interaction outcomes (i.e., to make an offer or not).

We contribute to the entrepreneurship literature in three major ways. First, viewing the hard-to-define concept of trust as a "decision variable" provides unique insights into how cooperative, trusting relationships are formed (i.e., the BA in this study assesses whether his/her trust level is high enough to continue the relationship with the entrepreneur). Second, a focus on the effect of entrepreneurial behaviors reinforces Gartner's (1988) suggestion that research should concentrate on "what the entrepreneur *does*, and not who the entrepreneur *is*" (p. 57, italics added). Third, the use of an innovative research method for studying interpersonal relationships, and the resulting development of a coding system that dynamically measures multiple facets of trust-based behaviors, provide useful tools for studying the influence of an entrepreneur's trustworthy behaviors as cues that inform investment decisions.

In the next section, we draw from research on BA investment decisions and investment risk to explore how the development of relational contracts, based on displays of trust-based behaviors or cues, can be key factors in whether a BA decides to continue building the relationship. We then use existing research on trust to develop four categories of trust dimensions that characterize how certain behaviors can build, damage or violate trust. From

this, we offer four hypotheses on how trust-based behaviors can influence the investment decision, including one that entails the BA's introduction of a control mechanism. We then present our research method and results, and conclude with theoretical, methodological and practical implications.

2.2 Staged investment, relationship risk and trust

Maxwell, Jeffrey and Lévesque (2011) summarize a body of research that identifies the multistage nature of the BA's decision-making process, and the stages at which the BA considers key decision factors. They find that during this multistage process, the BA often initially rejects a business opportunity due to a single "fatal flaw" (as perceived by the BA) during the initial interaction with the entrepreneur. Subsequently, the BA's assessment of the proposed venture allows him/her to predict anticipated investment return and investment risk based on specific factors—market, technology and financial—as well as entrepreneurial skills and characteristics. This prediction thus enables the BA to reject opportunities that do not meet his/her predetermined investment aspiration level or exceed a maximum level of investment risk (i.e., the likelihood of a complete loss).

In the case of BA investing, Fiet (1995) identifies two components in investment risk: market risk and agency (or relationship) risk. Das and Teng (1998) expand on this by extending market risk to performance risk, which also includes technological and implementation risk. Performance risk reflects the likelihood that the venture's objectives will not be achieved due to operational or external problems (such as unexpected competitor activities). Relationship risk is primarily the risk that the entrepreneur, while managing the venture, may not make the same decisions when spending the BA's money as would the BA himself/herself. In the context of this dyadic relationship, we focus on concerns the BA

might have about the entrepreneur's future decisions and behaviors, although we note that relationship risk is reciprocal and the BA may not always act in the entrepreneur's best interests (Arthurs & Busenitz, 2003).

Relationship risk is thus due to moral hazard, where the entrepreneur makes decisions that create a divergence of interests between the parties (e.g., using the company's money to pay for personal expenses). This can cause outcomes that deviate from the BA's prior expectations, not because of performance issues, but because the entrepreneur has made decisions that are not in the interests of the BA. Relationship risk is also due to adverse selection, where the entrepreneur has different perceptions and familiarity with information to the BA, known as perceptual asymmetry (Yazdipour, 2010). These perceived differences in business risks and opportunities or a lack of competence in the entrepreneur can result in the BA making suboptimal decisions during the investment decision or subsequently (van Osnabrugge, 2000). Because the BA does not need to assess relationship risk in the investment decision-making process until anticipated return and performance risk have been determined, he/she assesses relationship risk later on in the process. Also, since relationship risk comes from the BA's uncertainty about the entrepreneur's future decisions and behaviors while running the business, its assessment requires significant cognitive effort as well as information about the entrepreneur's previous performance (Ouellette & Wood, 1998). However, such information emerges later in the BA-entrepreneur interaction (Boon & Holmes, 1991).

To reduce relationship risk, the BA strives to increase his/her confidence in the future behavior of the entrepreneur via tools such as behavioral and output controls. Behavioral controls specify and monitor acceptable boundaries of conduct and behavior that comply

with stated rules (e.g., BA signature is required on all checks) rather than the venture's performance (Eisenhardt, 1985). Behavioral controls thus reduce the likelihood of adverse selection caused because the entrepreneur misrepresents his or her abilities or other business information that the BA cannot completely observe or verify during the investment decision process, or during subsequent management of the venture (Van Osnabrugge 2000). Behavioral controls allow the BA to require and be able to verify certain information before critical business decisions are made.

Output controls, on the other hand, are designed to reduce the risk of moral hazard through the alignment of the BA's and entrepreneur's goals and incentives. They thus specify how the BA will measure the entrepreneur's and venture's performance, and how to penalize the entrepreneur if agreed-upon performance milestones (e.g., revenue targets) are not achieved (Whitener, Brodt, Korsgaard & Werner, 1998). Both types of controls incur transaction costs, which can reduce anticipated returns or limit the speed at which the venture can react to opportunities (Dyer & Chu, 2003).

The use of such controls, common in venture capital investing, is less common among BAs, partly because venture capitalists (VCs) need to explain their investment decisions to funders and controls are easier to explain to a third party; in contrast, BAs do not need such explanations since they invest their own money (van Osnabrugge, 2000). In addition, VCs often view the replacement of the entrepreneur as a viable option and must insert language to this effect in the control clauses, an option that BAs rarely consider (Bruton, Fried & Hisrich, 2000). As a result, a more suitable (and often less costly) approach to reduce relationship risk is for the BA to develop interpersonal trust with the entrepreneur.

Research on the dyadic development of trust in close personal relationships (Boon &

Holmes, 1991) and actions/reactions in game-theoretic reasoning (Boyle & Bonachich, 1970) enables us to articulate how trust-based behaviors affect the relationship to the point where the decision to make an investment offer, or not, can be made. The BA's initial level of trust is based on his/her innate trust temperament (Strickland, 1958) or predisposition to trust (Lewicki, Tomlinson & Gillespie, 2006; Colquitt, Scott & LePine, 2007), which is related to his/her own trustworthiness under the assumption that others will behave similarly to oneself (Serva, Fuller & Mayer, 1995). The BA's initial trust assessment is further shaped by referral sources (Paul, Whitham & Wyper, 2007), the entrepreneur's reputation and institutional affiliations, and the context of the proposed transaction (McKnight, Cummings & Chervany, 1998). The entrepreneur's physical appearance (Grégoire, de Koning & Oviatt, 2008) and the nature of the anticipated relationship (Butler, 1991) also influence initial levels of trust.

Unlike traditional models of trust development that focus on intent (i.e., Mayer et al., 1995), we rely on evidence from behavioral experiments that demonstrate how trust in a relationship develops based on a sequence of behaviors/actions and responses/reactions. The framework of Serva et al. (1995) inspired the development of Figure 2.1, which illustrates a cycle of behaviors where each party builds trust in the relationship by first trusting the other party, and then waiting for the decision to be confirmed by the other's display of trustworthiness (Lewicki & Bunker, 1996).[6] In this circular phenomenon, the BA first trusts the entrepreneur. Subsequently, trust in the relationship builds if the entrepreneur displays trustworthy behaviors that confirm the BA's expectations. The entrepreneur then trusts the BA, who responds by showing that he/she too is trustworthy (Rempel, Holmes & Zanna, 1985). This reciprocal sequence continues with modifications to trust levels in the

[6] Trust develops when trustworthiness is confirmed. For instance, it is the demonstration that an entrepreneur has expected relevant ability to complete a specific task that builds trust in the relationship, not having the ability per se.

relationship (Shapiro, Sheppard & Cheraskin, 1992) based on the BA "auditing" limited samples of the entrepreneur's behavior for examples of positive and negative trust displays (Kramer, 1996).

While trust develops in the BA-entrepreneur relationship due to displays of behaviors that engender trust, negative trust-based behaviors reduce the trust level in the relationship. Specifically, if the trustee's behavior *confirms untrustworthiness*, then trust is violated while distrust develops (Lewicki, Tomlinson, & Gillespie, 2006). However, if the trustee's behavior *fails to confirm trustworthiness*, then trust is damaged and mistrust develops. Marsh and Dibben (2005) suggest that the fundamental difference between the two is that the former is deliberate whereas the latter is unintentional, and they are both a function of the reasons the trustor attributes to the trustee's negative behavior (Tomlinson & Mayer, 2009). Deutsch (1973) identifies an alternative negative outcome that also damages trust, namely suspicion, which occurs if the trustee's behavior *fails to confirm untrustworthiness*. The type of negative behavior that causes distrust, mistrust or suspicion impacts the likelihood that the relationship will continue (Whitener et al., 1998). Trust violations often cause immediate termination of a relationship (McKnight et al., 1998), and how trust is damaged influences whether it can be "repaired" (Kim, Dirks & Cooper, 2009). We focus attention on how entrepreneurs' negative trust displays impact the interaction outcomes between BAs and entrepreneurs (i.e., whether the BA decides to make an investment offer or not).

Although several researchers have identified the role of trust in the investment decision (e.g., Harrison, Dibben & Mason, 1997; Shepherd & Zacharakis, 2001), they have faced a number of challenges in gathering data to test their theories. Attempts to operationalize trust have met with limited success (Currall & Judge, 1995) partly because, as Kramer (1999)

notes, some scholars view trust as a psychological state and that individuals' dispositions affect intentions (e.g., Mayer et al., 1995) while others view trust from a behavioral perspective (e.g., Whitener et al., 1998). We adopt the behavioral perspective view because behaviors are better predictors of future behaviors than are intentions (Ouellette & Wood, 1998), and because behaviors are easier to observe and code than psychological states.

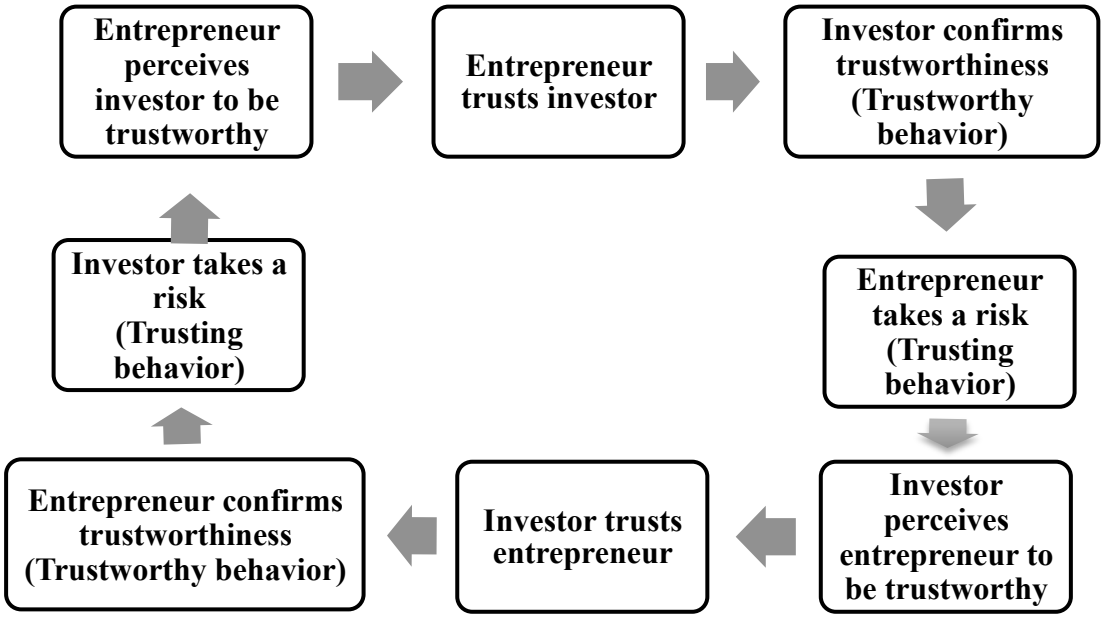


Figure 2-1 Reciprocal trusting and trustworthy behaviors

2.3 Behavioral trust schema and hypotheses development

The level of trust in the dyadic relationship between investor and entrepreneur changes over time as different trust-based behaviors are displayed and the interaction evolves (Rempel et al., 1985). As the BA interprets the entrepreneur's trust-based behaviors, the BA gains confidence in the predictability of the entrepreneur's future behaviors. The BA then uses these insights to assess the relationship risk that emerges due to adverse selection or moral hazard, and to determine if that risk can be sufficiently reduced to prompt the BA to make an investment offer. We chose to develop our own behavioral trust schema to observe,

code and analyze positive and negative trust-based behaviors displayed during an investment interaction since no known schema exists. Empirical research on trust has been hampered because researchers have used numerous definitions of trust, and have applied them inconsistently (Lewicki et al., 2006). In developing our behavioral trust schema, we draw extensively on Gillespie's (2003) *behavioral trust inventory* and Butler's (1991) *conditions of trust inventory*. We start with the definition of four general categories of trust dimensions—trustworthy, capable, trusting and communicative—and provide examples of behaviors for each.

Mayer et al.'s (1995) classic definition of trustworthiness includes integrity, benevolence, and ability. Integrity is defined as "the extent to which the party's actions are congruent with his or her words" and "the trustee['s] adher[ence] to a set of principles that the trustor finds acceptable" (p. 719). Simons (2002) emphasizes that behaviors associated with each are different. Hence, to avoid confusion, we use "consistency" (Whitener et al., 1998) and "alignment" (Lewicki et al., 2006), respectively. These two components of integrity, rather than integrity itself, are easier to code and, along with benevolence, they form our three behavioral trust dimensions for the *trustworthy* category. Each dimension is exemplified in Table 2.1.

The concept of ability in Meyer et al.'s (1995) classic definition of trustworthiness is based on a group of skills, competencies and characteristics that are all context dependent (e.g., a software engineer might show that he/she is competent to program a computer, but not to build one). In contrast, trustworthy behaviors can be displayed across a variety of contexts (an individual who is benevolent in his/her social life is likely to be benevolent at work). Hence, we create a separate category called *capable*, which we divide into three

dimensions—competence, experience and judgment—in order to again reduce definitional and coding confusion.

Trustors see displays of *trusting* behaviors, also exemplified in Table 2.1, as an indication that the individual is trustworthy (Serva et al., 2005). Trusting behaviors involve the trustee taking a risk by demonstrating vulnerability to the actions of others (Mayer et al., 1995). Trusting behaviors include: self-disclosing information that, if used inappropriately, could cause the entrepreneur harm (Gillespie, 2003); reliance on delegation (Clark & Payne, 1997); and receptiveness through a willingness to accept others' influence (e.g., by being 'coachable'; Levie & Gimmon, 2008).

As for the last category of trust dimensions, *communicative*, we rely on Whitener et al. (1998) who highlight how reliable communications affect the speed and quality of relationship development. Behaviors that demonstrate reliable communication confirm the accuracy of information exchanges between the trustor and trustee (Rotter, 1980), willingness to explain information content (Sapienza & Korsgaard, 1996), and reveal a sense of openness, especially with respect to receiving feedback (Clark & Payne, 1997). An entrepreneur rapidly informing the BA on both positive *and* negative outcomes of a meeting with stakeholders is a good example of communication that builds trust. The four categories and twelve behavioral trust dimensions (three per category) discussed are summarized in Table 2.1, which also offers relevant scholarly references to support our use of each dimension, and additional examples of specific behaviors that can build, damage or violate trust.

Behavioral Trust Dimensions		Manifestations			
		Build Trust	**Damage Trust**	**Violate Trust**	**Reference**
Trustworthy	**Consistency**	Displays of behavior that confirm previous promises	Shows inconsistencies between words and actions	Fails to keep promises and agreements	Butler, 1991; Gabarro, 1978 Lewicki & Bunker, 1996
	Benevolence	Exhibits concern about well-being of others	Shows self-interest ahead of others' well being	Takes advantage of others when they are vulnerable	Mayer et al., 1995; McAllister, 1995; Rempel et al., 1985
	Alignment	Actions confirms shared values and/or objectives	Exhibits behaviors sometimes inconsistent with declared values	Demonstrates lack of shared values and willingness to compromise	Arthurs & Busenitz, 2003; Butler, 1991; Lewicki et al., 2006
Capable	**Competence**	Displays relevant technical and/or business ability	Shows lack of context specific ability	Misrepresents ability by claiming to have non-existent competence	Butler, 1991 Gabarro, 1978
	Experience	Demonstrates relevant work and/or training experience	Relies on inappropriate experience to make decision	Misrepresents experience	Amit et al., 1990
	Judgment	Confirms ability to make accurate and objective decisions	Relies inappropriately on third parties	Judges others without giving them the opportunity to explain	Rosen & Jerdee, 1977 Kramer, 1996
Trusting	**Disclosure**	Shows vulnerability by sharing confidential information	Shares confidential information without thinking of consequences	Shares confidential information likely to cause damage	Currall & Judge, 1995; McAllister, 1995; Rempel et al., 1985
	Reliance	Shows willingness to be vulnerable through delegation of tasks	Reluctant to delegate, or introduces controls on subordinates' performances	Is unwilling to rely on representation by others, or dismisses participation	Clark & Payne, 1997; Gabarro, 1978; Gillepsie, 2003
	Receptiveness	Demonstrates 'coachability' and willingness to change	Postpones implementation of new ideas or makes excuses for failures	Refutes feedback or blames others	Butler, 1991 Levie & Gimmon, 2008
Communicative	**Accuracy**	Provides truthful and timely information	Unintentionally misrepresents or delays information transmission	Deliberately misrepresents or conceals critical information	Rotter, 1980; Whitener et al., 1998
	Explanation	Explains details and consequence of information provided	Ignores request for explanations	Dismisses request for explanations	Sapienza & Korsgaard, 1996 Whitener et al., 1998
	Openness	Open to new ideas or new ways of doing things	Does not listen or refutes feedback	Shuts down or undermines new ideas	Butler, 1991; Gabarro, 1978 Sapienza & Korsgaard, 1996

Table 2-1 Behavioral trust schema and manifestations

In line with these behavioral displays, which are trust building, trust damaging or trust violating, we develop a series of hypotheses as to their impacts on the BA's willingness to make an investment offer. Initial evidence of the entrepreneur's trustworthiness is his/her display of trusting behaviors, which are followed by reciprocal displays of trusting and trustworthy behaviors that reinforce the trustor's original decision to trust (Rempel et al., 1985). As per our behavioral trust schema shown in Table 2.1, trusting behaviors involve self-disclosure, reliance and/or receptiveness, whereas trustworthy behaviors involve consistency, benevolence and/or alignment (e.g., of goals). BAs will also look for behaviors that confirm that the entrepreneur is capable (displays competence, experience and good judgment) and communicative (displays accuracy, explanation and openness when communicating). Hence, we expect that the entrepreneur's displays of trust-building behaviors (as exemplified in Table 2.1) increase the BA's confidence in how the entrepreneur will behave in the future, which reduces the relationship risk and as such increases the BA's interest in making an offer to invest. Therefore,

H1. An entrepreneur who receives a BA's investment offer has displayed a greater number of trust-building behaviors than an entrepreneur who does not receive such an offer.

While behaviors that confirm the BA's expectations function to build trust, behaviors that reduce the predictability of the entrepreneur's future behaviors damage trust (Rotter, 1980). We note that trust-damaging behaviors are not necessarily the absence of trust-building behaviors (Marsh & Dibben, 2005). As articulated in the previous section, a trustee's failure to confirm trustworthiness damages trust and mistrust develops, as does failure to confirm untrustworthiness, which creates suspicion. Behaviors that damage trust, or

the absence of behaviors that build trust, increase the relationship risk and reduce the willingness of the BA to make an offer. Therefore,

H2. An entrepreneur who receives a BA's investment offer has displayed a smaller number of trust-damaging behaviors than an entrepreneur who does not receive such an offer.

We also argue that the motivation that the trustor attributes to the trustee's behavior creates the fundamental difference between behaviors that damage and those that violate trust. While trust damage can be inadvertent and unintended, trust violations are *intended to deceive*. Trust-violating behaviors create distrust in the relationship by confirming that the trustee is untrustworthy. For instance, an entrepreneur damages trust if, because of inexperience, he/she 'over-trusts' and relies on an inappropriate partner (e.g., the entrepreneur allows an accountant to decide on potential distribution partners) (Goel & Karri, 2006). However, if the BA discovers that the entrepreneur deliberately chose a friend as a partner for reasons other than a good skill set and experience, then the BA's trust in the entrepreneur is violated. Distrust created by a trust-violating behavior often generates anger in the trustor (Lewicki & Bunker, 1996). It can also trigger a reappraisal of the relationship and be so catastrophic that it prompts the termination of that relationship (Burt & Knez, 1996). Opportunities where the entrepreneur has displayed even a single trust violation (as those exemplified in Table 2.1) are thus expected to be less likely to receive an offer. Therefore,

H3. The percentage of entrepreneurs who receive a BA's investment offer after displaying trust-violating behaviors will be smaller than the percentage of entrepreneurs who did not display trust-violating behavior and receive such an offer.

For opportunities where trust in the relationship has been reduced due to trust-damaging or trust-violating behaviors, Currall and Judge (1995) suggest that relationship risk can be reduced to an acceptable level only through the investor's introduction of controls. These include direct controls that allow the BA to participate in the venture's management and indirect controls that specify output or behavioral controls, where behavioral controls define boundaries of conduct and behaviors that comply with stated rules, and output controls articulate measures for the entrepreneur's and venture's performance.

A BA's direct participation in the venture's management can control the entrepreneur's behavior by requiring the BA's permission before the entrepreneur can make certain decisions (e.g., the BA's approval of all strategic partnerships) (Kelly & Hay, 2003). Indirect controls can be introduced through contract clauses in the shareholder agreement (Kaplan & Strömberg, 2004). The ability to introduce controls in a relationship depends on its progress (Lewicki & Bunker, 1996), the nature and dimension of the trust-damaging or trust-violating behavior (Kim et al., 2009; Tomlinson & Mayer, 2009), and the willingness of the trust damager or violator (in our case the entrepreneur) to accept the proposed control (Korsgaard, Brodt & Whitener, 2002). A BA interested in a specific opportunity is more likely to propose a control once the relationship has developed and if the behavioral trust dimension that is damaged or violated can actually be addressed via the control (e.g., unattainable for reasons such as goal alignment or benevolence). To propose a control, the BA will likely attribute the damage or violation to incompetence rather than a negative intent, and be confident that the entrepreneur will accept it. As a result, the introduction of a control in instances of trust damage or violation is expected to increase the likelihood that a BA will make an offer. Therefore,

H4. For the group of entrepreneurs whose behaviors has damaged or violated trust, the percentage who receives a BA's investment offer will be greater for those to whom the BA presented a control than for those to whom he/she did not.

2.4 Research methodology

We use a real-time technique to collect behavioral data from actual interactions to test these four hypotheses. Researchers have extensively used our chosen technique, observational interaction (Bakeman & Gottman, 1997), in observing the development and status of romantic relationships. While similar to surveys or conjoint studies on the questions addressed (e.g., to make an investment offer), observational interaction has multiple added benefits. It allows independent observers to extract certain data, and thus remove the likelihood of self-reporting bias by individuals who may not be aware of the decision-making process they use (Petty & Gruber, 2011). This real-time data-gathering technique uses behaviors as the key unit of analysis, removing the judgment components inherent in assessing intentions and predispositions. It also allows the researcher to gather data over time and not need to know the outcomes of interactions (offer/no offer), which eliminates hindsight bias. Our use of this technique enables us to explore the stages of the investment decision under actual risk (i.e., actual money to be invested) and in the context of long-term relationship development.

The interactions that we use to code and analyze are extracted from a population of entrepreneurs interacting with BAs via guest participation in the Canadian Broadcasting Corporation's (CBC) reality TV show, Dragons' Den (http://www.cbc.ca/dragonsden/). In this globally syndicated (20 countries) show, actual or 'hopeful' entrepreneurs, selected through an open audition process, pitch their business opportunities to a team of five experienced BAs, the "Dragons," in hopes of persuading them to invest between $10,000 and

$500,000 of their own money in return for equity in the business.[7] The BAs have no knowledge of the opportunity or the entrepreneur prior to their meeting in the "Den," where the entrepreneur must request (and be offered) a specific investment amount (after describing his/her business opportunity) or go home with nothing. During the show, the investor must make a risky investment decision in 15 to 75 minutes. The interaction concludes when either all the Dragons provide a specific reason for being 'out' or one or more of them decide to make an investment offer. If an offer is made and accepted, then there is a subsequent due diligence process, which if successful leads to an investment and the start of a long-term relationship between the BA and the entrepreneur.

For the four seasons (2006 to 2009)[8] of the Canadian show we study, 602 entrepreneurs pitched to the BAs (although only about 60% of these recorded pitches aired, we reviewed all of the unaired versions as well). These 602 entrepreneurial pitches (opportunities) are investigated in Maxwell & Lévesque (2011), who find that the BAs eliminated most (436) opportunities quickly due to the presence of a "fatal flaw" in the entrepreneur's pitch. A further 112 opportunities were then rejected by the BAs due to concerns about performance risk, including 'high likelihood of failure' and 'insufficient investment return.' We focus on the remaining 54 pitches that made it through this attrition process; because they are the entrepreneurs whose trust-based behaviors influenced the BAs' assessment of relationship risk (and the investment offer decision). Figure 2.2, inspired by Petty and Gruber (2011), summarizes the number of opportunities that the BAs considered at each of three identified

[7] CBC producers worked with industry experts, including one of the authors, to design and promote the selection (audition) process to replicate real-life situations. Each year, open auditions were held at 12 locations across Canada. In addition, entrepreneurs could apply on line or by mail.

[8] In the published version of the paper start dates for the BBC series rather than CBC were mistakenly given.

stages of the interaction, the attrition process and the reasons that the BAs gave for rejection at each stage.

We employed two trained observers to independently code each interaction using the behavioral trust schema (see Table 2.1). Based on a video recording of the TV interactions, the observers coded the frequency of each individual entrepreneur's behavior that built, damaged or violated trust, without knowing our underlying theory or the interaction's outcome (i.e., making an offer, or not). The observers also recorded whether or not (1/0) the BA introduced a control (i.e., BA's request for direct participation in managing the venture, request for output controls or behavioral controls), whether or not (1/0) the BA made an investment offer, and whether or not (1/0) the entrepreneur accepted it. Examples of actual coding sheets are included in Appendix C although the names and dates of the recordings have been covered to preserve confidentiality.

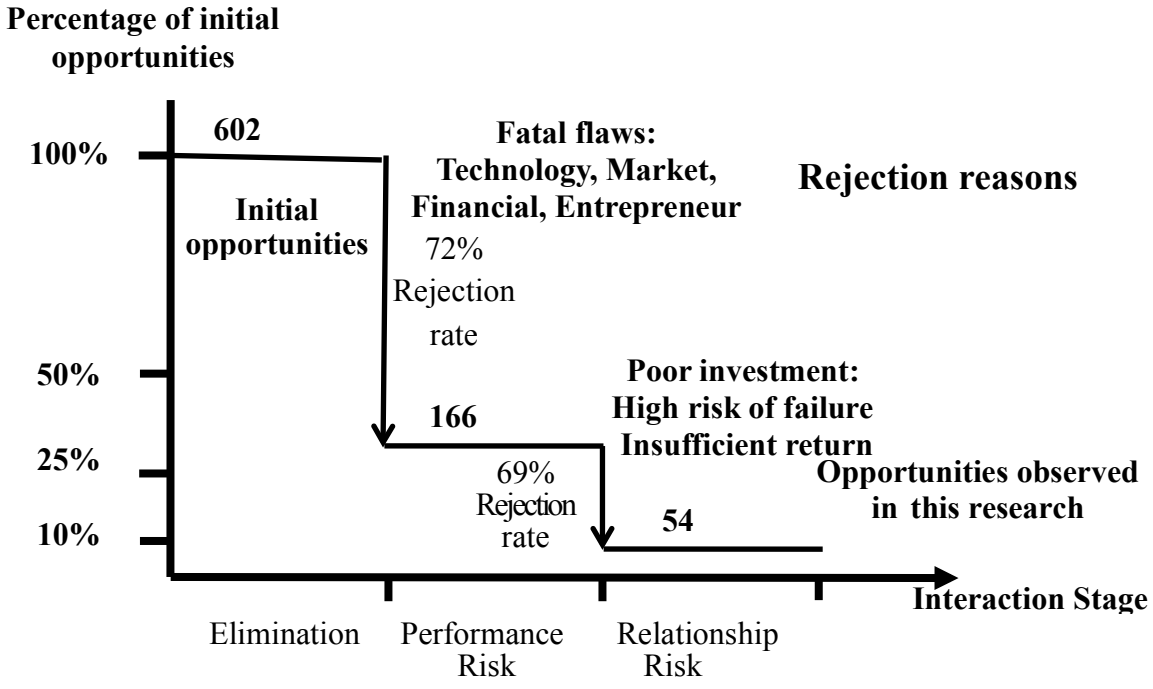


Figure 2-2 Elimination of business opportunities by stage

To rule out potential alternate explanations that could account for the observed outcomes, the observers also coded for whether or not (1/0) similarities (e.g., cultural background) existed between an entrepreneur and any one BA, and for the entrepreneur's presentation skill (1–5 Likert scale, 5 being the highest). Franke, Gruber, Harhoff & Henkel (2006) suggest that investor-entrepreneur similarities can increase the likelihood of receiving an investment offer, while Baron and Markman (2003) and Clark (2008) note that high levels of presentation skill also increase this likelihood. The observers coded each interaction for the presence of a similarity between the entrepreneur and an interested BA if it seemed to be important to the BA. While several of the similarities were anticipated—sex, cultural background, and business experience—a number of personal similarities (e.g., hobbies, social networks) also emerged. Presentation skill was based on the observer's evaluation of the entrepreneur's perceptive ability and persuasiveness.

2.5 Results

Of the 54 interactions we analyzed, 32 led to an investment offer, of which 26 were accepted, as summarized in Table 2.2.[9] In these 54 interactions, 571 trust-building behaviors were identified, along with 45 trust-damaging behaviors and 12 trust-violating behaviors. We note that a single instance of trust violation was enough to stop the interaction, while the display of more than one trust-damaging behavior did not preclude an investment offer. Figure 2.3 also offers the frequencies of trust-damaging and trust-violating behaviors per behavioral trust dimension, highlighting the importance of *competence* since it is the dimension most frequently damaged during those interactions. Trust-damaging behaviors via competence might have been easier to observe and more likely to occur early in the relationship development.

[9] Although less than half of the offers made and accepted in the "Den" were subsequently consumated, funds were advanced to entrepreneurs with and without trust-damaging behaviors.

Opportunity	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
Trust building	11	7	8	6	9	12	14	15	17	16	8	9	8	7	11	14	16	12	7	9	11	14	15	16	17	11	9	8	11	12	14	10
Trust damaging																			1	1	1	2	1	2			1		2		1	
Trust violating																									1							
Control																			1	1	1	1	1	1	1		1		1		1	

(a) 32 opportunities that received an investment offer, with AA – AF rejecting it (blank =0)

Opportunity	a	b	c	d	e	f	g	h	I	j	k	l	m	n	o	p	q	r	s	t	u	v
Trust building	8	7	11	14	12	8	9	12	6	8	9	12	13	11	10	7	6	8	9	10	11	6
Trust damaging		2	2	2	2	3	1	1	2	2	1	1	1	1	3	1	2	1	1	2	1	1
Trust violating		1					1	1	1			1	1	1	1		1			1	1	
Control (none)																						

(b) 22 opportunities that did not receive an investment offer (blank =0)

Table 2-2 Frequencies of trust –based behaviors and controls

2.5.1 Validity checks

Our research method raises validity concerns about the accuracy of coding behaviors. The coding schema was refined over several iterations and with the benefit of feedback from trust scholars. It also builds on other scholarly works that have developed behavioral trust schemas and validates the use of the dimensions identified based on testing on real interactions. The most reliable way to address coding validity concerns is via inter-rater reliabilities that compare the results and differences between our trained observers when coding each type of trust-based behavior (building, damaging and violating) (Landis & Koch, 1977). Inter-rater reliability (Cohen's kappa) for trust-building and trust-damaging behaviors were 0.84 and 0.87, respectively, supporting the usefulness of our coding schema and method. Both observers identified all 12 trust-violating behaviors (Cohen's kappa of 1.0), confirming the fundamental difference between displays of trust damage and trust violation. We also measured the coding reliability for the introduced control, the degree of BA-entrepreneur similarities and the entrepreneur's presentation skill; inter-rater reliabilities were 0.94, 0.92 and

0.78, respectively (the lower rating for presentation skill likely results from its measurement on a 1–5 Likert scale, as opposed to control and similarities which had binary measures).

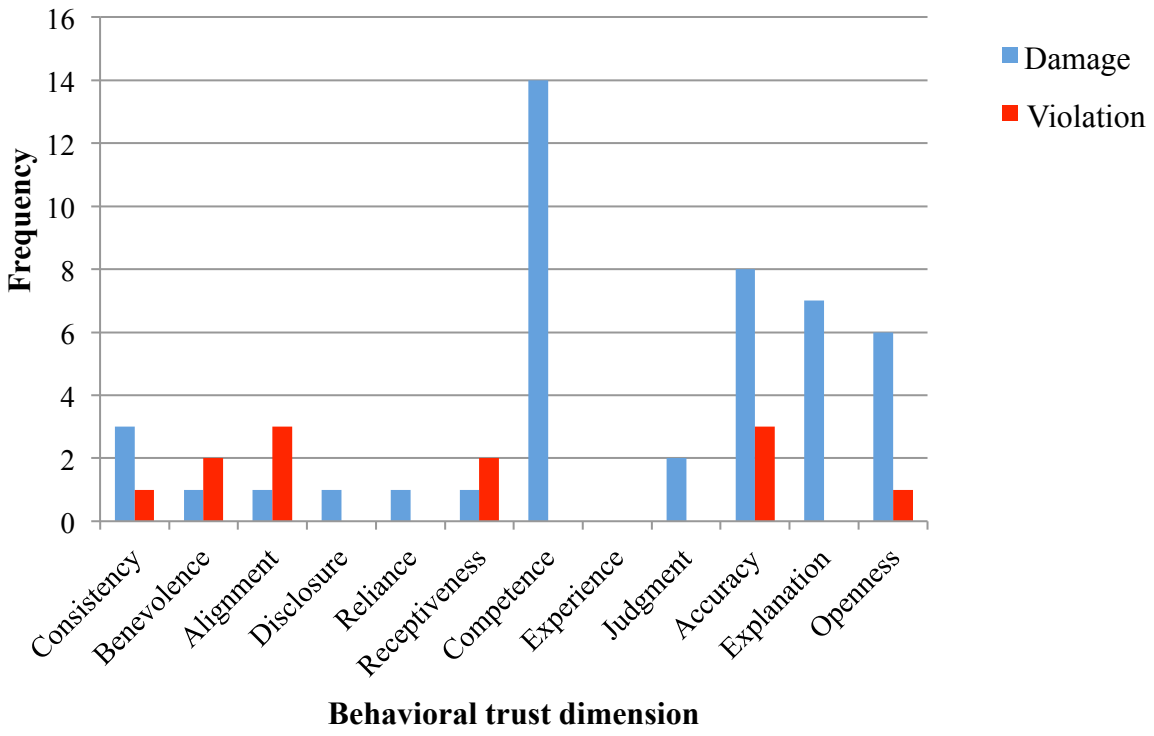


Figure 2-3 Frequencies of trust damaging/violating behaviors per dimension

Internal and external validity concerns also emerge due to the context of the interactions. In Table 2.3, we adopt a framework developed by Meyer (1995) to address these context-based concerns. A team of professionals—including one of the authors—with legal, accounting, marketing and technical expertise was formed to ensure the realism of the interactions and to subsequently assist the entrepreneurs whether or not they received an investment offer. The TV-set interactions mirrored real-life interactions on two key dimensions: the BAs invested their own money, and they decided whether or not to enter long term relationships with the entrepreneurs. Even the short timescale of the interaction may reflect real-life BA-entrepreneur interactions, in which BA investment decisions are

often made within ten minutes of the start of the first interaction, according to Mason and Rogers (1997). Post, van den Assem, Baltussen and Thaler (2008) also identify a number of studies that use data from TV shows to investigate how individuals make decisions under uncertainty, although rarely was one of the authors involved in the show's development and production, as is the case here. Such involvement can help reduce several other internal validity concerns, including changing the context of the interaction (e.g., removing a BA because he/she was too "nice") by someone external to the interaction (e.g., the shows producers).

	Concern	Symptom	Mitigation
Internal Validity	**Omitted variables**	Other factors than hypothesized may affect outcomes	Entrepreneur-investor similarities and entrepreneur's presentation skill were not found to predict the investment decision
	Outcome trends	External (e.g. economic) factors may change outcomes over time	4 year dataset were compared where investment rates increased, but rejection rates at the relationship-risk stage did not
	Mis-specified variances	Possible correlation of independent variables	Correlation tests were run prior to the regression, statistical tests separated the effect of trust-building, trust-damaging, & trust-violating behaviors
	Mis-measurement	Accuracy errors caused by data collection method	High degrees of inter-rater reliability
	Externalities	Context changes based on prior interactions	While changes in the interactions were noticed, one of the authors' participation limited the effects on displayed behaviors
	Selection	Participant selection criteria linked to outcomes	Selection process was independent of interaction, and the effect on the decisions made in the "Den" were limited
	Attrition	Participant may decide not to continue with interaction	All entrepreneurs left the interaction with an offer, after refusing an offer, or when rejected by the BAs
	Omitted interactions	Sample chosen for investigation linked to outcomes	A fundamental part of the research method was based on a similar process in practice
External validity	**Previous out-comes affect selection**	Individuals may not apply due to low likelihood of success	An open audition encouraged all entrepreneurs across Canada to participate
	Context deters participation	Concerns about treatment by BAs or exposure on public TV	Interaction setting was designed to replicate real-life interactions with Business Angel Groups
	Previous behaviors affect outcome	Observed previous behaviors may affect future behaviors	Participants learn from previous interactions, but no change in the percentage receiving offers during the relationship-risk stage

Table 2-3 Validity concerns on data from a reality TV show

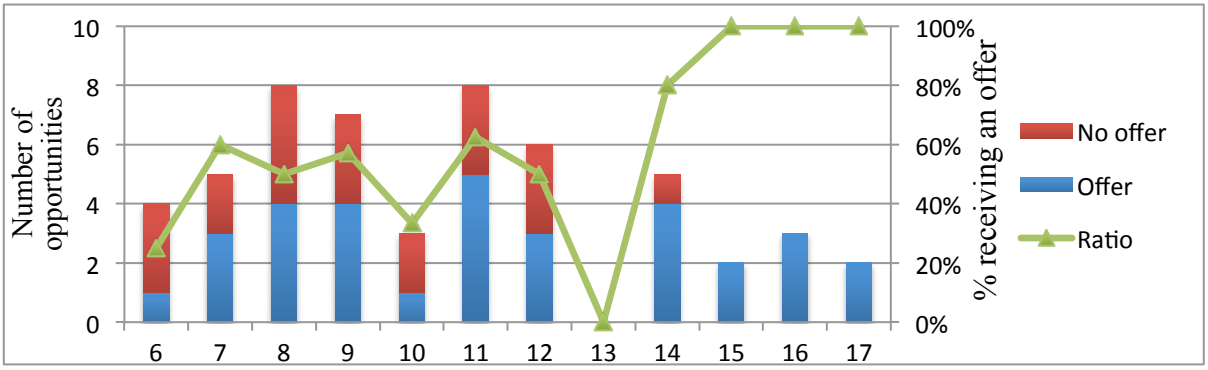
Regarding external validity concerns, a crucial one in our context is that participants in subsequent seasons of the show could observe outcomes from previous seasons. This influenced who auditioned for the show and how participants in subsequent shows behaved in the "Den." In turn, it also influenced whom the show producers selected. While we could not eliminate these concerns, we found no difference in success rates between participants in Seasons 1 and 4 who reached our sample (i.e., the relationship-risk stage of the interaction in Figure 2.2).

2.5.2 Testing the hypotheses

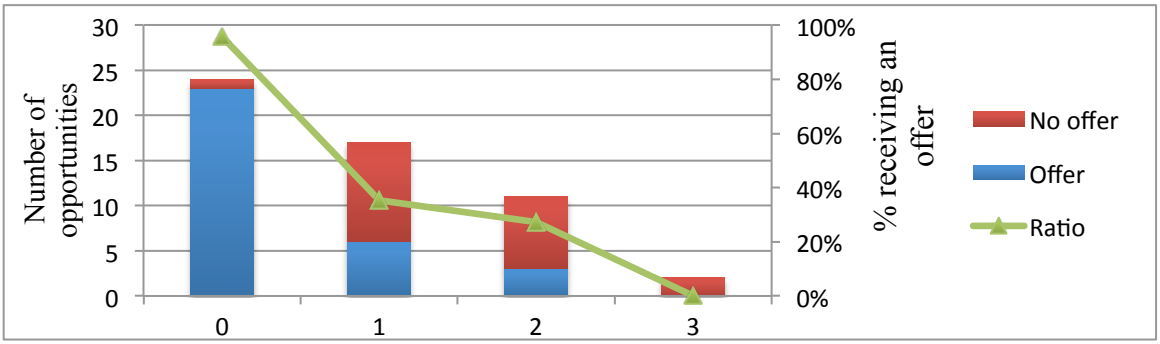
We use statistical hypothesis tests to verify whether our data support H1 to H4. We chose statistical testing because it provides insights on each incident of trust-based behavior and tells us whether or not the difference in mean values between subsets (those who receive an offer versus those who do not) is statistically significant. For H1 we apply a one-way t-test for the comparison of two averages (with unknown equal variances).[10] Accepting the alternative hypothesis—the average number of trust-building behaviors is greater for the subset of entrepreneurs who receive an investment offer than for the subset who do not—provides statistical support for H1. The average number of trust-building behaviors in the sample of 32 entrepreneurs who received an investment offer is 11.38, whereas in the sample of 22 entrepreneurs who did not receive an offer is 9.41. The t-statistic is 2.39 (a t-Student statistics with 52 degrees of freedom), which provides statistical support for accepting H1 (with a one-tail p-value $< .02$). In other words, an entrepreneur who receives a BA investment offer is expected to display a greater number of trust-building behaviors than an entrepreneur who does not receive such an offer.

[10] This test is appropriate given that the number of trust-building behaviors (per opportunity and for the 54 we analyze) appears to be approximately normally distributed.

For H2, given the much smaller number of trust-damaging behaviors recorded, we apply a Mann-Whitney test (which is a non-parametric version of the t-test). The alternative hypothesis states that the average number of trust-damaging behaviors will be smaller for the subset of entrepreneurs who receive an investment offer than for the subset who do not. The average number of trust-damaging behaviors in the received-investment-offer sample is 0.38, whereas it is 1.50 in the sample that did not. The Mann-Whitney U is 605.5 (where $n_1 = 32$ and $n_2 = 22$), which provides statistical support for accepting H2 (with a p-value < .0001). In other words, an entrepreneur who receives a BA investment offer is expected to display a smaller number of trust-damaging behaviors than an entrepreneur who does not receive an offer. Figure 2.4 illustrates a tendency for entrepreneurs to receive offers if they display a rather large number (e.g., 14 or more) of trust-building behaviors and a low number of trust-damaging behaviors (in this case, a monotone decreasing relationship).



(a) Trust building behaviors



(b) Trust damaging behaviors

Figure 2-4 Frequencies and investment offer ratios

While for H1 and H2 we had to compare frequencies of trust-based behaviors, for H3 and H4 we had to compare percentages of entrepreneurs receiving offers. The Fisher exact test is a more accurate statistical test than the usual Chi-squared test when comparing two percentages where one subset has a low count, which is the case for testing both H3 and H4 as it allows differences from the null or alternate hypothesis to be calculated exactly, while Chi-squared is an approximation that makes assumptions about the distribution of outcomes.

The alternative hypothesis for H3 states that the percentage of entrepreneurs who receive an offer will be smaller for the sample in which each entrepreneur displays trust-violating behaviors than for the sample in which they do not. As highlighted in Table 2.4, only one entrepreneur in the sample of 12 (8.3%) who displayed trust-violating behaviors received a BA investment offer, whereas 31 in the sample of 42 (73.8%) entrepreneurs who did not display trust-violating behaviors received an offer (as opposed to, respectively, 30.0% and 95.8% for trust-damaging behaviors). The Fisher exact test gave a P = 0.0134, which provides statistical support for accepting H3 (as this is an exact test, there is no calculation of significance). In other words, the percentage of entrepreneurs who receive a BA investment offer while displaying trust-violating behaviors is expected to be smaller than the percentage of entrepreneurs who receive such an offer but whose behaviors do not violate trust.

	Opportunities with	
	Trust damage	No trust damage
Offer	9	23
No offer	21	1
Total	30	24
% receiving an offer	30.0 %	95.8%

	Opportunities with	
	Trust violations	No trust violation
Offer	1	31
No offer	11	11
Total	12	42
% receiving an offer	8.3%	73.8%

Table 2-4 Investment offer ratios for opportunities with trust damage/violation

For H4, the alternative hypothesis is that for entrepreneurs whose behavior has damaged or violated trust, the percentage who receives an investment offer will be greater for the sample in which the BA presents each entrepreneur with a control than for the sample in which they do not. Among the 31 entrepreneurs who damaged or violated trust, the 10 who received an investment offer were all presented with a control by the BA, whereas none of the 21 who received no investment offer was presented with a control. The Fisher exact test gave a $P = 0.00046$, which provides statistical support for accepting H4. In fact, in our sample the BA's proposed control appears to have been a prerequisite to receiving an investment offer for all of the entrepreneurs who had damaged or violated trust.

2.5.3 Predictive strength of trust-based behaviors

While we found statistical support for each of our four hypotheses, we also wanted to rule out the possibilities that two independent variables, BA-entrepreneur similarities and the entrepreneur's presentation skills, could better predict the observed outcomes. We therefore conducted regression analysis to explore the predictive significance of trust-based behaviors on the likelihood of receiving an investment offer, and the effect of each of these alternative independent variables on this relationship. Table 2.5 shows the correlation matrix, and identifies two significant correlations: (1) between the introduction of a control and trust-building behaviors, and (2) between trust-damaging and trust-violating behaviors. Neither is surprising. We have already noted that the BA is more likely to introduce a control if he/she has already developed a relationship and somewhat trusts the entrepreneur, which would likely be linked to the entrepreneur's display of trust-building behaviors. In addition, trust violators are also more likely to damage trust.

	Trust building	Trust damaging	Trust violating	Control	BA-entrep-reneur similarities	Entrepreneur's presentation skill
Trust building	1					
Trust damaging	-0.137	1				
Trust violating	-0.042	0.356**	1			
Control	0.268*	0.199	-0.140	1		
BA-entrepreneur similarities	-0.081	0.045	0.094	-0.034	1	
Entrepreneur's presentation skill	0.118	0.257	0.184	-0.037	-0.254	1

** significant at 0.01 and * at 0.05

Table 2-5 Correlation matrix

	Model 1	Model 2	Model 3
Constant	-2.850 (0.058)	-4.440 (0.012)	-7.135 (0.001)
Trust building	0.678** (1.970)	0.872* (2.392)	0.868* (2.381)
Trust damaging	-3.012** (0.049)	-3.765** (0.023)	-4.105** (0.016)
Trust violating	-6.328* (0.002)	-7.689* (0.000)	-8.450* (0.000)
Control	NA[a]	NA[a]	NA[a]
BA-entrepreneur similarities		2.026 (7.586)	2.330 (10.273)
Entrepreneur's presentation skills			0.731 (2.078)
R^2 (Cox and Snell)	0.580	0.599	0.605
Model accuracy	88.9%	87.0%	87.0%

** significant at 0.01 and * at 0.05 [a] Dropped due to colinearity

Table 2-6 Regression results (with Odds Ratio)

We use logistic regression to examine three models of the relationship between the independent variables and the decision to make an investment offer (a dichotomous outcome). In Model 1 we include the three types of trust-based behaviors (i.e., number of

behaviors that build, damage, and violate trust), dropping the independent variable control because of colinearity. In Model 2 we add BA-entrepreneur similarity and in Model 3 we add the entrepreneur's presentation skill. Table 2.6 summarizes the regression results.

Model 1 shows statistical significance for each type of trust-based behavior, with all regression coefficients being significant (p-value < 0.05). This finding supports our earlier assertion that each type of behavior is a different construct. Also as expected, the coefficient is positive for trust-building behaviors and negative for both trust-damaging and trust-violating behaviors. In other words, the more trust-building behaviors the entrepreneur displays, the higher the likelihood he/she will receive an investment offer, but the more trust-damaging or trust- violating behaviors the entrepreneur displays the lower the likelihood he/she will receive an investment offer. From the odds ratios (OR), we also observe that each occurrence of a trust-building behavior is associated with almost double the chances of the entrepreneur receiving an offer (OR = 1.97) and each time an entrepreneur exhibits a trust-damaging behavior, his/her chance of receiving an offer decreases by about 20 times (1/OR = 1/0.049). Trust violation decreases the entrepreneur's chance of receiving a BA investment offer by 500 times (1/0.002), virtually killing and entrepreneur's chance of receiving an offer.

In Models 2 and 3, the coefficient of neither added variable is statistically significant, and adding these two variables reduced rather than increased the predictive accuracy (i.e., the percentage of opportunities where the model predicted the outcome—offer/no offer—correctly). Yet, all coefficients for the three types of trust-based behavior are significant (p-value < 0.05) and retain relatively similar values and identical signs. Therefore, BA-entrepreneur similarities and the entrepreneur's presentation skill cannot provide

alternate explanations for the investment offer decision. (We also verified that interaction effects were not significant).

2.6 Discussion and conclusion

Most of the empirical research on how BAs make decisions has focused on the characteristics of the venture (e.g., large potential market) and entrepreneur attributes (e.g., relevant experience), but not on the BA's decision-making process to evaluate whether or not they can develop a long-term relationship with the entrepreneur, a major factor in the BA's decision to offer funding. In fact, the context of BA-entrepreneur interactions—over extended periods and in a confidential environment—has made it challenging to gather data, especially on the role of trust development in the BA-entrepreneur relationship. This paper addresses this shortcoming. Further, the research on rapid trust development in informal cooperative relationships often confuses the use of social and institutional controls with the development of direct interpersonal trust (e.g., Meyerson, Weick & Kramer, 1996). Researchers have also ignored fundamental agency differences between venture capitalists (VCs) and BAs, based on the fact that VCs invest others' money while BAs invest their own money, thereby overlooking the differences in trust development between investor types and entrepreneurs (van Osnabrugge, 2000). Our ability to access a unique (and contextually appropriate) data set, our utilization of an observational-interaction technique, and our development of a behavioral trust schema has enabled us to address each of these limitations.

We found that in a short time span and under public exposure (a TV audience), BAs pay particular attention to key signals that entrepreneurs provide in their displays of positive or negative trust-based behaviors, which are often exaggerated under pressure (Mishra, 1996). While it might seem incredible that so much information about individual ventures,

entrepreneurs and potential relationships can be gleaned in such short interactions (i.e., between 15 and 75 minutes), our findings reflect what scholars call rapid-judgment decision-making (or *thin slicing*) (Ambady, Bernieri & Richeson, 2000). Maxwell et al. (2011) conjecture that experienced investors develop heuristics that enable them to rapidly eliminate opportunities early in the investment decision-making process, despite the fact that this practice may sacrifice accuracy for expediency (Gigerenzer & Goldstein, 1996). We argue that later in the process, BAs change their decision-making process and instead 'intuitively audit' positive and negative displays of trust-based behaviors to determine the level of relationship risk before making an investment offer.

Overall, the statistically significant support that we found for our four hypotheses suggests that entrepreneurs displaying a comparatively large number of trust-building behaviors and a comparatively small number of trust-damaging ones are more likely to receive a BA investment offer. However, entrepreneurs who display trust-violating behaviors are unlikely to receive an offer. Once an entrepreneur violated trust it almost always led to the termination of the relationship. Furthermore, as illustrated in Table 2.3, while damaged trust can sometimes be addressed through the BA's introduction of a control, violated trust rarely can be remedied. In the 10 cases (out of 30) where trust was damaged (as exemplified in Table 2.1) and a control offered, the damage was either due to a shortfall in the entrepreneur's anticipated capability or the entrepreneur's inappropriate reliance on another individual (over-trust). In these cases, the BA proposed his/her direct involvement in the venture or the introduction of behavioral controls on the entrepreneur (e.g., BA signature is required on all checks, arguably to reduce the chance of undesirable behaviors subsequently occurring). We note that the BA did not present a control or an investment offer when the

damage was due to a lack of benevolence, alignment or receptiveness. In the one case (out of 12) where trust was violated and a control introduced, the violation was due to a misalignment of core values between the BA and the entrepreneur. That violation was addressed by the BA offering to invest in return for 100% ownership of the company. While this is technically a control mechanism, if accepted, the BA eliminates the relationship risk and is no longer vulnerable to the entrepreneur's actions. We also note that six of the entrepreneurs who received an offer turned it down: half disagreeing with the new venture valuation, the other half rejecting the proposed control option.

While potential alternate explanations for the interaction outcomes were examined—BA-entrepreneur similarities and entrepreneur's presentation skill—no support was found to suggest that either was a significant predictor of the investment offer decision, or moderated the effect of trust-based behavior displays. We did, however, observe that BA-entrepreneur similarities often made the interaction less adversarial, at least initially, while most of the entrepreneurs had high presentation skill levels. Our ability to eliminate the BA-entrepreneur similarities and the entrepreneur's presentation skill as alternate explanations reinforces our proposition that trustworthiness is a critical ingredient for entrepreneurs seeking BA investment.

On the theoretical side, our findings suggest that researchers pay closer attention to the connection between specific entrepreneurial behaviors and interaction outcomes. The characterization of behaviors that affect entrepreneurs' ability to develop trust in their relationships highlights the competitive advantage enjoyed by entrepreneurs who can develop such relational contracts with partners. Also, investors' reactions to entrepreneurs' display of different types of negative trust-based behaviors (as exemplified in Table 2.1), either by

rejecting the opportunity or identifying an appropriate control mechanism, highlight the different dimensions of trust at play in the BA's decision-making process. Further, in line with the work of Shanteau (1992) on using domain-specific experts to understand decision-making processes, our research suggests that experts like BAs can be instrumental in improving our understanding of how complex investment decisions are made. Indeed, during the interactions we observed, the BAs were instrumental in focusing our attention on the most important behavioral trust dimensions and in providing specific reasons for rejection.

On the methodological side, the use of an innovative research method to explore entrepreneurial behaviors in realistic environments responds to Bygrave's (2007) suggestion that entrepreneurship scholars build a "new paradigm with imaginative research methods" (p. 25). Our use of observational interactions and the development of an appropriate behavioral coding schema not only enabled us to explore behaviors and the BA-entrepreneur relationship development process, but helped demonstrate that analyzing short, but dynamic examples of entrepreneurial behaviors can explain how experienced investors (or other potential stakeholders) make rapid judgments about whether to enter a business relationship. Given the importance of first impressions, and the expected high correlation between initial and subsequent behaviors, the use of video-based techniques to explore other entrepreneurial phenomena and confirm insights from game-theoretic reasoning in dyadic relationships is likely to advance entrepreneurship research.

On the practical side, an awareness of the multidimensional nature of trust and how it influences behaviors can help improve the behavior of entrepreneurs (e.g., when interacting with BAs), and encourage them to display more trust-building behaviors. Trust-damaging or trust-violating behaviors manifested, for instance, through a lack of benevolence or

misalignment of core values, are indicative of problems that can prevent the fund-seeking entrepreneur from receiving BA investment. Identifying the many dimensions of trust-based behaviors also enables BAs to better understand the reasons for negative outcomes (e.g., when the entrepreneur rejects a control) from their interactions with entrepreneurs. It also enables BAs to deploy control mechanisms that are acceptable to the entrepreneur, allowing more investments to occur (or allowing more leeway for mistaken or ill-conceived mistrust). In turn, more entrepreneurs may be encouraged to start new businesses and seek external investment for expansion. Likewise, by improving BAs' decision-making processes, more investors will feel confident in their assessment and will be more likely to provide funding.

While we are encouraged by the research potential associated with extracting data from unedited line tapes from a CBC reality show, we are aware that behaviors displayed on a TV show can be atypical of actual interactions. One could expect that the entrepreneurs taped for the reality show would be more likely to receive an investment offer than entrepreneurs in real-life (not taped TV shows), because the act of being willing to share an idea on national TV, and be chided by a "Dragon," shows a willingness to be vulnerable (in addition, less trusting entrepreneurs may not be willing to expose themselves to vulnerability). Nevertheless, our analysis on identifying entrepreneur's trust-based behaviors and their impact on receiving an offer of BA investment may have not been possible otherwise, because too few entrepreneurs would have received an offer (the context of the show - environment, advisory team support, public exposure - was designed to enhance the likelihood of receiving an offer). We are also conscious that the number of interactions (54) that progressed to the stage of potential relationship development was rather small. Yet, we had a set of occurrences (displays of behaviors) large enough to conduct a statistical test, and

in the case of small samples, we used a test that could accommodate small sample sizes. Further, our behavioral trust schema was developed with this small sample of interactions, which constrained our ability to identify the relative importance of each behavioral trust dimension or the possibility for other dimensions. We did, however, utilize the findings of extensive literature to minimize potential deficiencies in developing our schema. We leave these limitations as issues deserving further scrutiny by researchers in the realm of entrepreneurs' trustworthiness in attracting investment and growing their new ventures.

3 Investor auditing of entrepreneurs' behaviors

3.1 Introduction

The crucial role played by the entrepreneur in new venture performance is widely acknowledged (e.g., Gartner, Carter, & Reynolds, 2010) and frequently more important than the idea itself (Shepherd, 1999). While certain key characteristics (need for achievement, locus of control, action orientation, etc.) differentiate entrepreneurs from managers, linking them to future venture performance is problematic (Rauch & Frese, 2007a). Shane et al. (2003) argue that the failure to find evidence for this link may be due to data often gathered from a broad cross-section of activities and at various stages in the venture creation process (despite the fact that the importance of certain characteristics depends on the nature of the activity and the stage of venture development; Baron, 2007a; Baum & Locke, 2004). The coding of characteristics is also far from trivial, with conflicting views on what should be included and how it should be measured (Baron, 2007a). The difficulty of identifying a characteristic-performance relationship is further compounded by exogenous factors affecting venture performance over time (Baron, 2007a). Some scholars have therefore developed "a deep-rooted skepticism [...] about the presence and the strength of this relationship" (Rauch & Frese, 2007b:354).

Gartner et al. (2010) note that concerns about the measurement of characteristics and their linkages (or absence thereof) to venture performance have stimulated scholars to look instead at behaviors, although to date few studies of entrepreneurs' behaviors exist (Baum & Bird, 2010). Behaviors are seen as more reliable predictors of *future* behaviors and *future* performance than characteristics (Ouellette & Wood, 1998). Exploring behaviors enables us to "focus on what the entrepreneur does and not who the entrepreneur is" (Gartner, 1988:21),

since the study of entrepreneurship is fundamentally about how entrepreneurs behave (Frese, 2007; Gartner, 1990). Investigating behaviors has its own challenges, however. Observing behaviors in a realistic environment can be difficult, and much research has tended to rely on self-reports that introduce confirmation and hindsight biases (Bird & Schjoedt, 2009). Furr, Wagerman, and Funder (2010) contend that the cost of setting up a realistic environment in which to make "direct behavioral observations" can be prohibitive, while Baumeister, Vohs, & Funder (2007) note the difficulties of developing behavioral-coding schema based on meaningful personality dimensions.

Yet, studies of investors' decision making (e.g., van Osnabrugge, 2000) have shown that an investor's awareness of the presence (or absence) of key entrepreneurial characteristics can affect the likelihood of making an investment offer. Investors assess inventories of characteristics, such as expertise (van Osnabrugge, 2000), commitment (Feeney, Haines, & Riding, 1999) or passion (Cardon, Sudek, & Mitteness, 2009), based on the entrepreneur's behaviors (and information provided) during the investment interaction. This article attempts to reconcile these research streams by observing and coding how entrepreneurs' behaviors in a specific context (the investment interaction) impact short-term outcomes (investment decision). Specifically, *how an entrepreneur's behaviors during the investor-entrepreneur interaction influence the likelihood of receiving, or not, an investment offer*.

We consider how entrepreneurs behave during their initial interaction with investors—specifically business angels (BAs) who invest their own money in promising opportunities—as a predictor of these entrepreneurs' future behaviors. We then theorize that experienced investors audit behavioral manifestations to enable them to modify their initial

assessment of the risk surrounding the future performance of the venture or, in other words, the *performance risk*, which they take into account in their investment decision along with return-on-investment. Perceptions of acceptable levels of performance risk directly influence the investor's decision to make an investment offer: the higher the perceived risk, the less likely the investor makes an offer. We formulate three hypotheses on how the entrepreneur's inventories of behaviors as manifestations of capabilities, experiences and traits affect the likelihood of receiving an offer: (1) an increasing linear relationship for the capability inventory; (2) an increasing relationship with diminishing returns for the experience inventory; and (3) an inverted U-shaped relationship for the trait inventory.

We select an approach that enables us to gather behavioral data while the interaction unfolds, to provide some answers to the often-repeated question of whether investment decisions are based on the attributes of the "horse" (venture) or the behaviors of the "jockey" (entrepreneur) (e.g., Harrison & Mason, 2002; Sudek, Mitteness, & Baucus, 2008). Scholars have shown the benefits of gathering such data with unscripted interactions taped for television that involve actual investment decisions. Closest to our context are the studies of Maxwell, Jeffrey and Lévesque (2011) and Maxwell, and Lévesque (in press) that consider, respectively, one and four seasons of the Canadian TV show Dragons' Den. The former focuses on how investors trim their set of available investment opportunities by developing shortcut decision-making heuristics, while the latter looks at how an investor's trust prompted by the entrepreneur's behavior affects the investment decision. Although the set of unscripted interactions we use here intersects with these studies, the data we analyze does not, because our focal point is on entrepreneurs' behaviors as manifestations of

characteristics that require their own unique coding. We develop an appropriate coding schema that we use on 99 interactions.

As we attempt to reconcile streams of research on the relationship between key entrepreneurial characteristics and venture performance, we contribute to the entrepreneurship literature in three ways. First, we highlight the importance of the entrepreneur's behaviors on the investor's assessment of performance risk (and hence the investment decision). In doing so, we consider how investors audit inventories of behaviors as manifestations of the entrepreneur's capabilities, experiences and traits during actual investment negotiations. Second, we use a tried-and-tested research method from psychology to study entrepreneurs' behaviors in interpersonal relationships, observing these behaviors in a similar context to enlighten our understanding of investment decisions. Third, we reinforce the benefit of using expert feedback (i.e., serial investors) to generate insights on how entrepreneurs' behaviors affect the investment decision-making process and moderate the performance risk. We thus overcome some limitations about the influence of key entrepreneurial characteristics on future venture performance by focusing instead on the impact of behaviors on investment decisions.

The remainder of this chapter proceeds as follows. In the next section we explain how expert investors (BAs) initially assess performance risk and how they audit the manifestation of certain entrepreneurial behaviors, which modifies their initial assessment. We then develop the coding schema for behaviors as manifestations of the entrepreneur's capabilities, experiences and traits, broken down into several facets. We formulate the hypotheses, present the research method and offer the findings. We conclude with this work's implications and limitations.

3.2 Angel investment and performance risk

The use of expert insights to help understand how decisions are made is common in cognitive science, where domain-specific experts forecast future outcomes based on the assessment of a limited number of factors. Shanteau (1992) suggests that expert decision-makers become more accurate when they operate in a consistent context, can break down the decision process into pieces, and use their cognitive processes to learn from previous decisions. Extracting real-time data from actual investor-entrepreneur interactions enables us to move in this direction, since we can observe both the entrepreneur's behaviors and the experienced (serial or expert) investors' reactions while investment decisions are being made.

Expert investors can be venture capitalists (VCs), who invest other people's money, or business angels (BAs), who invest their own money, in exchange for equity. Due to a fundamental agency difference between these types of investor—a VC has to justify his/her investment decision to others, but a BA does not (van Osnabrugge, 2000)—the decision-making process used, and the relative importance of the criteria considered when making the investment decision, differ. As BAs tend to invest smaller amounts of money in earlier rounds of financing than VCs do (Hall & Hoffer, 1993), they tend to invest earlier in the venture creation process where "the overall enterprise is not viable without the entrepreneur" (Gartner, 1990:18). BAs thus focus more attention on the entrepreneur, because removing him/her is often not an option. Further, BAs are likely to become directly involved with operating the venture, which obliges them to evaluate how their participation might address the entrepreneur's potential shortcomings and associated likelihood of venture failure (Freear et al., 2002). Given that BAs focus greater attention to the entrepreneur, we concentrate on them.

The likelihood of venture failure and insufficient return-on-investment both cause rejection of an investment opportunity (Lopes & Oden, 1999; Payne, Laughunn, & Crum, 1980).[11] When the BA's initial assessment of the venture results in a potential financial return that is too low, or an assessment of the likelihood of failure that is too high, he/she will reject the opportunity. However, for the remaining opportunities that are not rejected, the BA can assess how the entrepreneur's behaviors modify his/her original appraisal of the likelihood of failure. Assessment of behaviors, however, can only take place subsequent to the assessment of the venture, because the relative importance of the entrepreneur's behaviors as manifestations of his/her capabilities, experiences or traits is context dependent (Sudek et al., 2008). If the revised assessment of the likelihood of failure is below the BA's *risk threshold*, then the opportunity will be further considered (Freear et al., 2002). Lopes & Oden (1999) also argue that, unlike the traditional view of investment decisions, no tradeoff is considered between risk and return since these two dimensions are non-compensatory. Instead, each dimension has an "aspiration level" that is personal to the investor and based on his/her risk propensity and the context of the investment decision being made.

After initial screening, the likelihood of venture failure corresponds to the BA's assessment (i.e., perception) of the investment risk. Das and Teng (1998) identify two components of investment risk: *performance risk* and *relationship risk*. The performance risk is the risk that the venture will not achieve its full potential despite the best efforts of all stakeholders, while the relationship risk is the risk that the entrepreneur may not act in the best interests of the investor. McMullen and Shepherd (2006) propose that factors that are independent of the investor's involvement, such as the technology and potential market (i.e.,

[11] Other common reasons for rejection include lack of "fit," insufficient interest in the product or service, or inability to foresee how the BA can personally help the venture (Mason & Stark, 2004).

venture factors) or the entrepreneur's behaviors, are assessed before those that affect the anticipated investor-entrepreneur relationship. We therefore focus attention here on how the entrepreneur's behaviors moderate the performance risk, which is conditional on the assessment of venture factors, but before the impact of their behaviors on the relationship risk is considered (Maxwell & Lévesque, 2011).

Categories	Endogenous	Exogenous
Financial risk	Higher development or overhead costs due to unanticipated expenses	Customer insolvency creates bad debt expense
	Lower gross margins due to higher material costs	Deteriorating economy reduces demand for product/service
	Unanticipated negative cash flows	Reduced credit availability limits debt or equity funding
Technical risk	Embedded technology does not perform as expected	Competitor develops alternate solution
	Challenges in producing product / service	Technology supplier unable to perform
	Product development issues cause launch delays	External technology research obsoletes proposed product / service
Physical risk	Physical/environmental issues in plant	Unable to access required material
	Operational and manufacturing challenges	Poor performance by supply-chain partners
	Infrastructure failures or challenges	Logistical challenges in fulfillment
People risk	Team becomes dysfunctional	Unanticipated external changes in the market
	Team becomes unbalanced	Recruitment issues
	Team lacks required ability	Unable to develop strategic partnerships

Table 3-1 Examples of endogneous and exogenous performance risk

Das and Teng (1998) define four categories of performance risk: financial, technical, physical and people. Financial risks are due to lower than forecasted revenues or gross margins. Technical risks are inherent in product development and because of competitors' technological advances. Physical risks are associated with internal operational and external supply chain issues, while people risks arise for individual or team performance reasons.

Table 3.1 exemplifies these risk categories, which can either be endogenous (i.e., arising within the control of the firm) or exogenous (i.e., beyond its control). Any of these categories, individually or in combination, can cause a promising business opportunity to be rejected. We now turn our attention to *how* and *why* behaviors as manifestations of the entrepreneur's capabilities, experiences or traits can modify the BA's perception of the performance risk.

3.3 Types of behavioral manifestations

We draw on research from psychology and entrepreneurship to identify distinct types of behavioral manifestations that can affect the investor's perception of the entrepreneur's characteristics and likely future behaviors. Simon (1990) suggests that behaviors are based on the individual's underlying characteristics related to cognitive abilities, experiences and traits, a view echoed by Rauch and Frese (2007a), who link long-term venture success to the entrepreneur's capabilities, education and traits. Guided by these studies and the work of Bakeman and Gottman (1997) on direct behavioral observations, we classify behavioral manifestations into three types - capabilities, experiences, and traits - and break down each type into a number of facets that make it easier to code.

Manifestations of an entrepreneur's capabilities are behaviors that demonstrate *competence*, *critical thinking facility* and *new resource skills*. More specifically, competence includes demonstrations of technical expertise (Sandberg, Schweiger, & Hoffer, 1988) and management ability (Reuber & Fischer, 1994), as well as social skills (Baron & Markman, 2003). Behaviors linked to critical thinking facility include demonstrations of the ability to manage risk (Baron & Markman, 2003) as well as the ability to develop innovative solutions and make good decisions (Rauch & Frese, 2007a). New resource skills include the

confirmation of the facility to identify new business opportunities (Baron, 2007b), as well as build organizations, resource bases and teams (Bhide, 2000; Locke & Baum, 2007).

Experiences are manifested by behaviors that demonstrate *prior activities*, *relevant knowledge* and *education*. The entrepreneur's prior activities can include involvement as a founder (Gompers, Kovner, Lerner, & Scharfstein, 2006) or in a leadership role in a related business activity (Franke, Gruber, Harhoff, & Henkel, 2008), where previous track record is also considered (Gompers, Kovner, Lerner, & Scharfstein, 2010). Behaviors that demonstrate relevant knowledge include technology, industry and/or domain (market) familiarity (van Osnabrugge, 2000). Formal and informal education, such as college or graduate programs (Shrader et al., 1997) and specialized or vocational instruction (Franke et al., 2008) can also influence an entrepreneur's future performance and likely future behaviors.

While some of the entrepreneur's behaviors can be seen as manifestations of capabilities and experiences, others are manifestations of the entrepreneur's personality traits (Furr et al., 2010). We use McCrae and Costa's (1987) "Big 5" personality traits - *emotional stability*, *extraversion*, *openness to experience*, *agreeableness* and *conscientiousness* - to develop our behavioral-coding schema. Given the breadth of manifestations of behaviors that can be linked to each of these traits, we build on the approach of Ciavarella, Buchholtz, Riordan, Gatewood, and Stokes (2004) and the findings of Unger, Rauch, Frese, & Rosenbusch (2011) to identify proximate facets of each trait that are more closely linked to success and/or failure in entrepreneurial activities, which are discussed next.

Emotionally stable entrepreneurs manifest behaviors that reflect optimism (Locke, 2000) and high levels of confidence in the belief that they can control future events (Brush et al., 2010; Rauch & Frese, 2007a). They also display behaviors that show a high desire for

autonomy (Rauch & Frese, 2007b) and self-efficacy (Markman et al., 2002). *Extraverted* entrepreneurs' behaviors demonstrate high levels of energy (Locke, 2000), enthusiasm (Sudek, 2006), passion (Cardon et al., 2009), and that they are action oriented and pro-active (Ciavarella et al., 2004). Entrepreneurs whose behaviors demonstrate *openness to experience* do so by showing that they like to explore novel ideas (Brandstätter, 2010), adapt to new circumstances (Khan, 1986), and take risks (Stewart et al., 1999). *Agreeable* entrepreneurs manifest behaviors linked to honesty and trustworthiness (Sudek, 2006), and that they are sympathetic and willing to listen to feedback (Maxwell & Lévesque, in press). *Conscientious* entrepreneurs show high levels of motivation (Zhao & Siebert, 2006), and that they are dependable and planful (Brandstätter, 2010). They also demonstrate that they are committed (Prasad et al., 2000), persistent and work hard (MacMillan et al., 1985). Table 3.2 summarizes all of these facets.

During the investment interaction, the BA's assessment of the moderating effect of the entrepreneur on the venture's performance risk is informed by the entrepreneur's disclosure of pertinent information along with the manifestations of these facets. Information exchange can provide some evidence of capabilities (e.g., ability to make good decisions) or experiences (e.g., formal programs), while the entrepreneur's behaviors can further allow the BA to infer key capabilities and experiences. These, along with behaviors that are manifestations of personality traits, are all crucial in predicting the entrepreneur's likely future behaviors and thus the investor's assessment of performance risk. We now introduce our hypotheses, detailing the mechanisms by which behaviors that infer these entrepreneurial characteristic types affect the BA's perception of each risk category in Table 3.1 and thus the investment decision.

3.4 Hypotheses development

For each characteristic type (capabilities, experiences and traits), an inventory is intuitively audited by the BA during the investor-entrepreneur interaction and is determined by aggregating (i.e., weighting based on a principal component analysis to be introduced) the rating of each dimension in Table 3.2 that belongs to a type. In turn, a dimension rating is determined by considering behaviors (and information exchanges) that are manifestations of any one facet of that dimension. For each hypothesis, Table 3.3 outlines the mechanisms by which behavioral manifestations of various facets of capabilities, experiences or traits can reduce endogenous and/or exogenous financial, technical, physical or managerial risk and, as a result, the BA's perceived performance risk (to the point where an investment offer can be made).

An entrepreneur who exhibits behaviors that infer capabilities will demonstrate that he/she likely possesses the competence, critical thinking facility and new resource skills to reduce the risks in Table 3.2. For instance, demonstrations of *technical expertise* can reduce the exogenous technical risk by tracking and responding to external technology developments (MacMillan et al., 1985), while displays of *management ability* can reduce endogenous financial risks by showing the knowledge necessary to constrain overhead costs (Frese, van Gelderen, & Ombach, 2000). An entrepreneur who demonstrates *social skills* will be able to reduce endogenous managerial risks should team performance become dysfunctional, and the ability to deploy these skills in future partnership development can limit exogenous managerial and financial risks (Baron, 2007b). Also, those who show that they can *develop innovative solutions* and *make good decisions* are likely able to overcome both endogenous technical (Amit et al., 1990) and physical (Stuart & Abetti, 1990) risks associated with startup activities.

	Dimensions	Facets	References
Capabilities (C)	Competence (CD1)	Technical expertise	MacMillan et al., 1985; Sandberg et al., 1988;
		Management ability	Frese et al., 2000; Franke et al., 2008; MacMillan et al., 1985
		Social skills	Baron & Markman, 2003; Baum & Bird, 2010; Bird, 2002
	Critical thinking facility (CD2)	Manage risk	Baron & Markman, 2003; Bird, 2002; MacMillan et al., 1985
		Develop innovative solutions	Baum & Bird, 2010; Baum & Locke, 2004; Rauch & Frese, 2007a
		Solve problems / good decisions	Baum & Locke, 2004; Cooper et al., 1988; Rauch & Frese, 2007a
	New resource skills (CD3)	Identify opportunities	Amit et al., 1990; Baron 2007b
		Establish organization	Amit et al., 1990; Bhide, 2000
		Gather resources / build networks	Ciavarella et al., 2004; Locke & Baum, 2007
Experiences (E)	Prior activities (ED1)	Startup familiarity	Feeney et al., 1999; Gompers et al., 2006; Shrader et al., 1997
		Leadership familiarity	Franke et al., 2008; Cooper et al., 1988
		Track record	Gompers et al., 2010; Mason & Stark, 2004; MacMillan et al., 1985
	Relevant knowledge (ED2)	Technology familiarity	Bhide, 2000; Hall & Hofer, 1993; van Osnabrugge, 2000
		Industry or domain familiarity	Cooper et al., 1988; Franke et al., 2008; MacMillan et al., 1985
	Education (ED3)	Formal programs	Cooper et al., 1988; Franke et al., 2008; Shrader et al., 1997
		Informal training	Franke et al., 2008; 2006; Zhao & Seibert, 2006
Traits (T)	Emotional stability (lack of neuro-ticism) (TD1)	Confident / high conviction	Brush et al., 2010; Judge et al., 2002
		Optimistic / ext. control orientation	Locke 2000; Rauch & Frese, 2007b; Simon et al., 2000
		Autonomy / self-efficacy	Baum &Bird, 2010; Markman et al., 2002; Rauch & Frese, 2007b
	Extraversion (TD2)	Enthusiasm / passion	Cardon et al., 2009; Chen et al., 2009; Sudek, 2006
		Energetic / outgoing	Locke, 2000
		Action orientation / proactive	Baum & Bird, 2010; Ciavarella et al., 2004
	Openness to experience (TD3)	Explore novel ideas	Brandstätter, 2010; Zhao & Siebert, 2006; Ciavarella et al., 2004
		Innovative / easily adaptable	Engle et al., 1997; Khan, 1986; Rauch & Frese, 2007b
		Willing to take risk	Stewart et al., 1999
	Agreeableness (TD4)	Honest / trustworthy / integrity	Maxwell & Lévesque, in press; Sapienza & Korsgaard, 1996; Sudek, 2006
		Listens to feedback / sympathetic	Maxwell & Lévesque, in press; Sapienza & Amason, 1993
		Develops networks	Ciavarella et al., 2004
	Conscientiousness (TD5)	Motivated / need for achievement	Khan, 1986; Baron & Markman, 2003; Mason & Stark, 2004; Zhao & Seibert, 2006
		Dependable / organized / planful	Brandstätter, 2010; Khan, 1986; Zhao & Seibert, 2006
		Committed / persistent / hardwork	Brandstätter, 2010; Locke 2000; MacMillan et al., 1985; Prasad et al., 2000

Table 3-2 Entrepreneurial characteristic type

		Facets of capabilities	Facets of experiences	Facets of traits
Financial	Endogenous	Technical expertise reduces likelihood of development cost overruns (Sandberg et al., 1988) **Management ability reduces likelihood of excess overhead costs (Frese et al., 2000)**	**Startup familiarity increases alertness to new opportunities (Westhead et al., 2005)** **Higher levels of formal / informal education foster ability to manage cash flow (Frese et al., 2000)**	**Confidence increases ability to manage financial challenges (Cardon et al., 2005)** High levels of commitment persist despite setbacks (MacMillan et al., 1985)
	Exogenous	Problem solving limits effectsof weak economy / customer insolvency (Baron & Markman, 2003) **Social skills increase likelihood of attracting external finance (Baron, 2007b)**	**Start up familiarity helps develops contingency plans for market changes (Westhead et al., 2005)** **Track records are important in attracting finance (debt and equity) (Gompers et al., 2010)**	Innovativeness enables survival in a deteriorating economy (Clegg et al., 2002) **High levels of commitment required to attract debt or equity (Prasad et al., 2000)**
Technical	Endogenous	**Facility to develop innovative solutions reduces development / production risk (Amit et al., 1990)** Ability to establish organizations reduces implementation delays (Bhide, 2000)	Track records in technology areas increase the quality of future decisions (Gompers et al., 2010) Technology familiarity can reduce product development risks (Engle et al., 1997)	**Confidence increase ability to overcome production setbacks (Cardon et al., 2005)** Ability to explore novel ideas overcomes techn-ology development challenges (Morrison, 1997)
	Exogenous	**Technical expertise helps track external technology advances (MacMillan et al., 1985)** **Opportunity identification reduces dependence on single technology/supplier (Wright et al., 1997)**	**Domain familiarity helps selection of external technology partners (Sandberg et al., 1988)** Technology familiarity reduces supplier performance risk (Hall & Hofer, 1993)	**Enthusiasm increases ability to attract technology partners (Chen et al., 2009)** Willingness to take relationship risks with new partners/suppliers (Maxwell & Lévesque, in press)
Physical	Endogenous	**Facility to develop innovative solutions reduces oper. constraints (Stuart & Abetti, 1990)** Skill in establishing new organizations reduces operational risks (Bhide, 2000)	Start up experience enables cost-effective imple-mentation of operations (Westhead et al., 2005) Leadership experience provides knowledge that reduces operational risks (Franke et al., 2008)	**Exploring novel ideas help overcome operational challenges (Morrison, 1997)** **Trustworthiness encourages innovation to overcome physical challenges (Clegg et al., 2002)**
	Exogenous	**Ability to gather resources reduces supply chain risks through partnerships (Ciavarella et al., 2004)** Facility to manage risk encourages development of contingency plans (Rauch & Frese, 2007a)	Track records enable development of alliances to mitigate oper. risk (Mason & Stark, 2004) **Greater in/formal training create net-works to access resources (Stuart & Abetti, 1990)**	**Exploring novel ideas increases likelihood alternate suppliers can be found (Khan, 1986)** Trustworthiness facilitates partnerships with potential suppliers (Das & Teng, 1998)
Managerial	Endogenous	**Social skills increase employee engagement reduce team dysfunction (Baron, 2007a)** Management ability (business) increases employee performance level (Frese et al., 2000)	Start up experience builds awareness of likely team performance issues (Gompers et al., 2006) Informal training provides skills that can optimize team performance (Frese et al., 2000)	**Dependability increase leadership & manage-ment suitability (Zhao & Seibert, 2006)** Confidence can enhance team performance (Baum & Locke, 2004)
	Exogenous	**Social skills facilitate external relationships, attracts employees/partners (Baron, 2007b)** Management ability gives potential partners relationship confidence (Frese et al., 2000)	**Leadership familiarity enables collaborations that reduce risks (Franke et al., 2008)** Track records are key to attracting new employees/stakeholders (Gompers et al., 2010)	Willingness to take risks increases ability to anticipate market changes (Stewart et al., 1999) Confidence increases the ability to attract talented individuals (Brush et al., 2010)

Table 3-3 Performance risk reduction from various facets of capabilities, experience and traits (Bolded text exemplified in hypothesis)

Entrepreneurs who demonstrate that they can *identify promising opportunities* can lower exogenous technical risks by creating alternative options to reduce dependence on a single technology or supplier (Wright et al., 1997). Similarly, entrepreneurs who show that they have *built strategic networks* in the past are likely able to reduce exogenous physical (supply chain) risks through the future development of such partnerships (Ciavarella et al., 2004).

Overall, entrepreneurs who display behaviors that infer higher inventories of competence, critical thinking facility and new resource skills - i.e., capabilities - can reduce the BA's perception of the performance risk and increase his/her willingness to make an investment offer.

Formally stated:

H1: The likelihood of receiving a BA investment offer increases with the manifestation of behaviors that enhance the entrepreneur's inventory of capabilities (competence, critical thinking facility and new resource skills) during the interaction.

An entrepreneur who exhibits behaviors that show experiences through *startup familiarity* is able to reduce endogenous and exogenous financial risks by increasing opportunity alertness and by developing contingency plans (Westhead et al., 2005). Similarly, entrepreneurs who demonstrate *leadership familiarity* can foster a collaborative approach that reduces exogenous managerial risks (Franke et al., 2008). An entrepreneur, whose *track record* provides evidence of past satisfactory levels of performance, can reduce the BA's assessment of exogenous financial risks (Gompers et al., 2010). Similarly, those who show *technological* or *industry familiarity* can mitigate exogenous technical (product development) risks (Sandberg et al., 1988). Endogenous financial (cash-flow) risks can be

reduced if the entrepreneur demonstrates that he/she has participated in *formal* or *informal education programs* (Frese et al., 2000), which participation can also reduce the exogenous physical risks by enabling access to critical resources (Stuart & Abetti, 1990).

While this discussion suggests that entrepreneurs who display behaviors that infer higher inventories of experiences reduce performance risk, there are indications that, above a certain threshold, these higher inventories may have negligible effect on further reducing the risk (Westhead et al., 2005). For instance, when investigating the effect of *startup familiarity* on venture survival, Birley and Westhead (1993) found serial entrepreneurs equally likely to be successful as first timers. Also, individuals with higher levels of domain familiarity/knowledge (Dane, 2010) or training (Stuart & Abetti, 1990) were found no more likely to be successful than those with lower levels. Shepherd, Zacharakis, and Baron (2003) argue that previous experience can breed a level of situation familiarity that reduces objectivity, or leads to set behaviors and cognitive entrenchment that constrains the entrepreneur's ability to adapt or behave in an appropriate manner in a new environment (Dane, 2010).

Combining these different perspectives, we posit that entrepreneurs who display behaviors that infer higher inventories of prior activities, relevant knowledge and education - i.e., experiences - can reduce the BA's perceived performance risk. However, above a certain point, the effect of greater experiences on this risk exhibits diminishing returns. In other words, the relationship between the entrepreneur's experience inventory and the BA's willingness to make an offer is a concave increasing relationship. Formally stated:

H2: The likelihood of receiving a BA investment offer increases with the manifestation of behaviors that enhance the entrepreneur's inventory of experiences (prior activities, relevant knowledge and education) during the interaction but with diminishing returns.

We develop our last hypothesis by focusing on manifestations of behaviors that infer proximate facets of each of the five traits. Entrepreneurs whose behaviors demonstrate *confidence* can more easily overcome endogenous financial and technical risks due to challenges and unanticipated setbacks (Cardon et al., 2005). Entrepreneurs who demonstrate *enthusiasm*, evidenced by the display of *passion* and *energy*, find it easier to attract talented employees and partners (Chen et al., 2009; Locke, 2000), and can thus reduce exogenous technical risks. Entrepreneurs who demonstrate a willingness to *explore novel ideas* also show that they are *innovative* and thus able to address a range of endogenous and exogenous physical risks, such as operational challenges (Morrison, 1997) and supply chain issues (Khan, 1986). Those who display *trustworthiness* stimulate innovation within the firm (Clegg et al., 2002) that can reduce endogenous physical risks. Those who demonstrate *dependability* and good leadership can reduce endogenous managerial risks (Zhao & Seibert, 2006), while those who show *commitment* tend to persist despite a setback, reducing the exogenous financial risks (Prasad et al., 2000).

This discussion suggests that entrepreneurs' behaviors that infer a higher trait inventory reduce performance risk. However, scholars have also suggested that *excessive* manifestations of behaviors linked to these traits can increase the risk, because it can lead to a less objective decision maker (Shefrin, 2007), which raises concerns about the quality of the entrepreneur's future decisions. An entrepreneur who demonstrates *overconfidence* by, for instance, disregarding an expert's recommendation to cancel a project increases the investor's perception of financial risk (Åstebro et al., 2007). One who displays *over-enthusiasm* can become too attached to the venture, even refusing to delegate management and decision making (Cardon et al., 2005), which can increase managerial risk. Other

categories of performance risk can be increased if the entrepreneur demonstrates that he/she is *too willing to explore new ideas*, which can result in him/her losing focus on the challenges facing the venture (Ucbasaran et al., 2006). Those who demonstrate that they may be *too trusting* can end up relying too heavily on an inappropriate partner (Zahra et al., 2006), while those who demonstrate *over-commitment* will often overemphasize sunk costs, resulting in poor decision making (Chira et al., 2008).

Combining these two perspectives, we posit that entrepreneurs who display behaviors that infer higher inventories of the five traits can reduce the BA's perceived performance risk, but only up to a certain point. Beyond that point, manifestations of behaviors that show excessive traits are likely to reduce the quality of the entrepreneur's decisions and increase the perceived performance risk. That is, the relationship between the entrepreneur's trait inventory and the BA's willingness to make an offer is an inverted U. Formally stated:

H3: The likelihood of receiving a BA investment offer increases with the manifestation of behaviors that enhance the entrepreneur's inventory of traits (emotional stability, extraversion, openness to experience, agreeableness, and conscientiousness) during the interaction up to a critical threshold beyond which it begins declining.

3.5 Data and methods

Our expert investors, known as "Dragons," were selected from the general population of BAs in Canada by the producers (assisted by industry insiders) of the CBC's TV-show Dragons' Den. In order to create a realistic investment interaction, five criteria were used to select the Dragons: previous entrepreneurial experience, existing angel investments, high net worth, willingness to invest, and willingness to make investment decisions in a TV-show environment. The producers also considered the Dragons' domain of expertise (i.e., retail, software, education, marketing and food), as well as their personality and likely interactions

with each other and the entrepreneurs. BAs were chosen based on an initial referral from within the investment community and a live audition, where they interacted with several entrepreneurs.

Our intent was not to find BAs who were representative of the Canadian BA population, but rather select a set of investors with entrepreneurial experiences - the Dragons are such experts. Also, the context of the show meant that for an opportunity to be rejected all five BAs had to reject it and provide a reason. This process reduced the likelihood that investor decisions were atypical. Moreover, while each Dragon had a different motive for participating, they were all interested in both encouraging entrepreneurial activity in Canada and learning from the process, which makes them (and the interactions we study) suitable for this exploratory work.

We focus on the first four seasons of the show (2006-2009), during which our five BAs (4 men, 1 woman) remained fairly constant. One was replaced at the end of season 1 and another forced to leave the show at the end of season 3 for health reasons (full biographies of the Dragons are available on the show website). During the show, previously unknown fund-seeking entrepreneurs pitch their business opportunities to the five Dragons and leave with either at least the amount requested or nothing. Details on these interactions and how validity concerns were addressed is provided in Appendix A, but we note here that the involvement of one of the authors in the taping of the show has built confidence in the veracity of the interactions.

Our initial set of interactions comprises 602 BA-entrepreneur interactions (or opportunities). For the 570 opportunities that were rejected (95%), we used content analysis techniques to code the final rejection reasons, classifying them as being due to a “fatal flaw”

in the business, issues with the business opportunity's potential, or issues with the entrepreneur's ability to manage the venture and provide the required return.[12] Figure 3.1 illustrates the final rejection reasons, showing that most (436) were rejected due to the presence of a "fatal flaw," similar to those reasons identified in Maxwell, Jeffrey and Lévesque (2011). These flaws included specific technology failings (103), such as a lack of protectability, excessive technology development required, or misalignment between technology features and customer needs, and market failings (217), which included the lack of evidence of demand, limited market size, and no channel to market. Lack of relevant entrepreneurial experience (37) and unrealistic financial projection (79) were also reasons for rapid rejection.

Of the 166 remaining opportunities, 65 were rejected due to concerns regarding the venture (a combination of technology and market factors). Two (2) additional opportunities were rejected because none of the BAs could see how he/she would add value to the venture. The last 99 opportunities are those where the BAs became more interested and can be used to test our hypotheses, because the entrepreneur's behavior mattered. They resulted in either an investment offer (32) or a rejection (67).[13] For those rejected, we were able to code the rejections as *primarily* due to concerns raised about the performance risk due to the entrepreneur's ability to manage the venture (45) or the relationship risk due to entrepreneur's likelihood of managing the investment in the long-term interest of the BA (22). Data on these 99 investment interactions are extracted using our behavioral-coding

[12] While an investor might exit an interaction early for many reasons, our coding reflects the rejection reason of the most interested investor who stayed in the interaction the longest and was therefore last to exit.

[13] Of the 32 entrepreneurs who received an investment offer, only 26 were accepted on the show. Entrepreneurs typically rejected an offer because of disagreements about valuation or the BA's proposed control of the venture.

schema, in line with Bakeman and Gottman's (1997) suggestions when implementing an observational interaction method. Examples of the data coding sheets used are included in Appendix C, although details of the entrepreneur have been whited out to preserve confidentiality.

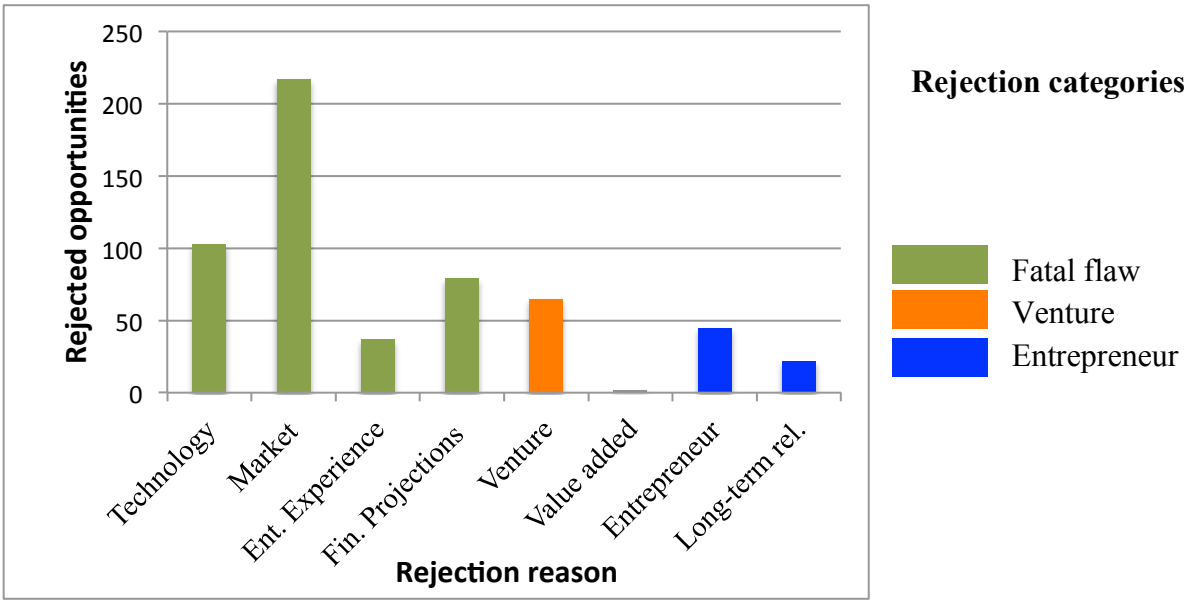


Figure 3-1 Opportunity frequency per rejection

This method allows us to use trained observers to code real-life interactions for information exchanges and behavioral cues, while the interaction is happening. It overcomes data collection limitations of previous research, where investors themselves might not understand how their assessment of certain behaviors influence their decision outcome (Zacharakis & Meyer, 1998), or where data is gathered from the investor's hazy recollections at the end of the decision-making process (Petty & Gruber, 2011). Rather than limiting the dataset to successful outcomes (which introduce selection bias), the use of these interactions enables us to develop insights on interactions that are normally protracted and take place in a confidential environment. Our ability to access the original line-tapes (with only a fraction in the public domain) of the interactions enables us to capture the behaviors

and decision process of entrepreneurs and BAs at a similar stage in the venture creation process within a consistent context, and view the recorded interactions repeatedly to explore and reevaluate different behavioral aspects in more detail.

The two observers possess a great deal of experience in helping early-stage entrepreneurs. They reviewed the entire non-edited line-tapes of the 99 interactions and coded each without prior knowledge of the outcome (offer/no offer). They use our behavioral-coding schema that subdivides capabilities, experiences and traits into a total of 11 dimensions, as shown in Table 3.2. The decision to subdivide was based on Bakeman and Gottman's (1997) recommendation to develop a schema at a level of analysis that is slightly more molecular than the proposed hypothesis and where the dimensions can be aggregated. For each interaction, the corresponding lead entrepreneur was assigned a code (on a 1–5 Likert scale) for every dimension of his/her capabilities and experiences based on the inventory of behaviors that manifested the entrepreneur's underlying facets provided in Table 3.2.[14] An entrepreneur's competence, for instance, was coded based on displays of technical expertise, management ability and social skills. To code for the five (dimensions of) traits, we developed simplified coding guides that focused on the more proximate facets of each dimension identified in our theory development. For instance, extraversion was coded based on behaviors that demonstrated enthusiasm and passion. If a dimension was not demonstrated during the interaction, then that dimension was considered irrelevant to the investment decision (because the opportunity was rejected before the dimension could be assessed or the BAs did not identify that dimension to be relevant).[15]

[14] In several cases, entrepreneurial teams presented. If there was not an obvious leader/founder, then the assessment was based on the team's behaviors during the interaction.

[15] Our observers were knowledgeable about the interaction, assessing the performance risk, and observing the investors' reactions to a specific entrepreneurial behavior.

3.6 Results

3.6.1 Validity checks

For construct validity, we performed a principal component analysis for the dimensions associated with each entrepreneurial characteristic type - capabilities (C), experiences (E) and traits (T) - as shown in Table 3.4. We used the calculated values as weights for the dimensions within a type to obtain that type's aggregate rating. Table 3.4 also offers the correlations between all dimensions and types, where we would like each dimension to be highly correlated with its type (gray cells), which is the case for all except relevant knowledge (ED2). We also would like none of a type's dimension to be significantly correlated to the aggregate ratings of the other two types. Out of the 22 relevant correlations bolded in Table 3.4, six are significant but again only ED2 is a real concern because its correlation with its type's aggregate rating E (at 0.041) is below its correlation with the aggregate rating for capabilities C (at 0.269). We also carried out a rotated varimax principal component analysis for all 11 dimensions, which showed alignment between the five (dimensions of) traits, but some linkages between the dimensions for experiences and capabilities. This construct validity concern will be revisited in the conclusion.

We address coding validity by calculating the inter-rater reliability between our trained observers for each of the 11 dimensions of the three characteristic types and for all the dimensions combined (Landis & Koch, 1977). Inter-rater reliability (Cohen's kappa) for the aggregate ratings of behaviors that manifest the various dimensions of capabilities, experiences and traits are 0.84, 0.89 and 0.79, respectively, while the overall reliability is 0.83. These are sufficiently large to feel confident about the reliability of our coding schema and the appropriateness of our observational technique. We also observed few extreme differences in the coding between the two observers, with the maximum difference being 1

on any given dimension. Furthermore, repeated access to the line-tapes, which provided a complete record of the entire interaction between the entrepreneur and BAs, gave us the opportunity to develop and improve the behavioral-coding schema over time and to subsequently investigate additional displays of behaviors that were not foreseen at the start of the research. While this research method may raise a number of internal and external validity concerns that we discuss in Appendix A, the show provides us the opportunity to undertake an elaborate "field experiment," where a variety of behaviors by each party can be observed (Bird & Schjoedt, 2009).

3.6.2 Hypothesis testing

We test the hypotheses with logistic regression, where the investment offer is a dichotomous variable (1: offer; 0: no offer). Regression models identify the presence of a linear increasing (H1), concave increasing (H2), or inverted U-shaped (H3) relationship. Since two out of the three hypotheses propose nonlinear relationships, we initially chose to transform the aggregate rating E for experiences to its exponential form (e^{-E} for a concave increasing shape) and to square the aggregate rating T for traits (T^2 for an inverted U-shape). We find (in Table 3.4[16]) significant correlations between the aggregate rating C for capabilities and E (0.360) and, as expected, between E and e^{-E} (–0.861, which also explains the significant correlation between C and e^{-E} at –0.372) and between T and T^2 (0.992). Given these high correlations, we create separate models to test each hypothesis and alternate, in addition to two versions of a model that combines all ratings.[17]

[16] Unlike previous models we do not include the odds/ratio, because rather than looking at frequencies, ratings are observer's relative assessments on a Likert scale. It is difficult to visualize what an increase in that subjective value would look like.

[17] We also centered (i.e., subtract the mean from) T & T^2 (Cohen et al, 2003), which reduced the correlation between them from 0.992 to -0.743, although this did not affect χ^2 nor model accuracy.

Types/Dimensions	PCA	Mean	S.D.	All Opportunities (99) C	E	e^{-E}	T	T^2	CD1	CD2	CD3	ED1	ED2	ED3	TD1	TD2	TD3	TD4	TD5
C Capabilities		3.48	0.66	1															
E Experiences		3.56	0.53	0.360**	1														
e^{-E} Experiences (Exp.)		0.28	0.02	-0.372**	-0.861**	1													
T Traits		3.44	0.47	0.079	-0.087	0.100	1												
T^2 Traits (squared)		11.83	2.59	0.081	-0.084	0.097	0.992**	1											
CD1 Competence	0.435	3.26	0.79	0.690**	**-0.006**	-0.083	**0.091**	0.094	1										
CD2 Critical thinking facility	0.517	3.57	0.84	0.838**	**0.434****	-0.438**	**0.083**	0.081	0.386**	1									
CD3 New resource skills	0.410	3.59	0.79	0.651**	**0.327****	-0.256*	**-0.008**	-0.004	0.153	0.350**	1								
ED1 Prior activities	0.654	3.44	0.66	**0.347****	0.719**	-0.602**	**-0.127**	-0.119	-0.010	0.291**	0.490**	1							
ED2 Relevant knowledge	0.035	3.46	0.68	**0.269****	0.041	-0.455**	**-0.003**	-0.011	0.340**	0.229*	0.007	-0.023	1						
ED3 Education	0.660	3.70	0.76	**0.199***	0.798**	-0.682**	**-0.013**	-0.016	-0.016	0.355**	0.040	0.156	0.031	1					
TD1 Emotional stability	0.388	3.38	0.80	**0.012**	**-0.115**	0.126	0.705**	0.704**	0.020	-0.003	0.012	-0.148	0.015	-0.092	1				
TD2 Extraversion	0.452	3.57	0.73	**0.036**	**-0.029**	0.050	0.788**	0.786**	0.071	0.046	-0.046	-0.049	-0.020	0.002	0.449**	1			
TD3 Openness to experience	0.271	3.39	0.76	**0.018**	**-0.029**	0.016	0.473**	0.461**	0.081	0.036	-0.090	-0.074	0.041	0.021	0.075	0.221	1		
TD4 Agreeableness	0.211	3.32	0.66	**0.244***	**0.120**	-0.066	0.343**	0.330**	0.126	0.255*	0.136	0.114	0.018	0.070	-0.010	0.241*	0.184	1	
TD5 Conscientious-ness	0.304	3.41	0.80	**0.029**	**-0.078**	0.108	0.556**	0.553**	0.020	0.024	0.019	-0.145	-0.046	0.017	0.256*	0.206*	0.133	0.026	1

** significant at 0.01 and * significant at 0.05

Table 3-4 Principal component weights, (PCW), descriptive statistics and correlations

When assessing the significance of logistic regression models, we rely more on χ^2 "goodness of fit" and model accuracy than the R^2 used widely in regression analysis, more importantly, the BIC (Bayesian Information Criterion) provides a better statistical tool when comparing model accuracy between models because it also considers the impact of the number of different criteria considered (Menard, 2002; Schwartz, 1978). In addition, significant values of χ^2 can be used to determine the overall accuracy of the model, while the contribution of each variable can be measured by its magnitude, sign and significance. We use each of these three measures of model accuracy when looking for support for our hypotheses or comparing models.

We follow the lead of Cohen et al. (2003) and first create a regression model for each hypothesis to test for the presence of the simplest relationship, which is the linear model. We call these Model 1a (capabilities), Model 2a (experiences) and Model 3a (traits). Finding high levels of χ^2 significance in Model 1a alone is sufficient to test H1. To test H2, we look for significant χ^2 in Model 2a and use BIC to compare this with Model 2b, which is created to only include e^{-E} (to show a concave increasing relationship when the regression coefficient is negative and significant). To test H3, Model 3b is created to include both T and T^2, where a significant χ^2 and a significant positive regression coefficient for T as well as a significant negative coefficient for T^2 supports the presence of an inverted U-shaped relationship. Table 3.5 shows Model 1a through Model 3b that examine the relationship between each inventory of behaviors as manifestations of the entrepreneur's capabilities, experiences or traits. In addition, we include the combination of all characteristic types in Model 4a (including experiences) and Model 4b (replacing experiences with its negative exponential), and the likelihood of receiving an investment offer, along with four measures of overall model accuracy in each case.

Variable	Model 1a	Model 2a	Model 2b	Model 3a	Model 3b	Model 4a	Model 4b
Constant	-7.902***	-4.001**	-.155	-0.142	-42.418	-54.169*	-53.316*
Capabilities (C)	1.467***					1.614***	1.525***
Experiences (E)		0.670*				0.048	
Traits (T)				-0.107	16.643*	18.383*	18.341*
$e^{-\text{Experiences}}$ (e^{-E})			-61.412*				-20.236
Traits^2 (T^2)					-1.626*	-1.817*	-1.809*
R^2 (Cox & Snell)	0.168	0.041	0.045	0.001	0.151	0.306	0.309
Model accuracy	64.6%	70.7%	67.7%	67.7%	64.6%	70.7%	69.7%
BIC†	108.40	122.42	121.99	126.45	112.38	96.41	95.95
χ^2	18.202***	4.175**	4.604**	0.146	16.217***	36.184***	36.649***

*** significant at 0.01, ** significant at 0.05, * significant at 0.1

† The Bayesian information (or Schwartz) criterion (BIC) is -2×log-likelihood + k×log(n), (where k is the number of estimated parameters and n is the sample size.

Table 3-5 Regression models: investment decision

Model 1a is significant (χ^2 = 18.202, p-value < 0.001), with a significant positive regression coefficient (p-value < 0.001) and a model accuracy of 64.6%.[18] H1 is thus supported and a positive linear relationship exists between the inventory of behaviors as manifestations of the entrepreneur's capabilities (competence, critical thinking facility and new resource skills) and the likelihood of receiving an offer. Model 2a is also significant (χ^2 = 4.175, p-value < 0.05), with a significant positive regression coefficient (p-value = 0.053) and a model accuracy of 70.7%. This suggests a positive linear relationship between the inventory of behaviors as manifestations of the entrepreneur's experiences and the likelihood of receiving an offer. Model 2b, which instead uses the exponential of the negative aggregate rating for experiences to model diminishing returns, is also significant with χ^2 improving to 4.604 (p-value < 0.05), but model accuracy reducing to 67.7% when compared with Model 2a and a regression coefficient that is equally significant. When comparing these two models, we note that Model 2a has a BIC equal to 122.42 while Model 2b has a BIC equal to 121.99,

[18] In logistic regression, model accuracy is a more reliable indicator than the R^2 used in linear regression. In addition, higher χ^2 values show greater support for rejecting the null hypothesis (Menard, 2002).

showing both models have equal "goodness of fit". We therefore find support for H2 that suggests increasing manifestations of behaviors that demonstrate experiences increase the likelihood of receiving an investment offer, but find no evidence that the hypothesized diminishing returns are no more significant than a simple linear relationship. In addition, as BIC for either Model is lower than for Model 1a, we suggest that capabilities are a more significant predictor of the investment offer than experiences.

As anticipated, Model 3a suggests an insignificant (linear) positive relationship (χ^2 = 0.146, p-value = 0.702) between the inventory of behaviors that manifest the entrepreneur's traits and the likelihood of receiving an offer. Model 3b, which combines T with T^2 to model the inverted U-shaped relationship, has a χ^2 = 16.217 and p-value < 0.01). The inverted U shape relationship is supported because both regression coefficients are significant (P<0.1) and of the appropriate sign for the hypothesized relationship. This shows that H3 is supported such that manifestation of behaviors that infer lacks or excesses in the entrepreneur's inventory of traits (emotional stability, extraversion, openness to experience, agreeableness, and conscientiousness) reduce the likelihood of receiving an investment offer.

Overall, the best regressions exhibit reasonable levels of model accuracy (64.6% to 70.7%) with significant goodness of fit. Figures 3.2 (a)-(c) offer graphical representations of the fit between the observed relationships and those prescribed by the regressions.[19] We note that, while we find support for all three hypotheses (although a linear relationship is equally accurate for H2), we also eliminated the possibility that a more complex regression model, using higher orders of power transformations of the independent variables, may exhibit stronger significance. In each case, we calculated the difference in χ^2 and observed that more

[19] In logistic regression, linear probability models are exponential–i.e., S-shaped–with: $P(\text{Offer}) = \frac{e^{\beta_0 + \beta_1 Characteristic}}{1 + e^{\beta_0 + \beta_1 Characteristic}}$.

complex (higher order) models did not produce greater accuracy; for space consideration we omitted these calculations.

We also created two combined models, Model 4a and 4b and regressed simultaneously the aggregate ratings for the characteristic types and their transformations (in the case of Model 4a - C, E, T, e^{-E} and T^2, while for Model 4b - C, T, e^{-E} and T^2) on the likelihood of receiving an offer. Model 4a and Model 4b in Table 3.5 each show a better (χ^2 = 36.184, p-value < 0.001, BIC = 96.41, χ^2 = 36.649, p-value < 0.001, BIC = 95.95, respectively) goodness of fit than the separate models. In each case all the coefficients excluding experiences are significant, however given correlations between the capabilities and experiences that may cause colinearity issues, this does not mean that experiences have no impact on goodness of fit. Insights from the combined model reaffirm our initial decision to model each of the characteristic types separately.

3.6.3 Improving explanatory power

The limited explanatory power on the investment decision of each aggregate rating encouraged us to revisit the dependent variable. We instead broke down the 99 opportunities into two groups: 45 that were rejected due manifestations of specific behaviors by the entrepreneur that affect the performance risk (shown in Figure 3.1); and 54 opportunities where 22 were rejected because of concerns about the future investor-entrepreneur relationship, and 32 that were not rejected. This division was inspired by the suggestion of Maxwell and Lévesque (2011) who suggest that different criteria are considered at each stage of the process, and that subsequent to the assessment of managerial risk during this stage of the interaction, relationship risk is considered.

Based on this understanding, we repeated the logistic regressions with a new

dichotomous dependent variable: continue to the next stage of the interaction, or not, rather than coding for the investment decision. This dependent variable was coded 0 for the 45 opportunities that were rejected based on concerns associated with the entrepreneur's behaviors, and 1 for the remaining 54 that move to the next stage of the interaction, where the investor explores a longer-term relationship. This coding was undertaken as part of the original coding process, and is also included on the coding sheets in Appendix C. Table 3.6 shows the corresponding models: Models 5a, 6a, 6b, 7a, 7b, 8a and 8b.

Variable	Model 5a	Model 6a	Model 6b	Model 7a	Model 7b	Model 8a	Model 8b
Constant	-13.363***	-6.657**	1.500***	-0.189	-46.147*	-131.320**	-120.059**
Capabilities (C)	2.851***					4.920***	4.662***
Experiences (E)		1.422**				1.989**	
Traits (T)				0.066	18.254*	39.991**	40.174**
$e^{-\text{Experiences}}$ **(e^{-E})**			-138.281***				-176.010**
Traits^2 (T^2)					-1.759*	-3.929**	-3.927**
R^2 (Cox & Snell)	0.376	0.165	0.165	0.001	0.224	0.627	0.624
Model accuracy	80.8%	67.7%	67.7%	54.5%	70.7%	91.9%	91.9%
BIC	91.66	120.54	120.59	138.36	115.31	46.87	47.47
χ^2	46.766***	17.855**	17.838***	0.062	25.116**	97.551***	96.949***

*** significant at 0.01, ** significant at 0.05, * significant at 0.1

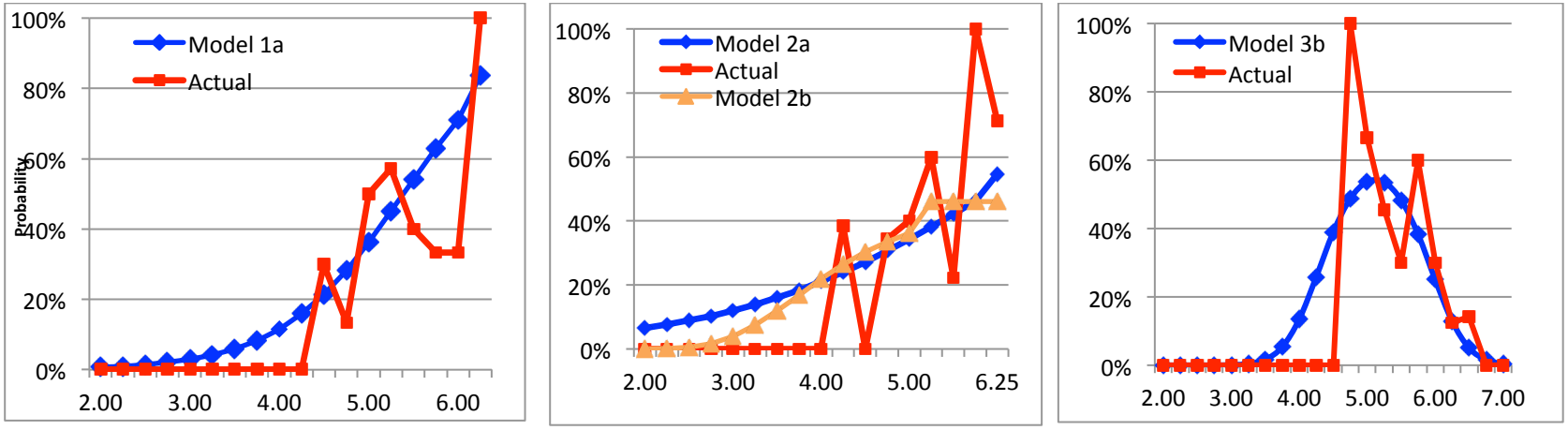
Table 3-6 Regression models: continuing to next stage of interaction

The explanatory power of the regressions considerably improved in most cases and the hypothesized regression coefficients now all become significant. To compare with figure 3.2, figures 3.3 (a)-(c) provides graphical representations comparing actual results to hypothesized model, where the dependent variable is now proceeding to next stage of interaction. Model 5a focuses on capabilities, and when compared to Model 1a, BIC improves from 108.40 to 91.66 (lower is better), and χ^2 improves from 18.202 to 46.766. This finds stronger support for a hypothesis where the dependent variable is proceeding to the next interaction stage. We therefore restate H1 such that a positive linear relationship exists between the inventory of behaviors as manifestations of the entrepreneur's capabilities

(competence, critical thinking facility and new resource skills) and the likelihood of continuing to the next stage of the interaction.

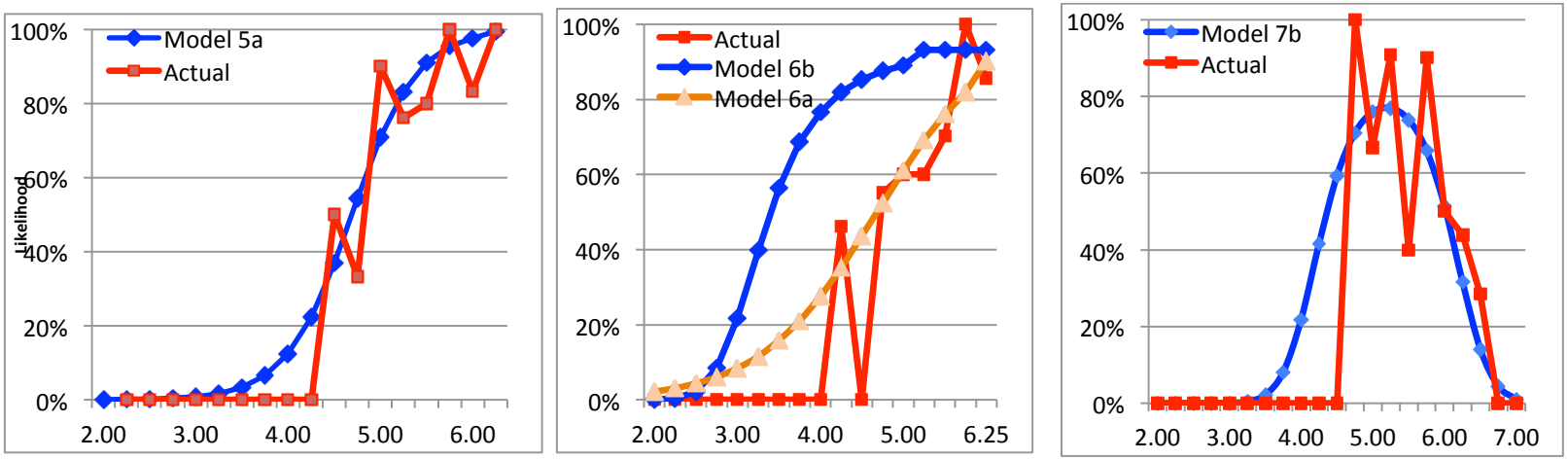
Model 6a's goodness of fit (χ^2 = 17.855, p-value < 0.05) is higher than Model 2a, χ^2 = 4.175, p-value < 0.05) with a similar BIC (120.54 compared to 122.42), however now the regression co-efficient (p < 0.05 rather than p< 0.1). Model 6b, which includes the negative exponential of experiences has a similar χ^2 and BIC to Model 6a (17.838 and 120.59), although the goodness of fit and the regression co-efficient are both more significant (p < 0.001). However, on balance, differences in accuracy between Models 6a and 6b are not significant, supporting either a linear or increasing concave relationship between the entrepreneur's experience inventory and the likelihood of continuing to the next stage of the interaction. We therefore restate H2 such that an increasing linear relationship exists between the inventory of behaviors as manifestations of the entrepreneur's experiences and the likelihood of continuing to the next stage of the interaction with limited evidence of diminishing returns.

As expected, Model 7a (linear), which focuses on traits, is has a low goodness of fit (χ^2 = 0.062, p-value = 0.803) and an insignificant regression coefficient, however model 7b, which includes coefficients for both T and T^2 has significant goodness of fit (χ^2 = 25.116, p-value < 0.05), with significant regression coefficients for each term (p<0.1). While model accuracy improves from 64.6% (in Model 3b) to 70.7%, and BIC deteriorates from 112.38 to 115.31, the goodness of fit, χ^2, improves from 16.2 to 25.1, providing stronger support for the hypothesized inverted U-shaped relationship between the entrepreneur's trait inventory and the likelihood of continuing to the next stage of the interaction. This supports a restatement of H3, such that manifestations of behaviors that infer a lack or excess In the



(a) Capabilities (C) (b) Experiences (E) (c) Traits (T)

Figure 3-2 Observed vs. prescribed relationships between likelihood of receiving an offer and aggregate ratio



(a) Capabilities (C) (b) Experiences (E) (c) Traits (T)

Figure 3-3 Observed vs. prescribed relationships between likelihood of continuing to next interaction stage and aggregate ratio

entrepreneur's inventory of traits (emotional stability, extraversion, openness to experience, agreeableness, and conscientiousness) reduce the likelihood of continuing to the next stage of the interaction.

When regressing simultaneously the aggregate ratings and their transformations on the likelihood of continuing to the next stage of the interaction, Model 8a (which includes experiences) has a more significant goodness of fit (χ^2 = 97.551, p-value < 0.001, compared to Model 4a χ^2 = 36.184) and model accuracy jumps from 70.7% to 91.9%, while BIC improves from 96.41 to 46.87. In the case of Model 8a, all the coefficients are significant. Model 8b (which includes the exponential of experiences) has a more significant goodness of fit (χ^2 = 96.949, p-value < 0.001, compared to Model 4b χ^2 = 36.649) and model accuracy jumps from 69.7% to 91.9%, while BIC improves from 95.95 to 47.47. More importantly, in the case of both Model 8a and 8b, all the coefficients are more significant than in Models 4a and 4b. However given the high correlation between the aggregate ratings for capabilities and experiences, one must be somewhat cautious with Model 8 to predict the relative impact of specific behaviors on the likelihood of progressing in the interaction.

3.7 Concluding remarks

What aspects of the entrepreneur contribute the most to future venture performance (including funding) has been unclear. In this article, we addressed this issue by examining behaviors. We consider a series of investment interactions as a "field experiment" to provide a consistent context, where the behaviors of entrepreneurs, who are at similar stages in the venture creation process, could be observed and appropriately coded. Our ability to not only observe entrepreneurs' behaviors in actual interactions, but also to see the reactions of expert investors, enabled us to draw conclusions about the importance of the "jockey"

(entrepreneur) rather than the "horse" (venture): only when the characteristics and winning potential of the horse is known do the behaviors of the jockey matter. Existing works on entrepreneurial behaviors enabled us to put forward a theoretical framework to explain how the manifestations of specific behaviors, viewed through the lens of the entrepreneur's capabilities, experiences and traits, might affect an investor's assessment of the venture's performance risk, and hence willingness to invest. In addition, our finding that the hypothesized relationships better predict continuing to the next stage of the interaction than of receiving an investment offer, provide support for the concept of of a multistage interaction, with factors other than performance risk considered at a subsequent stage in the process.

We showed that higher inventories of behaviors as manifestations of the entrepreneur's capabilities and experiences yield higher likelihoods of receiving a BA investment offer and an even higher likelihood of proceeding to the next stage of the interaction. In the composition of these inventories (as per Table 3.4), the entrepreneur's demonstration of capabilities was an approximately equal combination of behaviors that showed competence, critical thinking ability and new resource skills and there seemed to be a level of correlation between the capability dimensions that justified us aggregating them into a single variable in our model.

In a similar way, demonstrations of each of the five trait dimensions - emotional stability, extraversion, openness to experience, agreeableness, and conscientiousness, contributed to the rejection decision, however the very low correlation between these traits means that our aggregation of them into a single variable is an oversimplification of personality traits. The lack of a direct relationship between these traits reinforces their value

in assessing different dimensions of personality, but suggests that that more attention be paid to individual traits than their aggregate value. To investigate this, we repeated the regression for each trait separately, and found that emotional stability, openness to experience and conscientiousness all displayed significant inverted U-shaped relationships, however the low sample size caused concerns about model accuracy, and suggests an opportunity for further research with a large number of opportunities and entrepreneurs.

In looking at the entrepreneur's demonstration of experiences we noted that this was primarily inferred by behaviors that showed prior experience and education, with knowledge playing only a limited role. However we must be cautious when inferring about the role of knowledge, partly because of the selection bias in our dataset: the entrepreneurs were generally less sophisticated and experienced than those who might "pitch" to a BA group. This relative inexperience likely eliminated the possibility of excessive manifestations of experiences during the interaction. This might explain why support for our hypothesis associated with experiences (H2), where diminishing returns should have "kicked-in" above a certain inventory threshold, was weak (since we had an alternative linear relationship equally supported).

The exploratory nature of this research led us to identify three types of characteristics that we broke down into dimensions for coding purposes. It is clear that additional dimensions may be added that might increase model accuracy. In addition, regressing at the dimension rather than the characteristic type level may provide additional insights into how specific behaviors influence the BA's assessment of performance risk. Finally, it was difficult in a relatively short interaction to differentiate between manifestations of knowledge (a dimension of experiences) and competence (a dimension of capabilities). This reinforces

the observations of Unger et al. (2011) who explain the linkages between capabilities and experiences as capabilities can be viewed as an outcome from the effort made to acquire experiences. The richness of the experiences and the internalization of acquired knowledge can also be influenced by individual traits.

Nevertheless, some theoretical implications have emerged from this work. The involvement of experts has helped us reconcile the apparent inconsistency between those studying the relationship between entrepreneurial characteristics and venture performance and those investigating the relationship between such characteristics and the investment decision. This reconciliation comes from focusing on entrepreneurs' *behaviors*, specifically 11 dimensions of behaviors in a context-specific interaction, proposing that expert investors view the manifestations of specific behaviors as a moderator for the performance risk in the investment opportunity. We inform current research by proposing that an entrepreneur's capability inventory (as behavioral manifestations) or experience inventory can increase the likelihood of receiving an offer, because it reduces the BA's perception of the performance risk. An entrepreneur's trait inventory can also increase that likelihood, but only up to a certain point. After that point, the likelihood starts decreasing, because the entrepreneur's decision-making can become compromised by excessive behavioral manifestations of these traits.

On the methodological side, we applied an observational research method from psychology to gather data on what the entrepreneur does during the investor-entrepreneur investment interaction. Our direct involvement in this "field experiment" enabled us to develop a multi-criteria behavioral-coding schema and observe entrepreneurs' behaviors to find support for our proposed decision mechanisms, all at a fraction of the cost we would

have incurred if we had designed our own experiment. In addition, our ability to reexamine the unedited line-tapes increases their utility in that more data can be generated by altering the focus of what one chooses to study and thus code. Conscious of the fact that entrepreneurial success is a complex phenomenon, focusing on behavioral manifestations and the reactions of experts in a specific context can be fruitful in a variety of entrepreneurial phenomena.

On the practical side, acknowledging the importance of various behavioral manifestations of entrepreneurial characteristics, as listed in Table 3.2, might help entrepreneurs understand how the perception of their behaviors by investors affects these investors' assessment of the performance risk in the investment opportunity. Entrepreneurs can thus adjust their behavior by, for instance, more thoroughly demonstrating their capabilities or experiences. When the entrepreneur's behaviors create concerns about the performance risk, either party can engage other team members who can complement or supplement the entrepreneur's shortcomings. Furthermore, a less experienced investor's awareness of the behavioral manifestations we code can increase the quality of decision making and provide guidance as to when performance risk might be too high to justify an investment. Moreover, a focus on the four categories of performance risk exemplified in Table 3.3 can help entrepreneurs and investors identify alternate tactics to moderate undesirable behaviors.

This research is of course not without limitations. We found the identification of behaviors that indicated excess levels of certain traits somewhat subjective, as was the coding for experiences (e.g., starting three ventures that each failed after one year is greater or lesser experience than starting one successful venture). We must also acknowledge the context

limitations, in that decisions were made under severe time constraints and the population of entrepreneurs was not representative of the population of all fund-seeking entrepreneurs. These issues call for further research, by observing more investor-entrepreneur interactions and developing a more elaborate behavioral-coding schema that can enable more accurate inventory assessment. Furthermore, while we assert that entrepreneurs' behaviors are important during the investment decision due to their impact on performance risk, extrapolating these results to their impact on long-term venture performance from brief interactions early in the venture creation process may be premature. However, given the importance of third-party financing early in the venture creation process, understanding the factors that can influence success rates at this early stage is crucial. This might be complemented by a more detailed investigation of how behaviors might change over a longer timeframe or later in that process.

Inventories of behaviors as manifestations of an entrepreneur's capabilities, experiences and traits do matter for the making and receiving of an investment offer. Such behaviors are also crucial when negotiating and developing relationships essential to business success. There is still much to be learned about how the behaviors of entrepreneurs can act as a critical ingredient in the investment decision process and we hope others will join us in this task.

4 Aspiration levels and tradeoffs in business angel investment decisions

4.1 Introduction

Business angels (BAs) are recognized as an important source of finance for high potential ventures (Kelly, 2007), yet more than 95% of the interactions between fund-seeking entrepreneurs and BAs end in failure (Haines, Madill & Riding, 2003; Riding, Duxbury & Haines, 1997). Mason and Harrison (2003) suggest that this high failure rate is due to a combination of a lack of 'investment ready' ventures, a paucity of available BA investment funds, and a lack of understanding of the investment decision process. Riding, Madill and Haines (2007) highlight the need to address this lack of understanding, suggesting the use of tools from social sciences to scrutinize how BAs make investment decisions and "the kinds of information that business angels seek" in order "to present the relevant information and to negotiate from a better informed perspective" (p332).

In part, this lack of understanding stems from the assumption that experienced BAs invest in a similar manner to portfolio investors, who are thought to make tradeoffs between investment return and investment risk when deciding in which opportunities to invest (Markowitz, 1959). However, such a normative approach assumes that investors have unlimited time to make their decisions and can fully evaluate all available information before making a decision. Simon (1955) suggests instead that, depending on the context, individuals make boundedly rational decisions that consider only a limited number of criteria. Gigerenzer (1997) identifies that time constrained decision-makers can deploy fast and frugal decision shortcuts or *heuristics* to reduce the effort required by reviewing a limited number of criteria and limiting the analysis of tradeoffs among them. However, the resulting decision

outcomes can deviate from previous normative assumptions (Gigerenzer, 2008). We therefore ask: *Rather than using normative decision-making techniques that consider all relevant information, do BAs use heuristics that trade off decision accuracy for decision efficiency*?

We address this research question by developing three hypotheses that describe how BAs assess opportunities and use heuristics to reject them at one stage of the multistage investment decision process – the post-selection stage. Specifically, we hypothesize that BAs make tradeoffs between four critical sub-criteria to assess the investment return and between four additional sub-criteria to assess the investment risk. However, we posit that BAs do *not* trade off between these two investment-decision criteria (i.e., investment return and investment risk) when rejecting an investment opportunity. In fact, we hypothesize that rather than assessing the absolute value of each criterion, BAs look for the investment opportunity to fall short of an aspiration level for investment return, or exceed an aspiration level for investment risk, to reject it.

We test these three hypotheses with coded data originating from videotapes of the complete interactions (including what did not air) between fund-seeking entrepreneurs and five BAs recorded for the reality-TV show CBC Dragons' Den. Our analysis of such interactions enables us to overcome some of the methodological constraints identified in prior research, including the private nature of the interaction (Harrison, Mason & Robson, 2003) and reliance on investors' recollections (Wiltbank, Read, Drew & Sarasvathy, 2009), which would make it challenging to "identify whether there are non-compensatory or essential criteria" (Mason & Harrison, 1996a, p37). During the show recording, entrepreneurs pitch their opportunities to BAs they have not met previously, while the BAs

are required to provide a specific reason for the rejection of an opportunity, or make an investment offer. The context of the show makes available a unique dataset and our ability to use trained observers to code the entire investment process, and identify the reasons for rejection, enables us to gather data at specific stages of this multistage process. Observing real investment interactions provides a "fertile untapped resource(s) for future entrepreneurship research" (Sarasvathy & Venkataraman, 2011, p127).

Our research findings enable us to make two key contributions to the field of entrepreneurship. First, by paying attention to critical sub-criteria associated with the venture that inform a BA's assessment of the two investment-decision criteria, we unearth a compensatory relationship between the four sub-criteria that inform investment return and those that inform investment risk. This finding can in turn be used to explain how shortcomings in a sub-criterion can be addressed. Second, we challenge the normative assumptions of how BAs assess and trade off between these criteria by proposing instead that BAs use heuristics that limit their cognitive effort to reject opportunities that fail to meet an aspiration level for investment return or exceed an aspiration level for investment risk.

4.2 Investment-decision (sub-) criteria

BAs assess a large number of criteria (e.g., those associated with the venture, the entrepreneur, the investment fit) to inform their investment decision (van Osnabrugge, 2000). Some are personal to the BA and based on his/her own involvement, such as interest, ability to contribute and chemistry (Mason & Stark, 2004). Others are linked to the more traditional portfolio measures, investment return and investment risk (Feeney, Haines & Riding, 1999), or what we call here the investment-decision criteria. McMullen and Shepherd (2006) suggest that investors investigate these criteria in stages, assessing those seen as more

objective, such as those associated with the venture offering, before deciding whether to investigate those seen as more subjective, such as those associated with the entrepreneur. Sudek, Mitteness and Baucus (2008) explain this multistage sequence by pointing out that the assessment of how entrepreneurial factors influence the investment decision can only be undertaken once the venture offering is understood.

Maxwell, Jeffrey and Lévesque (2011) investigate the initial selection stage of the multistage investment-decision process, and observe how the presence of a fatal flaw in any one of eight venture sub-criteria (i.e., those directly associated with the venture) cause a business opportunity to be rejected. In this paper, we focus on the subsequent stage in the process, the *post-selection stage*, when opportunities that have made it through the initial selection stage are further considered. We propose that during the post-selection stage, investors reassess the same sub-criteria as at the selection stage, but rather than looking for a fatal flaw on any one of them, they assess the impact of each sub-criterion on the investment return or the investment risk. The BA's assessment of these sub-criteria influences the decision to reject an opportunity at the post-selection stage, or to allow it to proceed with the process where the entrepreneurs' characteristics are then considered (Lévesque & Maxwell, 2011). We next explain the relationship between the eight critical venture sub-criteria and the BA's assessment of investment return and investment risk. Table 4.1 summarizes these sub-criteria.

4.2.1 Investment return

Investment return is based on the assessment of the financial return that the BA anticipates receiving at the time of exit. It is calculated by the BA in the form of a percentage, dividing the amount he/she expects to receive (at the time of exiting the

Sub-criteria	Key question	Rating and Explanation	
V_1 – Market potential (market size)	Is there a large market for this product?	A	Large market potential (i.e. over $20 million)
		B	Medium market potential (i.e. over $5 million)
		C	Unable to predict — likely less than $5 million.
V_2 – Product adoption (market share)	Will customers in target market easily adopt this product?	A	Customers will easily adopt product or service
		B	Benefits harder to identify, some adoption issues
		C	No clear benefits, or major adoption issues
V_3 – Protectability (profitability)	How easy will it be for other people to copy the product or service?	A	Product patented or significant other barrier
		B	It will not be easy to replicate.
		C	Anyone could copy it easily.
V_4 – Entrepreneur experience (reputation)	Does management have direct and relevant experience?	A	Significant relevant experience
		B	Limited experience, but appropriate knowledge
		C	No evidence of required experience
V_5 – Product status (for technology risk)	Product ready for market, or major work required before it ships?	A	Finished product
		B	Design complete all technical issues addressed
		C	Needs more research and development
V_6 – Route to market (for operational risk)	Is there a realistic marketing plan and route to market?	A	Realistic marketing plan / distribution partner
		B	Options identified — no agreements in place
		C	Limited thought given to distribution issues
V_7 – Customer engagement (for market risk)	Is a first customer identified? Does product meet need?	A	Customers in place, or committed to purchasing
		B	Customers engaged in development project
		C	No first customers identified.
V_8 – Financial projections (for financial risk)	Profitable and sustainable cash flow?	A	Sound business model and cash management
		B	Unclear profitability, limited cash management
		C	No evidence of profit or cash management

Table 4-1 Venture sub-criteria in the investment decision

investment) by the initial investment amount. The amount invested in return for a specific level of equity in the venture is negotiated by the BA and fund-seeking entrepreneur, and included as part of the initial investment contract. The financial return is a function of the BA's percentage of venture ownership at the time of exit, and the venture's value at this time. The venture value at the time of exit is more difficult to forecast, but Ge, Mahoney and Mahoney (2005) suggest that it is influenced by the size and growth rate of the market, the potential for creating product differentiation, the barriers to entry for competitors, and the quality of the management team. Of the eight venture sub-criteria itemized in Table 4.1 (and

also used in Maxwell, Jeffrey & Lévesque, 2011), four can be linked to the forecasted venture value and hence investment return.

The forecasted venture value increases with higher forecasted revenues, which result from a higher assessment of V_1 – *market potential* (Mason & Rogers, 1997) and V_2 – customer ease of *product adoption* (Bachher & Guild, 1996). The forecasted venture value also increases with greater gross margins, which are due to V_3 – a level of *protectability* that creates an entry barrier for potential competitors (Mason & Harrison, 1996a). In addition, V_4 – evidence of the *entrepreneur experience* enhances venture credibility and increases the venture's ability to attract resources and build strategic relationships (Burton, Sorensen & Beckman, 2001), in turn augmenting the forecasted venture value and hence investment return.

4.2.2 Investment risk

Regarding the investment risk, its assessment by an investor (such as a BA) depends on sub-criteria that influence his/her estimation of the likelihood of the venture failing (Libby & Fishburn, 1977; Payne, Laughunn & Crum, 1980). We first recognize that to fully assess the investment risk the BA must assess sub-criteria not only associated with the venture, but also with the entrepreneur in order to anticipate the entrepreneur's behavior for future performances (i.e., managerial risk as in Lévesque & Maxwell, 2011), as well as for future relationships (i.e., relationship risk as in Maxwell & Lévesque, in press). By focusing on the venture sub-criteria, we can inform more specifically the BA's estimation of the *resident*-risk component of the investment risk. Resident risk is inherent to the venture and without which the venture would be riskless (Yazdipour, 2010). Since they are context specific, the managerial-risk and relationship-risk components can only be assessed once the venture sub-

criteria have been assessed. For instance, managerial risk depends on how the entrepreneur's technological expertise can influence the technology risk associated with product development, but this can only be assessed once the venture offering is understood.

We thus keep the scope of this research within reasonable reach by focusing on the four venture sub-criteria that affect the resident-risk component of the investment risk. Resident risk includes technology, operational, market, and financial risks, and a greater level in any results in the BA perceiving a higher level of investment risk (Das & Teng, 2001). The BA considers the technology risk based on the assessment of manufacturing and product development (Vara, 2010) that can be reduced when V_5 – *product status* includes evidence of manufacturability or a working prototype (MacMillan, Siegel & Subba Narasimha, 1985). Operational risk is associated with establishing a viable supply chain. The identification of an established V_6 – *route to market* can either directly (Mason & Stark, 2004), or indirectly through a strategic partnership (Zsidisin & Smith, 2005), reduce this risk. Market risk is lower if there is evidence of V_7 – *customer engagement* in the design process, so that new products are more likely to achieve market success (Mason & Harrison, 1996a). Financial risk is assessed based on the venture's V_8 – *financial projections* and is lower when they indicate that the venture is unlikely to run out of cash before being able to earn money, or it can attract additional funding (Mason & Stark, 2004).

4.3 Investor heuristics

The identification of the above sub-criteria, V_1 to V_8, that influence the BA's assessment of investment return and investment risk has been a manageable task given the state of existing literature on the topic. However, the prediction of "how to tradeoff one attribute [sub-criteria] against another" (Shafir, 1993 p546) or the anticipation of how a sub-criteria might change as the investment-decision process evolves (Hogarth & Einhorn, 1992)

is a more challenging task. Normative decision-making assumes that decision-makers have unlimited time to assess and make tradeoffs between all relevant (sub-) criteria. In reality, BAs operate under time constraints and need to manage their time between investing in new opportunities, negotiating investment agreements, and managing existing portfolio firms (Shepherd, Armstrong & Lévesque, 2005). In addition, many engage in other personal or professional activities (Haines, Madill & Riding, 2003). BAs are also constrained by the amount of money they can invest based on their personal wealth and by the percentage of this wealth they are willing to invest in risky endeavors.

Consequently, BAs are expected to be boundedly rational (Simon, 1978). Payne (1976) observes that, faced with making complex decisions under time constraints, experienced decision-makers take shortcuts or use heuristics to minimize their cognitive effort. Cognitive capacity (Simon, 1978), expertise (Gigerenzer, 1997) and decision-making experience (Shanteau, 1992) are all individual factors that can influence the choice of heuristics (Simon, 1955). That choice also depends on the decision context, including the nature of the decision outcome (Tversky & Kahneman, 1981), the interaction format, frequency and timescale (Busenitz & Barney, 1997; Jurkovich, 1974; Tversky & Sattath, 1979), and whether the interaction is externally observed (Stasavage, 2006). However, the use of heuristics challenges the assumptions of normative decision-making, because decision-makers may not consider all factors that link to the outcome, and instead take decision shortcuts that cause suboptimal outcomes (Brandstätter, Gigerenzer & Hertwig, 2006). Gigerenzer (1997) highlights that while this approach likely improves decision-making expediency by reducing cognitive effort, decision accuracy can be sacrificed and outcomes that deviate from expectations encountered.

Payne, Bettman, Coupey and Johnson (1992) contend that, when faced with complex decisions, individuals break down the decision process into stages and use different heuristics at each stage. Tversky (1972) also suggests that, when individuals have to select preferred options from a large set, they might use a covert sequential elimination process. The use of heuristics is thus challenging to predict (Marewski, Schooler & Gigerenzer, 2010). Nevertheless, we overcome this challenge by drawing on Shah and Oppenheimer's (2008) heuristics framework, illustrated in Table 4.2, which helps us identify different heuristics based on qualitative differences each heuristic has on reducing either the *acquisition* or the *assessment* effort required. We illustrate these heuristics with examples observed in BA decision-making research, enabling us to develop hypotheses on how BAs' use of heuristics may influence the assessment of investment return and investment risk, specifically at the post-selection stage.

Reducing acquisition effort. Decision-makers can most effectively reduce the acquisition (cognitive) effort required by *examining fewer alternatives*. For instance, they can filter out the number of opportunities considered (Payne, Laughunn & Crum, 1980) or apply a multistage process to reject opportunities at each stage (Svenson, 1979). In the case of BA-investment decisions, Kelly and Hay (2003) observe that BAs reduce the number of opportunities they personally consider by only reviewing those that have been referred by a trusted third party, while van Osnabrugge (2000) observe that BAs use a multistage process in which opportunities are rejected for different reasons at each stage.

Decision-makers can also reduce the acquisition effort by *examining fewer cues* (or sub-criteria). For instance, they can apply a priority rule that involves the evaluation of a lesser number of sub-criteria, they can use a stopping rule to decide which sub-criteria are

critical, and they can also apply a decision rule to decide which criteria to reject (Brandstätter, Gigerenzer, & Hertwig, 2006). In the BA-investment decision context, Maxwell, Jeffrey and Lévesque (2011) observed the use of an elimination-by-aspects approach (Tversky, 1972), where many opportunities were rejected due to the presence of a fatal flaw in one of the eight critical sub-criteria (V_1 to V_8) in Table 4.1.

The choice of cues initially considered can also be based on the desire of the decision-maker to *reduce retrieval effort* by focusing on sub-criteria that are easily available or recollectable (Tversky & Kahneman, 1973). In the case of multi-criteria decisions, the use of heuristics encourages decision-makers to focus on those criteria that are the easiest to retrieve. For the investment decision, once opportunities with a fatal flaw are eliminated, criteria focusing on the venture are easier to retrieve than those focusing on how the entrepreneur's characteristics influence the investment risk. This is partly because auditing the entrepreneur's behaviors to predict future behaviors takes longer than the assessment of the more objective venture criteria, and partly because the moderating impact of the entrepreneur's characteristics on the investment risk can only be undertaken once the risk inherent to the venture is understood (Lévesque & Maxwell, 2011). Acquiring information first on the venture reduces the assessment effort required and allows the BA to conserve cognitive efforts for later in the decision process, when only a limited number of opportunities are still being considered.

Reducing assessment effort. While the aforementioned heuristics reduce the BAs' acquisition effort to collect data on each sub-criterion, BAs use additional heuristics to reduce the assessment effort required to interpret this data and make the decision to continue with the interaction, or not. Decision-makers can reduce assessment effort by *simplifying*

criteria weighting. For instance, they use aspiration level or threshold decision techniques, based on a criterion achieving a certain level rather than the calculation of its absolute value. A common simplifying technique is satisficing (Simon, 1955), where the decision is based on the achievement of a threshold that depends on information provided to date rather than the assessment of all relevant information (Busemeyer & Johnson, 2004). Mason and Harrison (1996b) and Haines, Madill and Riding (2003) observe that BAs seem to have a certain investment-return aspiration level (around 30% to 40% per annum) and do not invest when this (predicted) level cannot be reached.

Type	Heuristic	Effort reduction	Example	Reference
Examine fewer alternatives	Sequential decision-making	Eliminate number of opportunities considered	Opportunities filtered by others before interaction – reject opportunities quickly	Svenson, 1979
Examine fewer cues	Lexicographic	Consider limited number of criteria	Focus on criteria thought to be most important	Fishburn, 1967
Reduce retrieval effort	Representative ness, Fluency	Examine easiest to retrieve criteria	Assess available criteria that are easiest to retrieve	Tversky & Kahneman, 1974
Simplify cue weighting	Satisficing	Use threshold technique	Look at achievement of aspiration level	Simon, 1955
Integrate less information	Priority	Do not trade off dissimilar variables	Make non-compensatory decisions when integrating different factors	Brandstätter, Gigerenzer & Hertwig, 2006

Table 4-2 A heuristic framework for BA-investment decision-making

Decision-makers can also reduce assessment effort by *integrating less information*, so that rather than considering all information when making a decision, only a limited amount influences the decision. This is particularly the case when attempting to integrate and make tradeoffs between dissimilar criteria (Hogarth, 1987). For instance, although it is easy to see how higher unit sales volumes at a lower price can produce the same revenues as do lower unit sales volumes at a higher price, integrating this information with the assessment of risk associated with competitor pricing activities is more challenging.

Regardless of the specific heuristic being used, BAs do appear to use them and take shortcuts to not only make assessments, but also to select or reject investment opportunities. In doing so, they may thus trade off the substantive rationality of an investment decision with the procedural rationality of process efficiency (Simon, 1976). Next we formulate testable hypotheses on the more specific use of aspiration levels (i.e., thresholds) and compensatory/non-compensatory (i.e., tradeoff/no tradeoff) decision techniques that result from the use of the above heuristics. Non-compensatory techniques (where a low score on one criterion cannot be compensated for by a higher score on another, i.e. no tradeoff) are characterized by the interactive use of cues, in contrast to the compensatory technique where there is an additive relationship between the criteria being assessed (Tversky, 1969). Combining our proposed relationships between the eight sub-criteria (V_1 to V_8) in Table 4.1 and the two criteria (investment return and risk) with the BA-heuristic approach enables us to theorize on how BAs minimize their cognitive effort when assessing investment opportunities during the post-selection stage.

4.4 Hypothesis development

The four venture sub-criteria that contribute to a BA's assessment of the forecasted venture value (V_1 – market potential; V_2 – product adoption; V_3 – protectability; and V_4 – entrepreneur experience) are aggregated to obtain the investment-return criterion, denoted V_a (this aggregation will be detailed in the following section). Similarly, the four venture sub-criteria that contribute to the BA's assessment of the resident risk (V_5 – proxy for the technology risk; V_6 – proxy for the operational risk; V_7 – proxy for the market risk; and V_8 – proxy for the financial risk) are aggregated to obtain the investment-risk criterion, denoted V_b.

A normative decision model would suggest that the decision-maker trade off between all of the relevant factors, including the eight venture sub-criteria that inform the investment return and investment risk, before making an investment decision (Slovic & Lichtenstein, 1971). Sitkin and Weingart (1995) further note that, while in practice the forecasted return is somewhat objective, the assessment of risk is more subjective. These views support both a separation of the sub-criteria between two groups, as well as tradeoffs within these sub-criteria in each group for the assessment of, respectively, V_a and V_b. Therefore, within the investment-return criterion V_a, the relationship between the four sub-criteria V_1 to V_4 will be compensatory, whereby a low value in one sub-criterion can be compensated for by a higher value in another sub-criterion. For instance, a lower market size that reduces the venture's revenue potential can be compensated for by a higher level of product adoption that increases the revenue potential. Feeney, Haines and Riding (1999) indeed observe this compensatory effect in BA decision-making. This compensatory approach is also expected for the investment-risk criterion V_b, based on the four sub-criteria V_5 to V_8. For instance, limited customer engagement increases market risk, but can be compensated for by a forecast of greater gross margins that improve cash flow projections, thus reducing the financial risk.

In addition to considering such tradeoffs (or compensation), BAs have been found to enter the interaction with a negative mindset (Mason & Rogers, 1997), looking for reasons to reject (rather than select) investment opportunities. As BAs minimize their cognitive effort when assessing these opportunities, they use the most easily available factors, the venture sub-criteria, to try to find evidence of a low assessment of investment return based on V_1 to V_4, or a high assessment of investment risk based on V_5 to V_8. This discussion leads to our first hypothesis:

Hypothesis 1: *When rejecting an investment opportunity, BAs trade off between*

(a) *market potential, product adoption, protectability, and entrepreneur experience (the investment-return sub-criteria);*

(b) *and between product status for the technology risk, route to market for the operational risk, customer engagement for the market risk, and financial projections for the financial risk (the investment-risk sub-criteria).*

In traditional portfolio investment theory (Modigliani & Pogue, 1974) there is an assumption that the BA's assessments of the aggregated values of the investment-return (V_a) and investment-risk criteria (V_b) are compensatory, such that a higher level of investment return compensates for a higher level of investment risk. However, we have reasons to doubt this assumption in our context. First, in BA investing, the assessment of risk is based on the likelihood of venture failure and therefore a complete loss, rather than a distribution of gains (Benjamin & Margulis, 2000). Second, the prospect theory of Kahneman and Tversky (1979) brings about a nonlinear relationship between risk and return, whereby *losses hurt more than gains feel good (i.e., loss aversion). Third,* psychology and neuro-economics studies identify fundamental differences in the way in which the anticipation of gains are processed in the brain when compared to the forecast of loss (Venkatraman, Payne, Bettman, Luce & Huettel, 2009). Knutson, Taylor, Kaufman, Peterson, and Glover (2005) and Sanfey, Lowenstein, McClure and Cohen (2003) note that the assessment of gain magnitude is a cognitive process that takes place in the subcortical nucleus accumbens, while gain probability takes place in the cortical mesial prefrontal cortex.

Given the differences in how and where in the brain the assessment of value and the likelihood of loss or gain are assessed, integrating the two into a single decision requires the expenditure of considerable cognitive effort (Lowenstein, Rick & Cohen, 2008). A common

way to limit the need to expend this effort is through the adoption of a non-compensatory decision technique that avoids the need to make tradeoffs (Payne, Bettman & Johnson, 1988). Feeney, Haines and Riding (1999) provides some evidence for the use of non-compensatory decision techniques, noting that BA investment opportunities were often rejected by the mere identification that the entrepreneur had no relevant experience. Khan (1987) further showed that the entrepreneur's ingenuity was a good predictor of the BA's decision outcome. This discussion thus leads to our second hypothesis:

Hypothesis 2: *When rejecting an investment opportunity, BAs do not trade off between investment return and investment risk.*

The non-compensatory nature of the relationship between the two investment-decision criteria proposed in Hypothesis 2 raises the question of whether the assessment of each criterion is linear (where greater investment return or lower investment risk is always better) or whether BAs use heuristics that influence how they assess each criterion. Simon's (1955) observation of the use of satisficing heuristics to reduce assessment effort suggests that, in their sequential elimination process, BAs might be using a satisficing heuristic to reduce the decision effort and might be rejecting opportunities that do not achieve a certain aspiration level for investment return or exceed a certain aspiration level for investment risk. Investors have been found to possess an aspiration level for investment return and reject any opportunity that fails to reach this level (Lopes & Oden, 1999; Payne, Laughunn & Crum, 1980). Mason and Harrison (1996b) support this view specifically for BAs. Feeney, Haines and Riding (1999) further contend that BA's seemed to possess an aspiration level for investment risk, based on a combination of their risk tolerance and investment experience, rejecting any opportunity that exceeds their risk aspiration level. This discussion leads to our

third hypothesis:

Hypothesis 3: *BAs reject investment opportunities that fail to meet an aspiration level for*

(a) *investment return*

(b) *and for investment risk*.

4.5 Data and coding method

Our data comprises a subset of the 602 BA-entrepreneur interactions that were videotaped for the first four seasons of the award winning CBC TV-show Dragons' Den, previously investigated by Maxwell and his colleagues (Maxwell, Jeffrey & Lévesque, 2011; Maxwell & Lévesque, in press; Lévesque & Maxwell, 2011). The interaction begins with the entrepreneur explaining the investment opportunity to the five Dragons (i.e., BAs) and ends when either all of the Dragons provide a reason to reject the opportunity, or one (or more) Dragon makes an offer to invest (or co-invest). Any investment offer made on the show includes the amount, the BA's equity percentage, and specific terms to be included in the investment agreement. The entrepreneur can accept the presented offer, negotiate a revised offer (including changes to the proposed terms), or reject the offer.[20] The BA's lack of prior knowledge of the business opportunity, the brevity of the interaction, and the need to confirm the entrepreneur's claims mean that less than half of the offers accepted in the Den are subsequently consummated.[21]

We used observational interaction techniques (Bakeman & Gottman, 1997) and two trained observers to code the information exchanges between BAs and entrepreneurs. The observers initially examined the 602 interactions, discarding the 436 that were rapidly

[20] Once the BA and entrepreneur have agreed on the terms, the BA will perform due diligence to confirm claims made by the entrepreneur during the initial interaction.

[21] This rate is similar to the consummation rates found in traditional BA activities (Kerr, Lerner & Schoar, 2011).

rejected due to the presence of a fatal flaw (as characterized in Maxwell, Jeffrey & Lévesque, 2011) in one of Table 4.1's eight venture sub-criteria. Our observers then focused on the remaining 166 interactions (i.e., those that passed the initial selection stage of the investment process and moved on to the post-selection stage), paying special attention to the 67 rejected by the BAs during this stage primarily due to concerns about the potential return on investment or perceptions of a high likelihood of failure. The observers recorded a value for each sub-criterion (V_1 to V_8) and reason for rejection. The nature of the interaction allowed the BA to request sufficient information on each sub-criterion to assess its value and pay more attention to those sub-criteria deemed most important.

Coding for each venture sub-criterion, as shown in Table 4.1, used an A+ to C– code linked to a 10-point coding scale identical to the coding schema used in Maxwell, Jeffrey and Lévesque (2011). Code 'A' was used if the observer believed the assessment of the sub-criterion provided a compelling advantage for the venture (e.g., the venture had obtained a well organized patent that would discourage potential replicators that could compete with similar solutions). Code 'C' was used if the observer believed the assessment of the sub-criterion created a strategic disadvantage (or fatal flaw) for the venture. The coding was consistent throughout the sub-criteria in that greater values (i.e., greater return) for V_1 to V_4 were better and so were greater values (i.e., lower risk) for V_5 to V_8. Although many opportunities with fatal flaws were eliminated at the initial selection stage of the process, in some cases the presence of a fatal flaw only emerged after an extended interaction (e.g., an initially promising partner who offered a route to market was in financial trouble, thus likely unable to address the BA's risk concern).

Our observers were encouraged to annotate scores with '+' or '−' to discriminate between opportunities. In an initial testing of the coding schema, we found 100% agreement between the observers' coding when using grade categories (i.e., A, B or C), but some differences when annotated scores (i.e., A+, A, A−, etc.) were used. When translating the annotated grades to a numerical score for analytical purposes, we thus created a 'gap' in the numerical score between each grade category (i.e., A, B or C) by eliminating the numerical scores of 4 and 7. In other words, this scale created a difference of ±1 for scores within a grade category, but a gap of at least 2 when comparing grade categories (e.g., A scored 9, A− scored 8, but B+ scored 6). The final score used in the coding was the average of the scores from each observer. The aggregated values of the investment-decision criteria, V_a and V_b, were determined by first completing a principle component analysis, and then using the calculated values to weigh the contribution of each sub-criterion in the aggregated value. The specific reason for rejection by the last BA to exit the interaction was also coded, using RE for 'concern about investment return', RI for 'concern about investment risk', V for 'concern about a specific venture sub-criterion' and OT for 'other'.

4.6 Results

4.6.1 Validity checks

A number of validity concerns arise from using this data, especially because we observe interactions that are recorded as part of a reality TV-show that might be fundamentally different from actual BA-entrepreneur interactions. First, the entrepreneurs are not representative of all fund-seeking entrepreneurs, in that they likely are unable to obtain funding elsewhere. They also had to be willing to expose themselves to scathing comments from the Dragons and to share their ideas with the public on television. Second, the ventures

selected for the show had to make good television (virtually all consumer products) and very few had sufficient potential to attract the interest of institutional investors (i.e., venture capitalists). Third, the context of the interaction diverges from practices in more traditional BA-group environments, where opportunities are heard in full and the interaction takes place over several meetings. While these limitations affect the representativeness of our observations, our involvement in the show and access to unedited videotapes, as well as knowledge of BAs' use of a similar investment-decision process outside the show, gave us confidence that these interactions did not diverge significantly from interactions that took place in more private surroundings.

Moreover, since the nature of our research is exploratory, we do not claim that the population (or sample) is representative. Our observations of more traditional interactions (with actual investments under risky conditions) and discussions with both the fund-seeking entrepreneurs and the Dragons provide, nevertheless, some support for the generalizability of our findings. For additional details on sample representativeness, we direct the interested reader to recent studies (i.e., Maxwell, Jeffrey & Lévesque, 2011; Maxwell & Lévesque, in press; Lévesque & Maxwell, 2011) that have used the Dragons' Den interactions, but each with a distinct coding approach given their distinct focus (i.e., respectively, counting the number of fatal flaws, counting the number of trust-based behaviors manifested by the entrepreneur, and coding for the extent to which an entrepreneur's behavior manifest his/her characteristics).

Regarding inter-rater reliability, we used two observers who were familiar with the interaction context. Before undertaking coding, we completed a short training program with them. We had them code ten opportunities that were not rejected due to the presence of a fatal flaw from a similar interaction (the BBC version of the show) using Table 4.1's coding schema for V_1 through V_8. Results from this training exercise (10×8×2 ratings) were then

shared between the two observers and each difference between the ratings discussed. As a consequence of this training program, modifications were made to clarify the coding schema. During the training session, coding for inter-rater reliability on all eight venture sub-criteria had a Cohen's Kappa of 0.76, improving following the training to 0.81. We note that inter-rater reliability for the investment-return sub-criteria (0.84) is slightly higher than for the investment-risk sub-criteria (0.76), perhaps indicating that the assessment of return (and forecasted venture value) is more objective than the assessment of risk. Inter-rater reliability on the reason for rejection is, however, a perfect 1. That is, there was complete agreement between the observers on the last reason provided by a BA for an opportunity to be rejected.

Variable		RE	RI	RE	RI
Constant		-37.943***	-18.702***	-73.505***	-25.393***
Market potential	V_1	2.247***		3.479***	0.273
Product adoption	V_2	1.355***		1.715***	0.215
Protectability	V_3	1.575***		2.947***	0.230
Entrepreneur experience	V_4	1.003***		1.407***	0.333*
Product status	V_5		0.591***	-0.294	0.502**
Route to market	V_6		0.756***	0.323	0.839***
Customer engagement	V_7		0.664***	1.253**	0.719***
Financial projections	V_8		1.024***	0.966	0.978***
R^2 (Cox and Snell)		0.584	0.412	0.635	0.443
Model accuracy		94.6%	87.3%	97.0%	88.0%
BIC (Bayesian information criteria)[§]		63.84	113.92	50.34	113.00
χ^2		145.59***	88.03***	167.09***	97.00***

*** significant at 0.01; ** significant at 0.05; * significant at 0.10)

Table 4-3 Relationship between venture sub-criteria and investment decision criteria

While we develop our aggregated investment-decision criteria based on theoretical arguments linking investment return and investment risk to the venture sub-criteria, we also verified the validity of the proposed relationships using logistic regression, linking each venture sub-criteria to two types of rejection reason: RE for 'concern about investment

return' and RI for 'concern about investment risk'. An example for RE was with a BA stating: "*while I like the business idea, at that valuation I cannot see how I can make any money by investing in your business and for that reason I am out*." An example for RI was: "*I am not convinced that you have worked out the full cost of operating your business, which gives me concern about running out of cash, and therefore I am out*." At times, a BA gave both rejection reasons: "*you have not satisfied me that you have established a route to market or that you have allowed sufficient margin to a distributor, therefore I cannot invest in your business*." Table 4.3 shows the significance of the four investment-return sub-criteria (V_1 to V_4) on RE (rejection reason = 1 if RE; 0 otherwise), and of the four investment-risk sub-criteria (V_5 to V_8) on RI (rejection reason = 1 if RI; 0 otherwise). We also acknowledge the competing view that all venture sub-criteria could be linked to either rejection reason and looked at the significance of V_1 to V_8 on RE and on RI. Table 4.3 shows that the investment-return sub-criteria contribute significantly to concern about investment return as a reason for rejection, and that the investment-risk sub-criteria contribute significantly to concern about investment risk as a reason for rejection.

Furthermore, Table 4.4 shows the weights derived from a principal component analysis using the eight sub-criteria to determine the weighting scale to be used when calculating the two aggregated investment-decision criteria, V_a and V_b. We also offer the correlations between each sub-criterion and V_a and V_b. Correlations are only significant (at the 0.05 level) between V_5 and V_7 and between V_1 and V_8. In each case, the correlation is less than 0.2, suggesting that this correlation should not create multicolinearity concerns in a regression model. Importantly, the correlation between V_a and V_b is not significant, showing that the assessment of the investment return is not correlated to the assessment of investment risk.

	PCW	Mean	S.D.	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_a	V_b
V_1	0.835	7.10	1.65	1									
V_2	0.714	6.15	1.48	-0.051	1								
V_3	0.744	6.33	1.52	0.043	-0.119	1							
V_4	0.340	6.32	1.60	0.076	-0.115	-0.12	1						
V_5	0.653	6.11	1.28	0.104	0.052	-0.038	0.077	1					
V_6	0.661	6.72	1.45	0.003	0.038	-0.059	0.050	0.068	1				
V_7	0.730	6.43	1.40	-0.114	0.018	-0.040	0.015	-.169*	-0.124	1			
V_8	0.493	7.20	1.50	0.174*	0.090	-0.058	0.121	-0.010	0.044	0.143	1		
V_a		17.18	2.03	0.695**	0.392**	0.491**	0.193*	0.096	0.003	-0.086	0.165*	1	
V_b		16.67	1.75	0.058	0.094	-0.099	0.124	0.412**	0.528**	0.497**	0.526**	0.0	1

** significant at 0.01 and * significant at 0.05

Table 4-4 Principal component weights (PCW), descriptive statistics and correlations

4.6.2 Hypothesis testing

We use logistic regressions to test the hypotheses, where 'proceeding to the next stage of the interaction' (i.e., not rejecting the opportunity) is the dependent dichotomous variable (1: proceed; 0: reject). H1(a) proposes tradeoffs between the investment-return sub-criteria and we developed Model 1a, where V_1 to V_4 are independent variables. H1(b) proposes tradeoffs between the investment-risk sub-criteria and we developed Model 1b, where V_5 to V_8 are independent variables. The presence of a compensatory effect between sub-criteria within each group, as they relate to proceeding to the next stage (or, equivalently, the opportunity being rejected), is supported if model accuracy is high and each sub-criterion coefficient is positive and significant (Cohen, Cohen, West & Aiken, 2003). We also developed two additional models, Model 1a', where V_1 to V_4 and their six interaction terms $V_1 \times V_2$, $V_1 \times V_3$, $V_1 \times V_4$, $V_2 \times V_3$, $V_2 \times V_4$ and $V_3 \times V_4$ are independent variables, and Model 1b', where V_5 to V_8 and the corresponding six interaction terms are independent variables, to eliminate the potential presence of a non-compensatory effect. However, due to numerous interaction terms we chose to perform a stepwise logistic regression for these models and

only include the two interaction terms that were found significant. Table 4.5 summarizes the regression results for all the models we developed.

We also found appropriate to verify whether a non-compensatory effect might have been present. We added the corresponding six interaction terms to Model 1a and those to Model 1b. Although we do not explicitly report the findings in Table 4.4 for space consideration, 11 out of the total 12 interactions showed insignificant coefficients, with virtually no change on model accuracy in both cases. The significant coefficient (–0.356, p-value = 0.007) was for $V_5 \times V_8$, but since model accuracy only increased from 80.7% (in Model 1b) to 83.1%, we felt confident that the non-compensatory effect can be ruled out.

Model 1a is significant (χ^2 = 63.68, p-value < 0.001), with significant positive coefficients for every investment-return sub-criteria and a model accuracy of 84.9%. Model 1b is also significant (χ^2 = 78.01, p-value < 0.001), with significant positive coefficients for every investment-risk sub-criteria and a model accuracy of 80.7%. Regarding the presence of a non-compensatory effect (where we added the corresponding six interaction terms to both Model 1a and Model 1b), 10 out of the total 12 interaction terms in Model 1a' and Model 1b' are insignificant (and omitted from Table 4.5). Model 1a' shows significance for $V_1 \times V_3$ and reduced model accuracy, but increased χ^2, as compared to Model 1a. Model 1b' shows significance for $V_5 \times V_6$ as well as increased model accuracy and χ^2, as compared to Model 1b. Nevertheless, the size of these increases and the 10 out of 12 insignificant interactions appear to provide enough support for the compensatory effect. Therefore H1a and H1b are supported. In other words, BAs make tradeoffs between market potential, product adoption, protectability, and entrepreneur experience (the investment-return sub-criteria) when they

Variable		Model 1a	Model 1a'	Model 1b	Model 1b'	Model 2a	Model 2b	Model 3
Constant		-14.057***	-23.323***	-15.761**	-31.080**	0.835***	2.101***	7.967***
Market potential	V_1	0.766***	2.034***					
Product adoption	V_2	0.559***	0.561***					
Protectability	V_3	0.436***	1.883***					
Entrepreneur experience	V_4	0.467***	0.456***					
Product status	V_5			0.332**	2.716***			
Route to market	V_6			0.528***	2.775***			
Customer engagement	V_7			0.514***	0.546***			
Financial projections	V_8			1.015***	1.031***			
Market potential × protectability	$V_1 \times V_3$		-0.197**					
Product status × route to market	$V_5 \times V_6$				-0.356***			
Invest. return (aggregated)	V_a					3.142***	4.067***	
Invest. risk (aggregated)	V_b					3.076***	4.266***	
Exponential of invest. return	e^{-V_a}							-2.718***
Exponential of invest. risk	e^{-V_b}							-2.756***
Investment return × investment risk	$V_a \times V_b$						2.564***	
R^2 (Cox and Snell)		0.319	0.337	0.375	0.404	0.575	0.632	0.637
Model accuracy		84.9%	82.5%	80.7%	83.1%	89.2%	91.0%	91.0%
BIC (Bayesian information criteria)[§]		168.24	165.79	153.91	147.93	86.05	63.75	59.71
χ^2		63.68***	68.12***	78.01***	85.99***	141.87***	166.17***	168.17***

*** significant at 0.01; ** significant at 0.05; * significant at 0.10

[§] The Bayesian information criteria is -2loglikelihood + klog(n), where k is number of parameters and n is the sample size

Table 4-5 Regression analysis

decide to reject a business opportunity due to concerns about the investment return. BAs also make tradeoffs between product status for the technology risk, route to market for the operational risk, customer engagement for the market risk, and the financial projections for the financial risk (the investment-risk sub-criteria) when they decide to reject a business opportunity due to concerns about the investment risk.

H2 propose instead the presence of a non-compensatory effect between the aggregated investment-return criteria and the aggregated investment-risk criteria as they relate to proceeding to the next stage of the interaction. We developed Model 2a, where V_a and V_b are independent variables, and Model 2b, where V_a, V_b and the interaction term $V_a \times V_b$ are independent variables, to test this hypothesis. H2 is supported if the inclusion of the interaction term increases the χ^2 and model accuracy, but reduces the Bayesian information criteria (BIC), with both V_a and V_b, as well as their interaction $V_a \times V_b$, having positive and significant coefficients (Menard, 2002).

Model 2a is significant ($\chi^2 = 141.88$, p-value < 0.001, BIC = 86.44), with significant positive coefficients and a model accuracy of 89.2%. Model 2b, which includes $V_a \times V_b$, is significant ($\chi^2 = 166.17$, p-value < 0.001, BIC = 64.41), with significant positive coefficients for each regressor (including the interaction term) and a model accuracy of 91.0%. This shows improvement over Model 2a of an amount of 24.29 for the χ^2, 22.03 for the BIC, and 1.8% for model accuracy. The non-compensatory effect suggested by H2 is thus supported. In other words, when rejecting investment opportunities, BAs *do not* appear to make tradeoffs between investment return and investment risk.

H3 proposes threshold effects for each investment-decision criterion, V_a or V_b, such that proceeding to the next stage (or, equivalently, the opportunity being rejected) will fail should the opportunity not achieve an aspiration level for the investment return or exceed an aspiration level for the investment risk. We first developed Model 3, where the independent variables are the exponential transformation of V_a and V_b, that is, e^{-V_a} and e^{-V_b} to test this hypothesis. The presence of diminishing returns (as implied by exponential transformations; Lin, Ko & Yu, 2007), which is an initial step in suggesting threshold effects (or aspiration

levels) as hypothesized in H3, is supported when an improvement is obtained in both χ^2 and model accuracy, as well as a reduction in the BIC, when comparing Model 3 to Model 2a (where V_a and V_b are independent variables). Model 3 shows significant coefficients, with greater model accuracy at 91.0%, a higher χ^2 (168.17) and a significant reduction in BIC (60.15) compared to Model 2a. This provides support for the presence of diminishing returns and initial support for the use of threshold effects in the BAs' decisions.

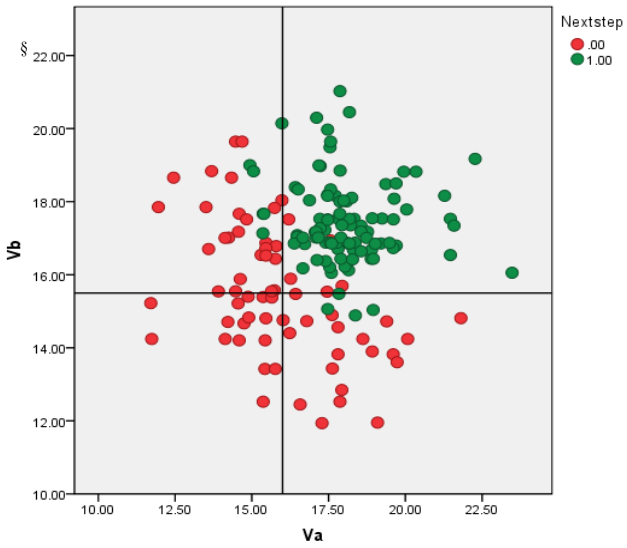


Figure 4-1 Distribution of outcomes (showing threshold & non-compensatory effects)

We look for more definite support for H3 by observing the scatter plot in Figure 4.1, which illustrates threshold effects. The opportunities that exceeded a threshold for both V_a and V_b (i.e., 16 and 15.5, respectively) were more likely to proceed to the next stage of the interaction than those that exceeded only one of the thresholds. Moreover, the probability of an opportunity proceeding to the next stage when both V_a and V_b exceeded their respective thresholds is 95%, while that probability is reduced to 17% and 19% when, respectively, only V_a or V_b exceeded its threshold. That is, not only are the threshold effects (i.e., aspiration levels) in H3 supported, but when rejecting investment opportunities, BAs *do not* appear to

trade off between investment return and investment risk, thus further supporting the non-compensatory effect in H2.

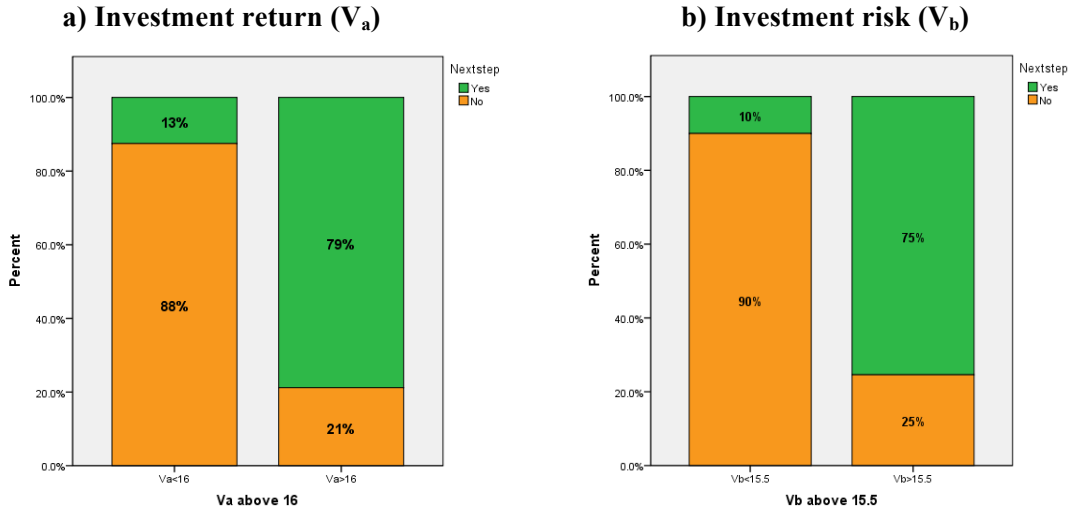


Figure 4-2 Percentage of opportunities moving to the next stage of the interaction

We provide more definite evidence of the threshold effects and further support for H3 by transforming V_a and V_b into categorical variables, based on Figure 4.1's threshold values of 16 and 15.5 for V_a and V_b, respectively. Specifically, $[V_a] = 1$ if $V_a > 16$ and 0 otherwise; $[V_b] = 1$ if $V_b > 15.5$ and 0 otherwise. Figure 4.2 shows that 79% of the opportunities proceeded to the next stage of the interaction when V_a was above the threshold, while only 13% did when V_a was below this threshold (a χ^2 test confirms the significant difference between these percentages with $\chi^2 = 62.33$, $p < 0.001$). Similarly, the percentage of opportunities that proceeded to the next stage of the interaction goes from 75% when V_b exceeded the threshold to only 10% when V_b did not ($\chi^2 = 53.94$, $p < 0.001$). Moreover, this simple reject/do-not-reject threshold model correctly predicts the outcome in 91% of the cases ($R^2 = 0.549$, $\chi^2 = 132.30$). Figure 4.3 further illustrates this effect: below the threshold (16 or 15.5) the likelihood of moving to the next stage increases with greater levels of V_a or

V_b. However, increasing V_a or V_b when it is already above the threshold has a negligible effect on this likelihood. H3 is therefore supported and BAs appear to reject investment opportunities that fail to meet an aspiration level for investment return and for investment risk.

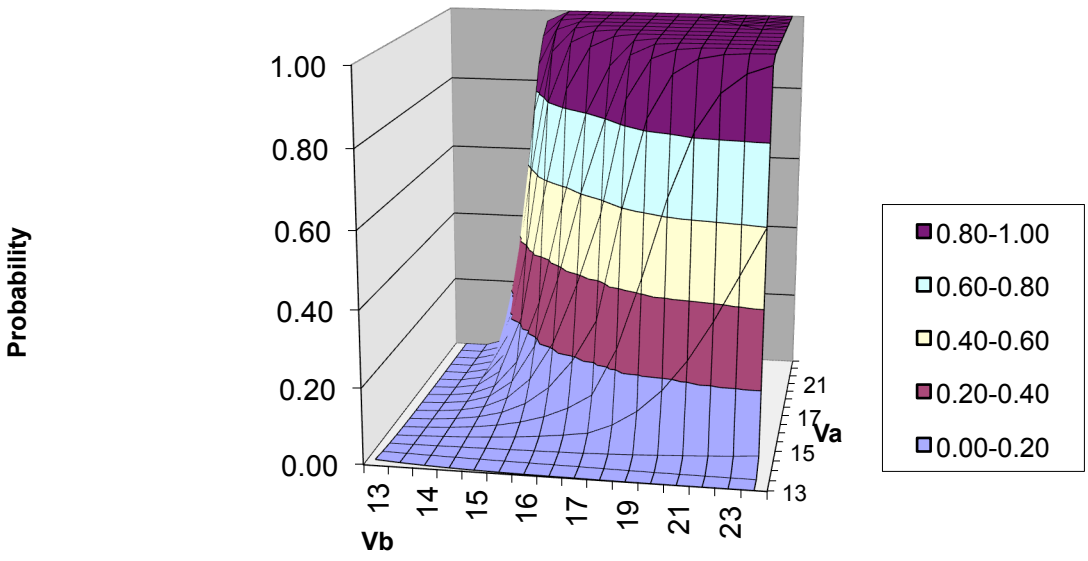


Figure 4-3 Likelihood of an opportunity moving to the next stage of the interaction

We note that Model 2b and Model 3 included, respectively, the non-compensatory and threshold effects separately. We finalize our analysis by contrasting in Table 4.6 the results of the linear model (i.e., Model 2a) with that of an hypothesized model that simultaneously includes both effects (i.e., e^{-V_a}, e^{-V_b} and $e^{-V_a} \times e^{-V_b}$). The linear model results in 7 false positives (i.e., the opportunities were rejected, but the model predicted that they would proceed to the next stage of the interaction) and 11 false negatives (i.e., the opportunities proceeded to the next stage, but the model predicted that they would be rejected). On the other hand, while the hypothesized model has no effect on the number of false positives, it reduces the number of false negatives to 4, a 65% reduction (with a model accuracy improving from 89.2% in Model 2a to 93.4% in Model 3).

a) Normative model (Model 2a)
(with V_a & V_b)

Observed	Predicted		
	Rejected	Next stage	Accuracy
	0	1	
Rejected	0 60	7	89.6%
next stage	1 11	88	88.9%
Overall percentage			89.2%

b) Hypothesized model
(with e^{-V_a}, e^{-V_b} & $e^{-V_a} \times e^{-V_b}$)

Observed	Predicted		
	Rejected	Next stage	Accuracy
	0	1	
Rejected	0 60	7	89.6%
next stage	1 4	95	96.0%
Overall percentage			93.4%

Table 4-6 Comparison of predictive powers[22]

4.7 Implications and conclusions

This research provides a framework that can explain not only how certain (sub-) criteria influence an entrepreneur's likelihood of receiving an investment offer, but also how BAs' use of heuristics can yield investment decision outcomes that deviate from normative assumptions, where all criteria are assessed and tradeoffs between these criteria considered, prior to making the decision. On the theoretical side, our findings can help explain how specific venture (sub-) criteria inform the investment decision based on their impact on the BAs' assessment of investment return and investment risk. This linkage provides a framework against which the impact of other criteria on the investment decision can be based, such as how a liability issue might influence the investment decision, how a BA's access to complementary assets might improve forecasted investment return, or how a BA's expertise might reduce the investment risk. Our findings also reinforce the value of observing experts make decisions, because it provides a shortcut to deciding what may matter as the

[22] A probability at or above 0.5 predicts that the opportunity will proceed to the next stage of the interaction, while a probability below 0.5 predicts that it will be rejected.

decision process unfolds. Moreover, applying a cognitive-effort-reduction framework for the use of heuristics can help scholars better theorize on how decision techniques may evolve as the BA-entrepreneur interaction progresses.

On the practical side, linking specific venture sub-criteria to the assessment of investment return and investment risk can help entrepreneurs focus attention on deficiencies in their venture that increase the likelihood of being rejected. Moreover, identifying which (sub-)criteria are compensatory and which are not can help entrepreneurs better "offset less readily corrected weaknesses" in their business plan and address specific "non-compensatory (i.e. essential) criteria" in their presentations (Sandberg, Schweiger & Hoffer, 1988, p13). Experienced BAs can also learn to improve their decision-making efficiency and quality by better understanding how they make decisions, rather than relying on how they think they make them. From our findings, BAs can focus attention on the sub-criteria identified as critical and move from a 'gut feel' decision approach to one where they can better assess investment return and investment risk. Our findings are not meant to change the heuristics used by BAs, but they can enable them to better appreciate how those based on threshold and (non-) compensatory effects might be used. Understanding rejection decisions can also guide governments in the development of policies and deployment of resources designed to increase the number of funded high-potential ventures. Government support programs, for instance, can be expanded to include access to market validation services or they can better prepare entrepreneurs to interact with potential investors.

This research is not without limitations, which open doors for future research. First, the behaviors and decisions we observe were influenced by the context of the interaction. As both BA and entrepreneur were aware that their behaviors and decisions would be broadcast

on national television, they were constrained due to concerns regarding long-term reputation. Repeating this investigation in a more private environment, perhaps also encouraging a broader cross section of entrepreneurs and venture types, would be desirable. Second, our coding was based on observer ratings of the venture, which depended on their interpretation of the BAs' reactions to the information presented. Reviewing the tapes of interactions with the BAs to uncover whether or not their interpretation of each criterion is similar to that coded by the observers would also be desirable. This might also help us better understand if the rejection reasons provided on the show were accurate, and not a mask for a more complex concern. Third, our data was gathered based on aggregated feedback from the BAs, rather than one individual BA. A model of how an individual BA might behave could provide more insights on whether experienced investors use different decision techniques than novices do, or how the availability of an expert within the group might influence the decision-making environment and outcome.

Additional ways in which we hope to extend this research include the investigation of subsequent stages of the investment interaction, specifically the due-diligence stage that occurs after an offer has been made and accepted, but before the final shareholder agreement is signed. Given the high failure rate at the due-diligence stage, an investigation of whether failure at that stage is due to incorrect previously supplied information, or due to new information emerging that negatively influences the original assessment of investment return and investment risk, would be informative. Another opportunity to extend this research is to apply the same research approach to the development of the interpersonal relationship between BAs and funded entrepreneurs. Exploring how this dyadic relationship develops as the two subsequently manage the funded venture would also be informative. Finally, many

existing businesses have identified the importance of developing strategic partnerships, yet they struggle to decide with whom to partner and how to formalize such a relationship. The research method we use might help to also scrutinize this process and structure the subsequent agreement to optimize return and risk.

Although further work is required to deepen our understanding of the use of tradeoffs and aspiration levels in business angel investment decisions, we have moved a step forward. We have shown that BAs appear to reject investment opportunities that fail to meet an aspiration level for both investment return and investment risk, without trading off between return and risk. Tradeoffs do seem to take place, however, when the BAs assess the investment return, as well as when they assess the investment risk, to make the decision on whether or not to reject the opportunity. We hope others will join us in our quest to better understand how BAs trade off decision accuracy for decision efficiency by considering criteria about the business opportunity as well as the context in which the investment decision is made.

5 Conclusions, recommendations, future research and impact

5.1 Conclusions

In our research, we attempt to advance the understanding of how various factors contribute to a BA's decision to invest in a risky business opportunity presented by a fund-seeking entrepreneur. We are interested in understanding the reasons for the high failure rates in the investment decision process because we believe current inefficiencies limit the number of high potential ventures that are able to attract funding. Previous research has provided little in the way of a theoretical framework to explain the multistage process, while reported observations that have relied on BA post-decision recollections have been subject to validity concerns. We overcome these issues by developing a strong theoretical framework to explain the sequential rejection process; and accessing a novel data set of interactions that allow us to address many validity concerns.

Developing a theoretical approach was essential in the creation of our coding schema that enabled us to observe how different venture criteria and entrepreneur behaviors influenced the rejection decision at each stage of the process. We combined insights from entrepreneurship and investment research to propose how various factors informed the investment return and investment risk, breaking down the investment risk into the components of resident, managerial and relationship risk. We also drew on research from decision-making and behavioral economics and used a heuristics framework to posit how experienced investors would use decision short cuts to minimize the cognitive decision making effort required. This enabled us to suggest: the sequence in which criteria would be examined; how rejection decisions would be made; and, whether relationships between

criteria are compensatory or non-compensatory. Our observations of the role of entrepreneur behaviors in informing the assessment of managerial and relationship risk, reinforced the importance experts attach to current behaviors when predicting future behaviors. We observed how entrepreneur behaviors, even over a relatively short time frame, could be seen as manifestations of underlying characteristics, and how trust behaviors increased or reduced confidence in the relationship. To provide support for the hypotheses we developed, we drew heavily on the insights of key researchers investigating the BA investment process (i.e. Feeney, Harrison, Landström, Mason, Paul, Riding, Sudek, Van Osnabrugge, Wetzel & Wiltbank), as well as our own evidence from actual interactions.

We observed that at the early stage of the process BAs focus on eight critical venture criteria that inform the assessment of the investment return and resident risk component of the investment risk. Understanding how specific venture criteria positively or negatively influence a BA's rejection decision helps the entrepreneur focus on: how to improve key aspects of the business plan before an encounter with a potential investor; when to provide specific information to help the BA make a favorable assessment; and how to compensate for weaknesses, in respect to achieving an acceptable level of return on investment, or through reducing the risk failure to a level acceptable to the BA. In addition, we highlight the fact that BAs do not appear to make trade-offs between investment return and investment risk.

Linking the assessment of entrepreneur characteristics to specific elements of resident risk showed why and how the entrepreneur's effect on the business could only be determined once the inherent risk in the venture was understood. We highlighted how specific entrepreneur behaviors could inform the assessment of managerial risk, and lead to either continuing with an interaction, or rejection due to concerns that the entrepreneur many not

successful manage the business. While behaviors that inform the assessment of managerial risk could only be assessed in the context of the venture, entrepreneur behaviors that informed the assessment of relationship risk could only be understood based on the relationship with the potential investor. We found that trust building behaviors (and the absence of trust damaging behaviors) could develop relationship confidence sufficient to allow the BA to invest, in part because BAs recognize the importance of trust for any entrepreneur who wishes to build future relationships with partners, customers, and suppliers. Our ability to look at a number of similar interactions from start to rejection/investment offer, allowed us build a comprehensive model of the investment decision process. In our model (Figure 5.1) we consider aspects of the venture, the entrepreneur and the potential relationship. This model can provide insights into the BA investment decision for both researchers and practioners. While they do not pretend to represent all of the venture criteria considered, all the behaviors seen as manifestations of characteristics, nor a comprehensive list of behaviors that can build, damage or violate trust, they provide a starting point, and a framework under which the effect of additional criteria can be considered

The development of our model of the BA decision process allows us to answer the original question raised by several researchers looking at the BA decision and the relative importance of the "horse" (venture) or the "jockey" (entrepreneur) (Harrison & Mason, 2002; MacMillan, Siegel & Subba Narasimha, 1985; Sudek, Mitteness, & Baucus, 2008). We suggest that the venture must be evaluated before the entrepreneur because venture criteria are the easier to retrieve and assess. Further, the entrepreneur's ability to optimize venture performance requires the entrepreneur to have venture specific capabilities, experiences, and traits. We do not suggest one is more important than the other, but explain the relationship

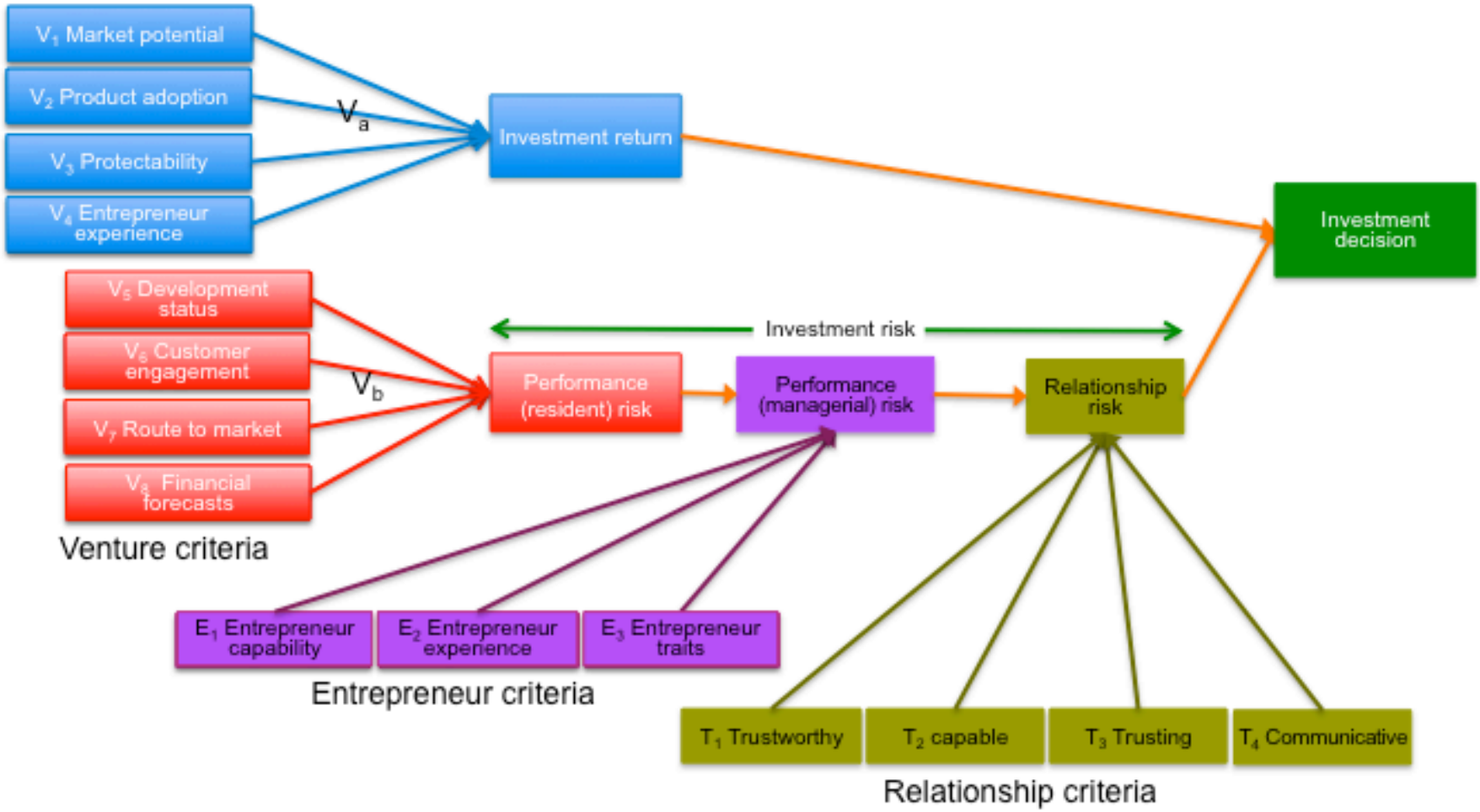


Figure 5-1 Likelihood of an opportunity moving to the next stage of the interaction

between them. However, we note that a better understanding of the investment decision process suggests that the "race" in which the horse/jockey are to participate is equally important.

We also make a number of theoretical contributions, subsequently supported by evidence from this research, which we now highlight. We utilize a heuristics framework to posit four stages of the BA investment decision process, and break down this complex decision based on minimizing the BA's required retrieval and assessment effort. Wee identify how BAs use satisficing and priority heuristics to limit the decision effort required at the venture assessment stage. We highlight how auditing behaviors seen as manifestations of underlying characteristics can be used to assess managerial risk, and identify the presence of an inverted U shape relationship between certain traits and increasing levels of managerial risk. We link the development of confidence in a relationship to the display of trust building behaviors and the absence of trust damaging behaviors and propose how controls can allow the effect of damaged trust to be reduced. Finally, we reinforce the insights that can be learned from observing how entrepreneurs behave and make decisions (especially to form partnerships) and provide two coding schemas and a research approach that can be used in future behavioral research.

5.2 Recommendations

A key motivation behind this research was the provision of specific advice to fund-seeking entrepreneurs, BAs and government policy makers frustrated with the small percentage of high potential ventures able to attract equity investment from BAs. In part this frustration is heightened by existing textbooks and research papers that tend to overstate the number of criteria considered by BAs without explaining which are compensatory and which

non-compensatory. In addition, a lack of understanding of how BAs assess presenting entrepreneurs and their ventures, even among the BAs themselves, makes it challenging to identify specific actions that fund-seeking entrepreneurs can take to improve success rates. Based on the conclusions from each of the previous three chapters, we identify specific actions that can be taken by entrepreneurs, BAs and government policy makers to increase the percentage of BA-entrepreneur interactions that result in investment.

We first provide advice to entrepreneurs who are often confused as to exactly what investors are looking for in a business plan, often because they fail to appreciate that VCs, BAs and banks are all looking for different factors when considering an investment opportunity (Mason & Stark, 2004). In Appendix B we provide a copy of the original "Pitcher's Bible" that we developed for CBC to provide to fund-seeking entrepreneurs participating in Season Two of Dragons' Den. This provides our initial recommendations to entrepreneurs and more importantly illustrates the specific assistance given to entrepreneurs to prepare for their interactions with the Dragons.

In Table 5.1 we provide specific recommendations to entrepreneurs that highlight how and why specific criteria are assessed at each stage of the process. We provide recommendations that identify specific aspects of the venture that can cause a BA concern, and explain how certain information might be best displayed during the interaction, as well as how behaviors might be modified. In addition we provide guidance as to how to develop and negotiate successful long-term relationships with a BA. While providing guidance to entrepreneurs may enable them to hide aspects of the business or mask their natural behaviors causes concern that the BA might be taken in; in our experience fundamental venture or behavioral problems inevitably emerged during the interaction or at the due

diligence stage, limiting the likelihood of the BA making an inappropriate investment. However, our main concern was to provide assistance that would enable more promising opportunities to increase their likelihood of receiving an investment offer based on a better understanding of the investment decision process. We hope that fund seeking entrepreneurs who either through misinformation or inexperience are prematurely rejected can take guidance from these recommendations and increase their likelihood of attracting funding.

I. Review your business plan against the eight critical factors

a. Develop a business plan/presentation to addresses the 8 critical factors: specifically:
   i. identify how high market potential, strong product adoption, good protectability & relevant experience - provide an adequate financial return
   ii. identify how completed product development, established route to market/ supply chain, strong customer engagement, & robust financial projections - limit risk

b. Develop conservative cash flow - explain how much you need & what it is for

c. Identify a realistic exit strategy and valuation to help justify investment

d. Compensate for weaknesses in one criteria with strengths in a compensatory one

e. Look for additional ways to reduce risk or increase returns

II. Recognize your strengths and weaknesses

a. Demonstrate capability and experiences. If necessary find an appropriate partner

b. Self-assess traits and modify negative behaviors or find a coach

III. Understand how behaviors influence relationship development

a. Be conscious of the importance of trust building on relationship development

b. Avoid behaviors that damage or violate trust. If you damage trust, be willing to accept controls

c. Be conscious of BA's need to meet aspiration levels for investment return and risk

d. Remember relationship development is two – way

Table 5-1 Recommendations to fund-seeking entrepreneurs

BAs often say that they rely on 'gut feel' when making an investment decision primarily because they do not really understand their own decision making processes. As a result, they find it difficult to explain to others how they make decisions, or to identify opportunities to improve decision efficiency or accuracy. In Table 5.2, we review specific ways in which BAs can improve decision quality or decision efficiency by better understanding their own decision criteria and processes.

Awareness of how heuristics influence their decision-making approach and how specific venture criteria and entrepreneur behaviors influence their rejections can help them improve how they make decisions. Further, insights from this improved understanding of the decision process can be shared with fund-seeking entrepreneurs and individuals who refer opportunities improving overall process efficiency. Heightened awareness of the effect of certain entrepreneurial behaviors on the BA's assessment of managerial or relationship risk can also help the BA look for early signals of potential problems. Knowledge of how specific factors influence their assessment of risk can encourage BAs to identify solutions to overcome specific deficiencies or identify how the identified risk can be mitigated through their own direct involvement. Direct feedback from the BA can also help the entrepreneur provide more pertinent information, and be more conscious of how their behaviors during the investment interaction influence the decision outcome. This can improve the quality of the interaction, and lead to both a higher percentage of entrepreneurs able to attract funding, and enhanced relationship between BA and entrepreneur both for those who receive an investment, and even with those who do not. In the context of Dragons' Den the reputation of

BAs is enhanced by their behaviors[23] and decisions. Creating a reputation as a strong partner, with expert knowledge and access to broad social networks, can beneficially influence the BA's ability to undertake subsequent transactions.

I. Understand your own investment requirements

a. Identify the importance of fit and type of venture where you can make a difference
b. Examine the relationship between specific venture and investment decision criteria
c. Examine your previous venture experience to decide the types of business where you can be most helpful
d. Review how you can deploy your assets/expertise to help a promising opportunity
e. Provide specific feedback to the entrepreneur about the venture's shortcomings
f. Ask for third party validation of performance (market or technology)

II. Focus on how entrepreneur behaviors influence your risk assessment

a. Examine entrepreneur behaviors for manifestations of capabilities and experiences
b. Highlight how excessive behaviors influence your assessment of performance risk
c. Audit displays of trust building, damaging, or violating behaviors
d. Identify appropriate controls to handle damaged trust (but walk away from violators)

III. Highlight your aspiration levels and other motivations

a. Explain investment motivations so that the entrepreneur can seek out the appropriate investor
b. Grow reputation by introducing potential investees to previously funded entrepreneurs
c. Take the role of the coach in the relationship so that you can be on the same side as the entrepreneur

Table 5-2 Recommendations for Business Angels

Better understanding of the investment decision process provides an opportunity for government policy to identify specific actions they might take to increase the success rates of interactions between fund-seeking entrepreneurs and BAs. Appropriate policies will increase the number of investable ventures, facilitate additional BA/entrepreneur interactions and

[23] One reason the show is not embraced by the BA community is because the Dragons make cruel comments on the show, yet BAs have a natural desire to encourage entrepreneurs. Rather than being a normal behavior negative comments were encouraged by the producer as making good tv (O'Leary, 2011)

provide mechanisms to reduce the investment risk, which will increase the number of funded ventures. In Table 5.3 we provide some specific recommendations for governments and policy makers based on removing the causes of inefficiencies in the current investment decision process, especially through the deployment of mechanisms that can reduce the likelihood of rejection.

I. Better prepare entrepreneurs to become investment ready
a. Provide third party market and technology validation services
b. Provide financial and technical support to encourage first customer adoption
c. Create new opportunities for governments to be first customer
d. Help entrepreneurs understand how investors make their decisions
e. Help fund-seeking entrepreneurs understand how their behaviors influence outcomes.
f. Provide training on negotiation to fund-seeking entrepreneurs
g. Develop standard approaches to deal structuring and shareholder agreements
h. Provide access to advisors and their supporting resources
II. Enhance the opportunities for BA/entrepreneur interactions
a. Create and support BA inter and intra networking activities among BA groups
b. Provide training / support for BAs and entrepreneurs to reduce information asymmetry
c. Provide matching funding or tax incentives to encourage BA investment & reduce risk
d. Link BA activities to other sources of finance
III. Provide resources to help BAs with their nascent ventures after funding
a. Provide access to high quality professional services to provide timely advice
b. Facilitate access to existing government support programs
c. Facilitate opportunities for funded SMEs to collaborate with academia & industry
d. Establish governments as first customers

Table 5-3 Recommendations for Governments and Policy Makers

5.3 Future research

There are a number of ways in which we plan to extend this research. We can re-examine existing data from the first four seasons of CBC Dragons' Den to investigate how

additional factors affect decision outcomes such as BA expertise or access to complementary assets. We can also explore the decision processes of individual BAs rather than the aggregate decisions of all the BAs, as we do in the current research. This will allow us to investigate how decision outcomes are influenced by: participation in the show; individual characteristics; previous experiences; and, the investment objectives of each BA.

We can also extend our research to explore the impact of culture and context on the investment decision outcome and relationship development by comparing our coded interactions from the Canadian version of Dragons' Den with interactions from the 21 other countries where Dragons' Den is now recorded, which includes developed and developing countries in Eastern Europe, the Middle East, Asia and Africa. Our research method and coding schema can also be adapted to investigate more traditional BA/entrepreneur interactions (for example entrepreneur presentations to BA groups, or more "private" interactions with participation by a broader cross-section of fund-seeking entrepreneurs).

Given the critical nature of the development of the relationship between a funded entrepreneur and the funding BA we can also adapt our research method to investigate how this relationship develops over time. This could include the immediate follow up to the Dragons' Den interaction when due diligence is carried out and final terms are agreed, and subsequently as the relationship continues to develop. In fact we can deploy approaches from relationship management developed using Observational Interaction in social relationships to the development of the ongoing relationship between BA and entrepreneur, where we can formulate practical suggestions as to how ongoing relationships might be improved.

5.4 Impact

We started this thesis by explaining the importance of high growth potential ventures to regional economies and observing that less than 5% of those seeking funding were able to attract it. Our hope is that by explaining the investment decision process in detail, participants in the process will learn how to reduce this high failure rate. A better understanding of how and why investment decisions are made (facilitated by the fact that the interactions can be viewed on national television) should encourage both more potential entrepreneurs to seek third party finance and more high net worth individuals to invest in early stage ventures. Further, a better understanding of BA's and entrepreneur's motivations and decision techniques will lead to improved outcomes from the investment interaction. Appreciating the decision process and the other party's motivation is even more important when a successful interaction outcome leads to sharing venture ownership and the development of a long-term partnerships. I our efforts f are only able to reduce the current rejection rate from 95% to 90% we will double the number of high potential ventures able to attract funding.

Our research was also motivated by the desire to contribute to entrepreneurship theory by: developing improved models of the venture creation process; highlighting the importance of entrepreneur behaviors; and, emphasizing the importance of entrepreneur trustworthiness. To improve the efficiency of the venture creation process we broke it down into stages so that we could identify the causes of failure at each. This allowed us to combine theory and observation to uncover the relationship between each criteria or behavior and the rejection decision. Our focus on understanding how entrepreneurs behave and make decisions required us to adopt and enhance research methods from several disciplines that can guide future research. . We hope that our research will have an impact on both entrepreneurship theory and practice.

Appendix A Dragons' Den interactions – the context

i. Show background

Dragons' Den is a globally syndicated reality TV show currently being recorded and shown in 22 countries. The show started in Japan, and the current format for the show was developed by the BBC in the UK in 2004. In the show, entrepreneurs pitch their business opportunities to five BAs (the Dragons) in the hopes of obtaining direct equity investment of between $10,000 and $500,000. In the Canadian version of the show, entrepreneurs looking for investment for their nascent ventures apply to take part in the show through an audition process at regional centers across Canada or through an online screening process. The screening process was designed by the show's producers in conjunction with industry experts to match as closely as possible the actual screening process used by third-party individuals who refer entrepreneurs to BAs. Between 10 and 12 interactions between entrepreneurs and the BAs were recorded each day in a continuous format and the results used for the production of the show footage. Analysis for this research used unedited line-tapes rather than the edited-for-TV version (with some never shown on air), which gave us the opportunity to observe and reexamine these interactions.

ii. The interaction

During the interaction, the entrepreneur starts by stating his/her name, the nature of the proposed business, and the amount of capital requested. The BAs have no knowledge of the opportunity or the entrepreneur prior to their meeting in the "Den," where the entrepreneur must request (and be offered) a specific investment amount (after describing his/her business opportunity) or go home with nothing. The Dragons then quiz the entrepreneur on, among other things, his/her experience and the details of the business, in order to decide whether or

not to make an investment offer. During the show, the investor must make a risky investment decision in 15 to 75 minutes, with the interaction continuing until either all five Dragons withdraw, or one or more proposes an investment offer. This offer can then be accepted or rejected by the entrepreneur. When a Dragon withdraws from an opportunity, he/she is required to provide a reason for the lack of interest in moving forward. If an offer is made and accepted, then there is a subsequent due diligence process, which if successful leads to an investment and the start of a long-term relationship between the BA and the entrepreneur.

iii. Validity concerns

a. Interaction behaviors and decisions not indicative of traditional interactions:

The entire interaction was videotaped in the CBC studio in front of TV cameras for subsequent broadcast on national television. The artificial reality TV environment and the subsequent public disclosure of the decision outcome cause validity concerns as they might influence participant behavior to the point where entrepreneur behaviors and BA reactions deviate from similar interactions in a more traditional and private environment. While we acknowledge such concerns, we find evidence that using reality TV show for research into decision-making under risk is not novel. A number of researchers have used the natural experiments of game shows to investigate people's attitude to: risk aversion; expected utility theory; endowment; heterogeneity; and, discrimination. Shows studied include the game-show Card Sharks, Jeopardy, Who Wants to Be a Millionaire, Weakest Link, and Deal or No Deal (Gertner, 1993; Metrick, 1995; Hartley et al., 2005, Levitt, 2004; and de Roos and Sarafidis, 2006, respectively). These studies have confirmed the general applicability of TV shows to "real-world" decision-making. All of these examples are deemed reliable as they

study people under situations of real consequence, as does Dragons' Den, since investors offer their own money to fund real business opportunities.

Behavioral economic studies have found that the behaviors of TV participants in an intense decision-making environment reflect similar behaviors in real-life. In investigating prospect theory using Deal or No Deal, researchers confirmed that contestants' decisions on the show were similar to those in a subsequent experiment that replicated the risky decision making processes. They also noted "prior to the show, contestants have had considerable time to think about what they might do in various situations" (Post et al. 2008: 67). This was the case in Dragons' Den, where both BAs and entrepreneurs had time to reflect on how they would make a decision prior to actually making it. In addition, the Dragons' Den set was built to foster an intimate environment, and participating entrepreneurs confirmed that within a few minutes of the start of the interaction they tended to forget that the interaction was being recorded for subsequent broadcast. Rather, the nature of the interaction and the need to respond to questions from five expert Dragons caused them to focus on the interaction itself. The stressful interaction context encouraged entrepreneurs to respond and display behaviors that exaggerated their underlying characteristics (Mishra, 1996).

The interaction context also differed from more traditional entrepreneur/BA interactions. In traditional interactions entrepreneurs are referred by trusted third parties, the interaction takes place over several meetings with the BA performing due diligence both in between and subsequent to these meetings. In the observed interactions in Dragons' Den, the BA could not rely on the referral source, nor look to validate the opportunity from external sources. As a result, the BA was forced to make rejection decisions based primarily on the entrepreneurs' displayed behaviors and disclosed information. This highlights rather than

diminishes the insights we gain from observations of the causes of rejection and failure manifest on the show.

The time spent to reject an opportunity is directly linked to the stage in the process when the opportunity is rejected, given our assertion that BAs reject opportunities as soon as they find a reason. As each season progressed, and as the two new BAs became more familiar with the interaction, their decision-making expertise seemed to increase, and they became more sophisticated at focusing on the critical elements that might cause rejection. Over time they seemed to reject certain opportunities more rapidly, and had extended interactions with those to whom they made an investment offer.

There were two further constraints on the observed Dragons' Den interaction that differed from traditional entrepreneur/BA interactions. The first was the requirement that each BA provide a reason for rejection. The second was that the entrepreneur had to receive the initial amount requested or leave with nothing. The requirement that BAs had to provide a rejection reason forced them to internalize their decision-making process and explain their rejection decision to the entrepreneur (and the TV audience). This explanation of the rejection reason in real time facilitated improved understanding of the rejection decision and helped us identify the stages of the process. The shows requirement that the entrepreneur receive an investment offer of the amount requested or leave with nothing did cause certain potential fundable opportunities to be rejected. Most of these rejections occurred at the venture assessment stage, where some opportunities were rejected because they offered insufficient return. This slightly increased the number rejected at this stage, whereas, in a more traditional setting, some of those opportunities may have been offered a lower investment amount by the BA. While this artificially did change the outcome, it also made

decision outcomes easier to code. It should be noted that in each subsequent season, asking for too much money became less common, indicating that entrepreneurs were learning from observing previous season's interactions.

b. Selection bias in both entrepreneurs and BAs participating in the show

We are conscious that there was an inherent selection bias in both the fund-seeking entrepreneur chosen for the show and in the BAs who chose to participate. Entrepreneurs who wished to participate in the show and appear on national television were usually unable to obtain funding elsewhere. This created a number of adverse selection problems in that very few 'high potential' entrepreneurs participated, as they were likely able to attract funding from traditional local BA investors. In addition the context of the show precluded BAs from verifying information about the opportunity or the entrepreneur's capabilities/experiences before they had to make an investment decision. This created adverse selection issues as initial decisions had to be made without full disclosure. In addition, the selection of entrepreneurs could not be seen as representative of the total population. Some participating entrepreneurs chose to pitch their business on national television because this might generate interest from customers, strategic investors or acquirers. Conversely, other entrepreneurs decided not to participate in the show, concerned that presenting nascent ideas on national television could lead to them being prematurely exposed to the market and/or replicated.

Further, the audition process created a second selection bias as CBC chose several entrepreneurs based on their "entertainment" value rather than based on their likelihood of receiving investment. The audition process tended to favour ventures with consumer

products, as they were both easy to explain on the show and made good TV content. However, while these limitations reduce our ability to extrapolate the percentage of potential opportunities that might get funded, or to infer insights about the entrepreneurial population, they do not diminish our ability to identify the causes of rejection at each stage of the process.

The selection of the seven BAs (one was replaced at the end of season one, and one at the end of season three) also influenced the interaction. Each of the BAs had a high net worth, was committed to investing in companies each season, had a track record of angel investing, was willing to invest in companies from across Canada, and had different industry experience and background. Further, the producers chose BAs who had entertaining personalities that would make the interactions more interesting. However, the ability to compete and cooperate, together with the number of interactions in which the BAs participated together, enriched the insights that could be gathered from their complex decision processes. We can also confirm that none of the BAs participated solely as a means to directly generate deals on the show, based both on their comments and the fact that the number of deals done by each would not normally justify their investment in the time required (about 15 days for each season). It seems that the two primary motivations for BAs to participate in the show were a desire to enhance their personal brand and a desire to give something back to the community. It should also be noted that we observed the BAs to be thoughtful and helpful to participating entrepreneurs, in many ways similar to BAs operating in a more traditional environment. Some of the extreme comments made by BAs made were at the behest of the show's producer because they created good TV. Such comments

inevitably made it to the broadcast version of the show, although they were not indicative of the tone of most interactions.

As the interaction involved the simultaneous decisions of the five BAs, the effect on the outcomes of the individual biases of each BA tended to be minimized. Individual BA personality or experience that might affect outcomes such as "chemistry with the entrepreneur" or specific industry knowledge were reduced by using a coding schema that assessed the aggregate value of each factor (for example capability assessment was informed based on the combined assessment of the entrepreneur by all the BAs). Similarly, rejection reasons were coded based on the last BA to reject an opportunity. In combination, these factors limited the impact of individual BA characteristics on the decision outcome and allowed us to generalize the investment decision process. However, we are conscious that research into individual investment decisions could further improve understanding of the investment decision process. For example, it would be interesting to explore BA behaviors and decisions based on their experiences, capabilities and traits.

c. Development of coding schema

The development of the two behavioral coding schema was achieved through an iterative process where videotapes were shared with subject matter experts. Original coding consisted of the time to decision and outcomes. Outcomes could include an investment offer being made (who made the offer, how much the offer was for, the percentage equity required and any control mechanisms introduced), or being rejected (rejection reason given by each BA). An example of the coding sheet (Sheet A) that was used to break down the multistage process into four stages is included in Appendix C. Figure 6 highlights the number of

opportunities rejected at each stage based on rejection reason: a) due to insufficient return, b) due to excess resident risk, c) due to excess managerial risk; and, d) due to excess relationship risk.

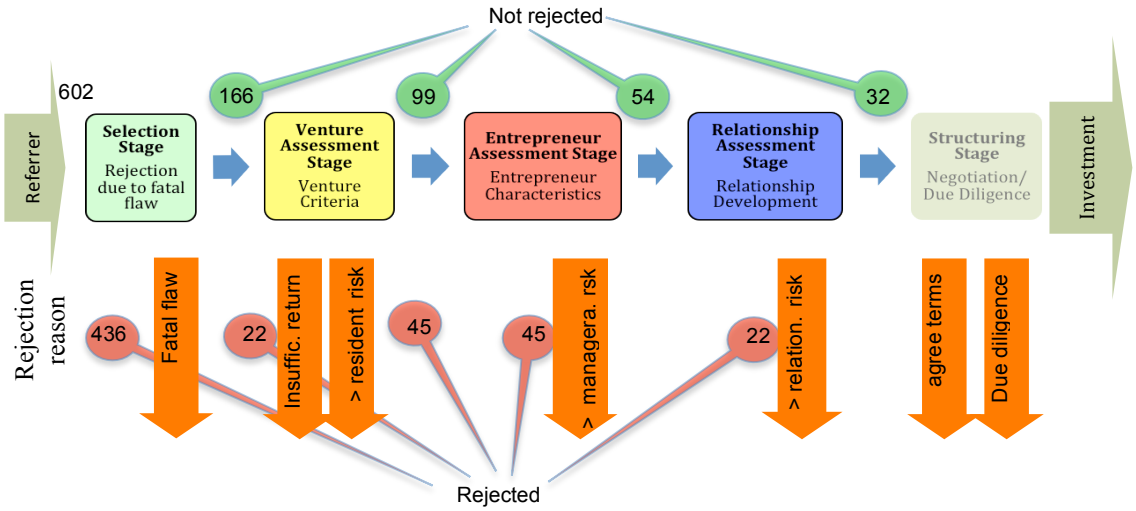


Figure 5-2 Number of opportunities rejected at each stage of the decision process

We took each group of opportunities based on common rejection reason and reviewed each interaction to establish patterns linked to theory. We then developed specific hypotheses and created an initial coding schema for each chapter that would enable us to find support for our theory. For each group of opportunities with common rejection reasons, our initial hypotheses, coding schema and sample coding were shared with subject matter experts[24] who helped refine the coding schema, which we then used to code a small sample of interactions to confirm that coding was both feasible and reliable. Once we had been able to get high levels of inter-rater reliability and refined out hypotheses about the anticipated relationships between the observations and the outcomes, we finalized the schema shown and used them to

[24] For example an initial coding schema of seven trust behaviors was presented at the EIASM workshop on Trust in 2010. Based on feedback at the conference, this initial schema was modified refined to include the four types of trust behaviors with three behavior manifestations of each type used in chapter 2.

code the relevant data set. Examples of the coding sheet for each chapter are included in Appendix C: rejected due to insufficient return or excess resident risk (Sheet B), rejected due to excess managerial risk (Sheet C), rejected due to excess relationship risk (Sheet D). (The names of the entrepreneurs are whited out to maintain confidentiality).

iv. Direct involvement in the show

The data set for this research was made available through the Canadian Innovation Centre volunteering to help the CBC with the development of the Reality TV Show – Dragons' Den. I, along with a colleague from the Canadian Innovation Centre, worked with the CBC to recruit entrepreneurs, facilitate the audition process, and prepare the entrepreneurs for their meeting with the Dragons. This involvement allowed us to influence the audition process, which allowed us to understand how entrepreneurs were selected. In addition, during the first two seasons of the show we interviewed each of the entrepreneurs after the interaction, and in some cases the BAs after a particularly complex interaction. Responses to our questions helped us in the development of our coding schema.

The show's format impacted the interaction in four ways that simplified our research: the entire interaction from first meeting to the decision to make an offer was recorded in a single continuous session; the BAs had no prior knowledge of the entrepreneur or the opportunity; the outcome was an equity investment offer or a rejection; and, if the opportunity was rejected each Dragon had to specify a specific reason. These factors facilitated our coding and reduced the externalities that often influence the decision in a more traditional investment situation. The taping of the show, our access to the line tapes, and CBC's permission to share some of the recordings allowed us to undertake a "field experiment" which would otherwise have been impossible due to the production costs.

Appendix B

Pitcher's Bible prepared for CBC Dragons' Den participants

Guide to entrepreneurs:

As a participant in the Dragon's Den you have a "once in a lifetime" opportunity to pitch your business to potential investors – the Dragons. Good preparation and understanding what the show's producers are looking for will get you on to the show, while understanding how the Dragons make their investment decisions will increase your chances of success. In this pitching guide we explain both what the Producers and the Dragons are looking for, how to pitch, and potential pitfalls. The purpose of these notes is to provide assistance in preparing for participation in the Dragon's Den interaction at the CBC studios. They are not mandatory, so please feel free to use any or all of them as you feel appropriate, you may also want to discuss them with your advisors.

To get funded entrepreneurs must persuade the Dragons:

- That you are a person whom Dragons can have the confidence in to trust with their money.
- That the product or service innovation is one that a sufficient number of people will wish to purchase.
- That the business itself will be able to be sold in the future and allow both you and the Dragon to make a return on the investment.

What CBC producers want to see:

First you must recognize that the show is designed for television, and the format of the show is such that you must be able to explain your business to the Dragons in your opening pitch. This means that consumer products or services are easiest to present, while new

software algorithms might be more challenging. The show context is set up so that both the Dragons and the TV audience are learning about your business simultaneously.

You need to persuade the CBC that you will be able to communicate your idea well, and that you pitching this on television will be of interest to viewers because of one of three things: viewers will be interested in the product/service themselves, there will be an interest from the Dragons in investing, or the interaction will create entertainment value. We suggest that you develop a script that can achieve one or more of these three objectives, and then practice it many times, before the show. You will not be able to read from the script during the show, nor do you have to address every point. The pitch must be personalized and the order in which you present the information should suit you and your business idea. Whilst it will be beneficial to understand your Dragon's to succeed, please also bare in mind that the TV audience will contain many potential customers or alternate potential investors.

What you should include in your pitch:

A pitch is actually the ultimate sales opportunity. You have to sell the investor on the fact that you are the right person to run the business, that lots of people will want to buy the product or service, and that they can obtain the required exit from their investment. These three issues are fundamentally different. You will be given the chance to make an opening statement that must attract the interest of the investor. Most pitches lose the interest of the investor within the first two minutes. After some initial opening the investor is likely to cross-examine you. This serves three purposes:

- To help them quickly understand the critical features of the invention and the business model.
- To challenge you, to see if you have thought of objections and to see how you react

under pressure.

- To create a dynamic that will put them in a good position when negotiating.

You can use each of these to your advantage but requires significant preparation. You need to have two versions of your presentation ready, the two-minute elevator pitch and the ten-minute full presentation. Whilst it is unlikely that you will get the chance to make the full presentation, having it prepared will help you. You should rehearse each of the pitches several times and then work with a coach who will role-play the investor and ask you the really tough questions. If you don't know them when you practice, you need to make time to perfect them. It is surprising the number of times entrepreneurs say they wish they could answer a question again. Often this occurs when an entrepreneur has not practiced enough. Many times the investor decides not to invest because of the lack of information provided in the answer, or, because the answer takes the discussions in the wrong direction. Practicing pitches helps to reduce the chances of this happening.

Critical factors to cover:

1. Does the product have a unique value proposition and will people in your target market buy it:
    i. What is the product and what does it do?
    ii. Can you explain why people will buy it and provide any evidence?
    iii. Is it a new product or just better than an existing product?
    iv. How will you get people to switch
2. How big is the market:
    i. Who are the main customers in your target market?
    ii. Is the market growing or declining?

iii. Who are the competition, and how will they react?

3. What led to the idea?
    i. Do you have some expert knowledge that helped you identify the need?
    ii. Do you have some unique expertise that led you to develop the idea?
4. What experience or qualifications do you (or your team) have to show you can manage the business?
    i. Have you started a business?
    ii. Have you worked in a similar business?
    iii. Do you have direct experience of the market?
5. How will you make money for the business with this product?
    i. How much does it cost and how much will you sell it for?
    ii. How much will you have to spend on other items?
    iii. Can you show that you will not run out of cash?
6. How will you make sure it is difficult for people to copy you once they have seen it on television?
    i. Can you patent it? Or obtain some alternative first mover advantage?
    ii. Can you rapidly gain market share to create economies of scale or recognizable branding?
    iii. Can you tie-up major customers to make them unavailable to potential competitors?
7. Can you demonstrate you have a good understanding of the market and similar products available?
    i. Can you use this information to show that your product or service can be

successful?

ii. Can you demonstrate the advantages your product has over these competitors?

iii. How do you know that competitors will not simply add your unique features to their product?

8. Where are you in the development stage?

i. Have you finished the development and design phase? Is it ready for manufacturing?

ii. How close are you to being able to sell the product to customers?

iii. Have you already sold some or do you have commitments from future customers?

9. Do you have a well thought out distribution and scale up strategy?

i. How will you get your product to customers (direct, distribution, through licenses)?

ii. Are there logistical issues that limit your ability to sell? Do you have channel partners in place?

iii. Are there any supplier constraints?

10. How much money are you looking for?

i. Exactly what will you do with it?

ii. Can you take it in phases?

iii. Are there ways to reduce this amount?

The interaction:

The interaction itself is vey important, it shows your credibility and gives the BA confidence in both you and the business. In addition, the BA's interest in working with you

develops during this short interaction, remember you may be establishing a long-term relationship, and the interaction establishes the initial pattern for what happens if the venture is funded. Most people focus too much on the idea, and not enough on showing the investor they can make money, and that working with you will be fun:

- Persuade the BA of the value of the idea, business model and market opportunity.
- Get the BA to believe that you have the capability to implement the business plan.
- Show how the value of the company will grow by a significant factor (usually more than 10 times).
- Demonstrate how you will leverage invested dollars.
- Convince the BA that they can work with you in the long term and that you will listen to their advice.

Negotiating the deal:

Raising capital at the early stage of a venture is extremely costly, both in terms of the equity you will have to give up and the time taken to attract the money. Going into the negotiation you must be very clear on what you need, how you will spend and what you might be willing to give up for it. You should also consider, what is the cost of not taking an investment offer (however costly in terms of equity) and can you do better elsewhere?

- You must start by understanding the money you need, and the basic methods of company valuation. Many entrepreneurs limit their upside by being unrealistic at the early stage; this reduces the likelihood of doing a deal and your credibility. Although some would say that you simply have to negotiate the best deal, in some cases, starting too aggressively can have a negative effect.
- The negotiation process is a power struggle, between an entrepreneur with one idea,

and an investor with many investment options. You need to consider the interaction from the BAs perspective, if you are going to get the deal that is right for you.

- The final terms of any investment offer will cause the entrepreneur to lose some control of the venture. Most entrepreneurs are passionate about the ventures, and giving up control can be an emotional challenge. Investors recognize this, but will see too much desire to keep control by an entrepreneur as negative, and something that will limit the future likelihood of success.

Finally, this is not a simple negotiation, with a winner and a loser, the negotiation must conclude with an agreement that both parties can live with and become the basis for a long term fair partnership. Acting during the negotiation to protect your interest, but without appearing uncooperative is not an easy challenge.

There is also an element of the show context designed to increase the tension during the interaction. You should be aware of these dynamics during the interaction, expect them, and recognize the best way to respond to specific questions or comments from the Dragons:

- Dragons are themselves successful entrepreneurs, with strong personalities. In a group this will give them a dominant position with regard to an individual, less experienced innovator.
- Dragons have a strong sense of what will make money and what will not. It is important to ensure that entrepreneurs transfer their belief in the opportunity to the naturally skeptical Dragons.
- Dragons are looking for a good "Return on Investment" and will seek to value the company based on realistic comparable opportunities. Innovators may be over-optimistic on their company valuation.

Remember Dragons are likely not experts in your product or service and may not be typical customers. You have to paint a picture for them so that they can understand the market need, see the potential business opportunity and become engaged. Testimonials and existing sales go a long way to address this.

How much money should you ask for:

Asking for the right level of investment is very important as it shows to potential investors that you have a good understanding of what the business needs to do to be successful and precisely how their investment will be spent. Specifically, they will determine from this:

- Where you are in the development/production/launch phase of the product.
- A good understanding of the business model and the crucial financial investment decisions which the company will need to make over the next months
- An appreciation of your knowledge, experience and approach to determine your technique to commercializing your innovation
- Clear reasons for each expenditure so that once underway, performance milestones can be introduced and measured to track performance.
- A clear understanding that you will not run out of money when you are half way along the path, with an inability, at the point to raise any further funds.
- Whether you are asking for sufficient funds to take the company to the point where there is a demonstrable and significant increase in company value, such as:
- The point where the technology development is either complete or overcomes the single most important technological challenge.
- The point where a first strategic customer offers to purchase and use the product.

- The point where the growth of the business is enhanced through the signing of some long term contract with an OEM, distributor or other strategic channel partner.

How much equity should you give up:

Money raised at this time is the most expensive money you will ever raise. This is because it carries the highest level of risk. As time progresses, you achieve more milestones and get closer to commercial success and the risk is reduced. The higher the risk, the more you will have to provide back to the investor. Early-stage high-risk translates to high returns for early stage investors. However, the return to the investor usually comes a the point when the venture is sold, so you need to focus on developing a business plan that identifies an exit strategy, and a likely acquirer.

The most common valuation method is based on making assumptions about revenue levels at the time the company is sold, and looking at industry multipliers to use this to calculate the value. However there are very few hard and fast rules on this and it is very difficult to do. Be cautious, company valuations based on unsubstantiated projected future revenues are equally flawed, as is accumulated expenditure or investments already made in the company. The road to high growth in a venture eventually means surrendering most of the equity and control of the venture to others. The decision to seek external investment for the first time is the first step on this path. In general you must balance two things, do you have to attract external finance in order to grow the business, and is the offer on the table the best you can get (delaying the decision can also be expensive). In addition, if you recognize that you may need additional funds at a later date, you need to be clear that what you give up now may affect your ability to raise further money in the future. However, this is less of a concern than you might think, once a Dragon has invested, they will work with you to find

the next round of funding, at that point they are as interested in the company success as you.

Top twenty reasons Dragons' don't invest:

1. It is a bad idea, with no market opportunity.
2. The innovator failed to communicate the value proposition to the potential investor.
3. The innovator fails to convince the investor that they can make a sufficient return on their investment.
4. The market is one that the investor is unfamiliar or uncomfortable with.
5. The entrepreneur does not have the knowledge, aptitude or experience to run the business.
6. The entrepreneur is not willing to seek external advice.
7. The entrepreneur has the necessary knowledge and experience but does not communicate it well.
8. Lack of chemistry between entrepreneur and the investor, or even a potential conflict.
9. Great product or service, but not a fundable business.
10. It will take too long to bring the product or service to market.
11. The investor does not see how they can add value to the business.
12. The investor has had a bad experience with a similar product or service.
13. The entrepreneur has unrealistic expectations on current valuation.
14. There is no real barrier to entry
15. There are no natural acquirers who could allow an exit to be made.
16. There are no ways to erect a barrier to entry to stop stronger competitors taking over the market.
17. The business plan requires a level of resources that are too high to justify before

revenue is achieved.

18. There is no evidence of how the entrepreneur will attract first customers, or perhaps channel partners.
19. There is too much focus on technology, and not enough on meeting market need.
20. The investor does not envisage a good working relationship with the entrepreneur over the longer term.

What can you learn from participating in Dragons' Den:

Most pitches fail, because they fail to communicate effectively. This can occur when the entrepreneur becomes too interested in their invention and not enough in the business or investment opportunity. It can be because they have not rehearsed enough or because the Dragons put them off. Whatever the reason, they need to leave the experience wiser. They need to learn from this experience, their investment of time and emotion and be better prepared when the next opportunity arises. Most entrepreneurs fail on their first attempts to raise money. What separates the ones who are ultimately successful is their ability to learn from each experience and incorporate these lessons into the next pitch.

Appendix C Coding Manual for Dragons Den Interactions (and sample data sheets)

Coding instructions for coding sheet SS – identifying rejection reason (interaction stage)

Form information; Code date of interaction: Your initials (Reference will be added by ALM)

Coding mandate – Code reason that each Dragon exits from interaction - due to a fatal flaw (**Column 5**), Insufficient return (**Column 6**), Excess Venture Risk (**Column 7**), Excess Managerial Risk (**Column 8**) or Excess Relationship Risk (**Column 9**)

If there is an investment offer, code amount and equity percentage, if more one than one Dragon code split.

Code Entrepreneur: Name of principle entrepreneur (Use CBC designation)

Code Start and Finish time: Time entrepreneur enters/leaves Den based on screen clock

Code investment offer with amount. $___, **Accepted** Y/N, **Investing Dragons** by first name (Robert, Laurence, Arlene, Jim, Kevin)

FF: Code Rejection Reason due to Fatal Flaw in venture criteria (Code: a, b, c, d, e, f, g, h)

Venture criteria	Key question	Fatal flaw if	Examples of BA comment
a. Market potential	Is there a large market for this product?	No evidence of market potential market presented	I cannot see any demand for this product…. The market is already well served…..
b. Product adoption	Will customers in target market easily adopt this product?	No clear benefits, or major adoption issues	You have not convinced me that anyone will buy this product… There are only a few major customers for your product, and it will take you too long to sell to any of them….
c. Protectability	How easy will it be for other people to copy the product or service?	Anyone could copy product or service easily.	No barrier to entry, as soon as you are successful, others will enter the market and you will find it hard to compete…. Without a clear advantage you will just have to compete on price, which will reduce your profits to zero….
d. Entrepreneur experience	Does management have direct and relevant experience?	No evidence of required experience	I am concerned that without any direct experience of the retail market you will be able to achieve success… While the product is great, this is a business, and you haven't shown me you have what it takes …

	Venture criteria	Key question	Fatal flaw if	Examples of BA comment
e.	Product status	Product ready for market, or major work required before it ships?	Needs more research and development	The product is still in its research and development phase when you actually have something that works… Currently each product is handmade, not clear that you have put any thought into how you could scale up manufacturing….
f.	Route to market	Is there a realistic marketing plan and route to market?	Limited thought given to distribution issues	Why would an existing distributor switch to you as a supplier… You have not allowed enough margin for a retailer..
g.	Customer engagement	Is a first customer identified? Does product meet need?	No first customers identified.	You have not identified a first customer who would likely be interested in the product… You have not considered the switching cost for potential customers to adopt your product….
h.	Financial projections	Profitable and sustainable cash flow?	No evidence of profit or cash management	You will run out of money before you are able to raise more money from investors… There is simply not a path to profitability….

RE: Code Rejection Reason due insufficient return (Code: 0 for rejection, 1 for no rejection)
RI: Code Reason for excess resident risk (Code: 0 for rejection, 1 for no rejection)

	Reason	Explanation	Examples of BA comment
RE.	Insufficient return	Can not identify a viable exit, or valuation at exit insufficient	While the company looks like it can grow – it will never be sufficiently large to attract an acquirer, therefore there is no path to exit. Sales projections in three years result in a valuation that makes it impossible to make a reasonable return on investment at the time of exit
RI.	Excess resident risk	Excess technological, physical, financial or people risk	There is too much uncertainty about your ability to deliver a working product within a reasonable timescale Your business is predicated on raising additional rounds of finance, but I can not see how you will do this

MR: Code Rejection Reason for excess managerial risk (Code: 0 for rejection, 1 for no rejection)

	Reason	Details	Examples of BA comment (explanation in brackets)
C.	Insufficient capabilities to manage venture	Behaviors create concerns that they do not have the capabilities to manage the venture	People that work in companies in which I invest know their numbers (lack of competence) You need to find a new approach to the problem – not just repeat it (lack of innovativeness) You can not approach this problem as if you were working in a big company experience (lack of new resource skill)
E.	Insufficient experiences	Does not have appropriate experiences to achieve success	You have failed to show you have what it takes to manage my money (lack of experience) Your answers to market questions show a poor competitor understanding (lack of expertise) You do not seem to have required knowledge to address technology issues (lack of training)
T.	Inappropriate traits	Creates concern about leadership & decision making ability	You appear to be unwilling to listen to my advice (lack of coachability) You seem to be willing to hang on to poor performers (over-agreeableness) Running this business will take much more than a good idea (lack of persistence)

RR: Code Rejection Reason for excess relationship risk (Code: 0 for rejection, 1 for no rejection)

	Reason	Details	Examples of BA comment (explanation in brackets)
B	Lack of display of trust building	Fails to demonstrate they are trusting or trustworthy	You don't seem to be willing to let go of day-to-day management (lack of vulnerability) You need to show that you care about the people you work with (lack of benevolence) I'm not sure I can be in business with a partner who has those values (lack of alignment)
E.	Excess displays of trust damaging	Demonstrates they inadvertently damage trust	I thought you would better understand this issue (damage anticipated capability) You should not have taken advantage of the situation (damage benevolence) You should not have disclosed that information (damage disclosure)
T.	Display of trust violating	Entrepreneur tries to deceive the potential investor	You are in complete denial that you did anything wrong (lack of receptiveness) Don't you see that you need to separate your money and company money (lack of integrity) But that information contradicts what you said earlier (lack of communication)

Date of recording: _____ Coder:_____Coding sheet ref: _SS_____

No.	Entrepreneur	Start time	Finish time	Fatal Flaw (a-h)	Return RE (1/0)	Resident Risk RI (1/0)	Man. Risk (1/0)	Rel. Risk (1/0)	Invest. amount	%	Dragon

Code start and finish time, and fatal flaw by reason (Circle final rejection reason)

Fatal flaws code: a (market potential) b (product adoption) c (profitability) d (entrepreneur experience)

e (product status) f (route to market) g (customer engagement) h (financial projections)

Date of recording: 17 May 2006 Coder: JG Coding sheet ref: SS 03

No.	Entrepreneur	Start time	Finish time	Fatal Flaw (a-h)	Return RE (1/0)	Resident Risk RI (1/0)	Man. Risk (1/0)	Rel. Risk (1/0)	Invest. amount	%	Dragon
31		9:30	10:10	baaf(a)							
32		10:17	10:42	ddedd(d)							
33		10:58	11:18	qaaaa(a)							
34		11:31	12:05	ccedd(c)							
35		12:17	13:03	ag	1	1	0				
Lunch											
36		14:10	14:28	eeded(d)							
37		14:34	14:51	qacq(b)							
38		14:59	15:45	hab	1	1	1	0			
39		15:53	16:21	fgfd(g)							
40		16:45	17:12	e	1	0					
41		17:30	18:04	abddd(d)							
Finish.											

Code start and finish time, and fatal flaw by reason (Circle final rejection reason)

Fatal flaws code: a (market potential) b (product adoption) c (profitability) d (entrepreneur experience)
e (product status) f (route to market) g (customer engagement) h (financial projections)

Table A: Sample coded data for rejection reason

Coding instructions for coding sheet VC – identifying rejection due to venture criteria

Form information; Coding date: Your initials (Reference will be added by ALM)

Coding mandate – Assess alphanumeric code (A+, A, A-, B+, B , B-, C+, C, C-) for each venture criteria (V_1 – V_8), and assess whether rejection reason linked to insufficient investment return or excess investment risk

Code Entrepreneur: Name of principle entrepreneur (Use CBC designation)

Code Rejection Reason: **RE – insufficient return (0 for rejection, 1 for no rejection)**

RI – excess risk (0 for rejection, 1 for no rejection)

VC: Code Evaluation of each of the venture criteria (A+ to C-)

Venture Criteria		Evidence of		Examples
V_1	Market potential	Market size	A	Large market potential (i.e. over $20 m.)
			B	Medium market potential (i.e. over $5 m.)
			C	Unable to predict — likely less than $5 m.
V_2	Product adoption	Market share	A	Customers will easily adopt product / service
			B	Benefits harder to identify, adoption issues
			C	No clear benefits, or major adoption issues
V_3	Protectability	Profitability	A	Product patented or significant other barrier
			B	It will not be easy to replicate.
			C	Anyone could copy it easily.
V_4	Entrepreneur experience	Reputation	A	Significant relevant experience
			B	Limited experience, appropriate knowledge
			C	No evidence of required experience

Venture Criteria		Evidence of		Examples
V_5	Product status	Technology risk	A	Finished product
			B	Design complete - technical issues addressed
			C	Needs more research and development
V_6	Route to market	Operational risk	A	Realistic marketing plan/ distribution partner
			B	Options identified — no agreements in place
			C	Limited thought given to distribution issues
V_7	Customer engagement	Market risk	A	Customers in place, committed to purchase
			B	Customers engaged in development project
			C	No first customers identified.
V_8	Financial projections	Financial risk	A	Sound business model and cash management
			B	Unclear profitability, limited cash manage
			C	No evidence of profit or cash management

Code Rejection Reason: **RE – insufficient return (0 for rejection, 1 for no rejection)**

RI – excess risk (0 for rejection, 1 for no rejection)

	Reason	Details	Examples of BA comment (explanation in brackets)
RE	Insufficient return	Future venture value insufficient to generate return	I never see this company being large enough to attract an acquirer (no valuation) Slow sales growth means I'd be better off putting money in bank (insufficient return)
		Percentage equity insufficient to generate return	The ownership percentage you are proposing for me makes it impossible to achieve my investment return target (insufficient return)
RI	Excess resident risk	Excess technological risk	Come back when the product is finished (excess technological risk)
		Excess physical risk	I am worried that you don't have a secure supply chain (excess physical risk)
		Excess financial risk	With those overheads, you will never be profitable (excess financial risk)
		Excess people risk	Most of your people only have experience in a research lab (excess people risk)

Date of coding: _____ Coder: _____ Coding sheet ref: _VC_____

Reference	Entrepreneur	V1- Market potential	V2 – Product adoption	V3 - Profitability	V4 – Ent. Experience	V5 – Product status	V6 – Route to market	V7 – Cust. Engagement	V8 – Fin. Projections	Rejection - low return	Rejection - high risk

Venture criteria coded A+ - C- (C ratings usually fatal flaw) Rejection coded as 0

Coding guide		
V_1	A	Large market potential (i.e. over $20 m.)
	B	Medium market potential (i.e. over $5 m.)
	C	Unable to predict — likely less than $5 m.
V_2	A	Customers will easily adopt product / service
	B	Benefits harder to identify, adoption issues
	C	No clear benefits, or major adoption issues
V_3	A	Product patented or significant other barrier
	B	It will not be easy to replicate.
	C	Anyone could copy it easily.
V_4	A	Significant relevant experience
	B	Limited experience, appropriate knowledge
	C	No evidence of required experience
V_5	A	Finished product
	B	Design complete - technical issues addressed
	C	Needs more research and development
V_6	A	Realistic marketing plan/ distribution
	B	Options identified — no agreements in place
	C	Limited thought given to distribution issues
V_7	A	Customers in place, committed to purchase
	B	Customers engaged in development project
	C	No first customers identified.
V_8	A	Sound business model and cash management
	B	Unclear profitability, limited cash manage
	C	No evidence of profit or cash management

Date of coding: June 17: 2006 week 2. Coder: J.P.L. Coding sheet ref: _VC_02

Reference	Entrepreneur	V1- Market potential	V2 – Product adoption	V3 - Profitability	V4 – Ent. Experience	V5 – Product status	V6 – Route to market	V7 – Cust. Engagement	V8 – Fin. Projections	Rejection - low return (1/0)	Rejection - high risk (1/0)
27	[illegible]	B-	A	B-	B	B	B+	—	—	0	—
35	[illegible]	B+	B+	A	B-	B	A	B+	A+	1	1
38	[illegible]	B+	A-	B+	A-	A+	A	A-	B+	1	1
40	[illegible]	A	B+	B	A+	B-	B-	A	B-	1	0
47	[illegible]	B-	B	A	B-	A	B-	C+	B-	0	0
58	[illegible]	B-	B	C+	B-	B	—	—	—	0	—
59	[illegible]	B+	B+	A-	A	A-	B-	B-	B+	1	1
63	[illegible]	A+	A	B	B-	C	B	B-	B	1	0
67	[illegible]	A-	B+	B-	B-	B	B-	B-	B	0	0
81	[illegible]	B	B-	A	B+	B	A-	A+	A	1	1
82	[illegible]	B+	A-	B+	B+	B	B-	B	—	1	0

Venture criteria coded A+ - C- (C ratings usually fatal flaw) Rejection coded as 0

Coding guide

V_1	A	Large market potential (i.e. over $20 m.)
	B	Medium market potential (i.e. over $5 m.)
	C	Unable to predict — likely less than $5 m.
V_2	A	Customers will easily adopt product / service
	B	Benefits harder to identify, adoption issues
	C	No clear benefits, or major adoption issues
V_3	A	Product patented or significant other barrier
	B	It will not be easy to replicate.
	C	Anyone could copy it easily.
V_4	A	Significant relevant experience
	B	Limited experience, appropriate knowledge
	C	No evidence of required experience
V_5	A	Finished product
	B	Design complete - technical issues addressed
	C	Needs more research and development
V_6	A	Realistic marketing plan/ distribution partner
	B	Options identified — no agreements in place
	C	Limited thought given to distribution issues
V_7	A	Customers in place, committed to purchase
	B	Customers engaged in development project
	C	No first customers identified.
V_8	A	Sound business model and cash management
	B	Unclear profitability, limited cash manage
	C	No evidence of profit or cash management

Table B: Sample coded data for elimination due to insufficient return or excess risk

Coding instructions for coding sheet B – identifying behaviors as manifestations of characteristics

Form information; Coding date: Your initials: (Reference will be added by ALM)

Code Entrepreneur: Name of principle entrepreneur (Use CBC designation)

Coding mandate – Observe behaviors of entrepreneur and reaction of BAs so that at the end of the interaction you can the 11 aspects of the characteristics described below on a scale of 1 – 5. Coding should be based on the relative score in relation to the other entrepreneurs and strongly consider the reactions of the BA (look for follow up questions from BA to inform coding schema). Try not to code everyone 3 for every characteristic. Note high levels of traits should be coded 5 – even if they seem to have a negative effect on BA.

Code: offer: (1 is offer made, 0 is no offer made)

CD, ED, TD: Code overall impression of each of the 11 characteristics listed (at end of interaction

Characteristic		Description	Example of low score	Example of high score
CD1	Competence	Technical expertise Management ability Social skills	Limited evidence of technical issues involved in product dev. Poor presentation skills	Demonstrates ability to solve complex technical issues Professional presentation skills
CD2	Critical thinking facility	Manage risk Develop innovative solutions Solve problems / good decisions	Provides little evidence of ability to "think outside the box" Recounts previous poor decisions without realizing errors	Responds to questions with novel solutions that address problem Shows ability to make good decisions under pressure
CD3	New resource skills	Identify opportunities Establish organization Gather resources / build networks	Little evidence that knows how to build an organization No external connections or social networks	Addresses specific challenges of establishing new organization Wide network of relevant connections who can be accessed
ED1	Prior activities	Startup familiarity Leadership familiarity Track record	No evidence of prior management or leadership experience No record of establishing anything new (or of success)	Proven track record of leadership (not necessarily business) Strong track record of creating new and sustainable organizations

Characteristic		Description	Example of low score	Example of high score
ED2	Relevant knowledge	Technology familiarity Industry or domain familiarity	No evidence of technical skills required Limited understanding of market	Strong evidence of technical skills required Profound understanding of marketplace and competitors
ED3	Education	Formal programs Informal training	No evidence presented of participation in any form of training or post-secondary education	Often a degree (does not have to be directly relevant) Evidence of participation in relevant training/professional development
TD1	Emotional stability	Confident / high conviction Optimistic / ext. control orientation Autonomy / self-efficacy	Low level of confidence – difficult to see leadership Unclear has the vision to overcome adversity	Extreme confidence – not always willing to take feedback Estimates high likelihood of positive outcome
TD2	Extraversion	Enthusiasm / passion Energetic / outgoing Action orientation / proactive	Introverted and uninspiring Gathers excessive data before making decision	Views business as his or her "baby" and can be over-protective Leaps into things without full information
TD3	Openness to experience	Explore novel ideas Innovative/Easily adaptable Willing to take risk	Not clear has ability to overcome problems or pivot business High risk aversions	Identifies many opportunities, keeps refocusing business plan Willing to take on high risk
TD4	Agreea-bleness	Honest / trustworthy / integrity Listens to feedback / sympathetic Develops networks	Doesn't provide straightforward answers to questions Provides limited evidence of successful partnerships	Open and frank, discloses information freely Willing to rely on anyone who offers to help
TD5	Conscient-iousness	Motivated / need for achievement Dependable / organized / Committed / persistent	Limited evidence of inner drive or planning and organizing ability Gives us easily	Strong work effort / continues despite setbacks Organized Wants to make a difference

Date of coding: _____ Coder: _____ Coding sheet ref: B_____

No.	Entrepreneur	CD1 - Competence	CD2 – Critical thinking facility	CD3 – New resource skill	ED1 – Prior activities	ED2 – Relevant knowledge	ED3 - Education	TD1 – Emotional stability	TD2 - Extraversion	TD3 – Openness to experience	TD4 - Agreeableness	TD5 - Conscientiousne	Offer (1/0)	Next stage (1/0)

Entrepreneur behaviors coded as evidence of high levels of characteristic (5), average level (3) or low level (1)
Outcomes coded as 1 offer made, 0 no-offer and 1 proceed to next stage, 0 do not proceed

Date of coding: Jan 18 2019 Coder: JPL Coding sheet ref: B 004

No.	Entrepreneur	CD1 - Competence	CD2 – Critical thinking facility	CD3 – New resource skill	ED1 – Prior activities	ED2 – Relevant knowledge	ED3 - Education	TD1 – Emotional stability	TD2 - Extraversion	TD3 – Openness to experience	TD4 - Agreeableness	TD5 - Conscientiousnes	Offer (1/0)	Next stage (1/0)				
306		4	4	3	4	4	2	3	4	3	5	5	0	0				
309		3	4	5	4	5	1	3	4	2	4	2	0	1				
321		4	3	2	4	4	3	4	2	3	4	3	0	1				
326		1	2	2	3	2	2	3	3	3	3	4	0	0				
327		4	3	4	5	5	4	4	3	3	4	4	1	1				
331		3	4	2	2	2	4	4	3	4	2	4	0	1				
340		5	4	5	4	4	2	3	4	2	4	3	1	1				
351		4	4	5	3	4	4	4	2	3	3	4	1	1				
360		4	3	4	3	4	4	1	1	2	3	2	0	0				

Entrepreneur behaviors coded as evidence of high levels of characteristic (5), average level (3) or low level (1)

Outcomes coded as 1 offer made, 0 no-offer and 1 proceed to next stage, 0 do not proceed

Table C: Sample coded data for elimination due to excess managerial risk

Coding instructions for coding sheet T – identifying trust behaviors

Form information; Coding date: Your initials (Reference will be added by ALM)

Code Entrepreneur: Name of principle entrepreneur (Use CBC designation)

Coding mandate – Observe interaction and code for each example of trust behavior (by type) that builds, damages of violates trust. For trust violation explain why trust is violated not damaged. Code offer, acceptance & controls: similarities & presentation

Code: offer: (1 is offer made, 0 is no offer made), acceptance (1 is offer accepted, 0 is not accepted)

Code similarities: (1 is there an *identified* similarity between one of the BAs and the entrepreneur, 0 there is no similarity noted)

Code presentation quality scale of 1 – 5 (where 1 is poor & 5 is excellent) **Code controls** (1 control introduced, 0 no control)

T1 – T12: Code instances of trust building (X), trust damaging (D), or trust violating (V) behaviors

Trust Behavior		Trust building examples	Trust damaging examples	Trust violating examples
Trustworthy	**Consistency**	Displays of behavior that confirm previous promises	Shows inconsistencies between words & actions	Fails to keep promises and agreements
	Benevolence	Exhibits concern about well-being of others	Shows self-interest ahead of others' well being	Takes advantage of others when they are vulnerable
	Alignment	Actions confirms shared values and/or objectives	Exhibits behaviors sometimes inconsistent with declared values	Demonstrates lack of shared values and willingness to compromise
Capable	**Competence**	Displays relevant technical and/or business ability	Shows lack of context specific ability	Misrepresents ability by claiming to have non-existent competence
	Experience	Demonstrates relevant work and/or training experience	Relies on inappropriate experience to make decision	Misrepresents experience
	Judgment	Confirms ability to make accurate and objective decisions	Relies inappropriately on third parties	Judges others without giving them the opportunity to explain
Trusting	**Disclosure**	Shows vulnerability by sharing confidential information	Shares confidential information without thinking of consequences	Shares confidential information likely to cause damage
	Reliance	Shows willingness to be vulnerable through task delegation	Reluctant to delegate, or introduces controls on subordinates' performances	Is unwilling to rely on representation by others, or dismisses participation
	Receptive-ness	Demonstrates 'coachability' and willingness to change	Postpones implementation of ideas / makes excuses for failures	Refutes feedback or blames others

Trust Behavior		Trust building examples	Trust damaging examples	Trust violating examples
Communicative	**Accuracy**	Provides truthful and timely information	Unintentionally misrepresents or delays information transmission	Deliberately misrepresents or conceals critical information
	Explanation	Explains details / consequence of information provided	Ignores request for explanations	Dismisses request for explanations
	Openness	Open to new ideas or new ways of doing things	Does not listen or refutes feedback	Shuts down or undermines new ideas

S: Code Entrepreneur/BA similarities (Code: 1 for similarity observed, 0 for no similarity observed)

	Type of similarity	Examples noted in BA comments (made to entrepreneur or other BA
i.	Ethnicity/background	Common culture or geographic heritage noted (i.e. both are immigrants/single mothers)
ii.	Education/Industry	Common University or Company experience (i.e. both graduated from same university)
iii.	Interest	Common sport or pastime (i.e. both like horse riding)

P: Code Presentation Quality (Code: 1 for poor quality, 5 for high quality)

	Type of similarity	Examples noted in BA comments (made to entrepreneur or other BA
1	Poor	Limited evidence of critical factors, lack of confidence, incomplete information, looks amateurish
3	Average	Presents critical factors, not polished, knows information but does not volunteer, unimpressive
5	High	Highlights important critical factors, professional, responds to questions, engaging, polished

C: Code Introduction of Controls in relationship (Code: 1 for controls introduced, 0 for no controls)

Examples	BA owns more than 50% of the company or issued special share
	BA introduces own employee to operate at senior management role
	BA required to sign checks or make major hiring decisions

Examples of trust building, damaging and violating behaviors

	Behavior	Trust effect
A.	Entrepreneur refuses new and improved investment offer because she has already committed to first investor	Builds trust through consistency
B.	Entrepreneur offers to stay late to keep office open so that employee can go home to take care of personal issue	Builds trust through benevolence
C.	Entrepreneur provides information about challenging technology issues that another person may have failed to disclose	Builds trust through benevolence
D.	Entrepreneur allows friend to represent company at important customer meeting because unable to travel for health reasons	Builds trust through reliance
E	Entrepreneur listens to feedback from BA and incorporates changes based on advice into business plan	Builds trust through receptiveness
F.	Entrepreneur espouses the idea of a multicultural working environment but 90% of employees are white	Damages trust through lack of alignment
G	Entrepreneur has been trained in computer programming but shows lack of basic skills required to design software programs	Damages trust through lack of competence
H.	Entrepreneur requires employee travelling on work to file daily reports on work plan and daily accomplishments	Damages trust through lack of reliance
I.	Despite promises to pay, entrepreneur fails to pay supplier when payment due because of unforeseen cash flow issue	Damages trust through lack of consistency
J.	Entrepreneur promises to pay supplier on time despite the fact that he knows that no money is available	Violates trust through deliberate inconsistency between words and actions
K.	Fires employee for poor performance without being willing to listen to an explanation about extenuating circumstances.	Violates trust through making poor judgment (that could have been avoided if he had listened)

Date of coding: _____ Coder: _____ Coding sheet ref: T_____

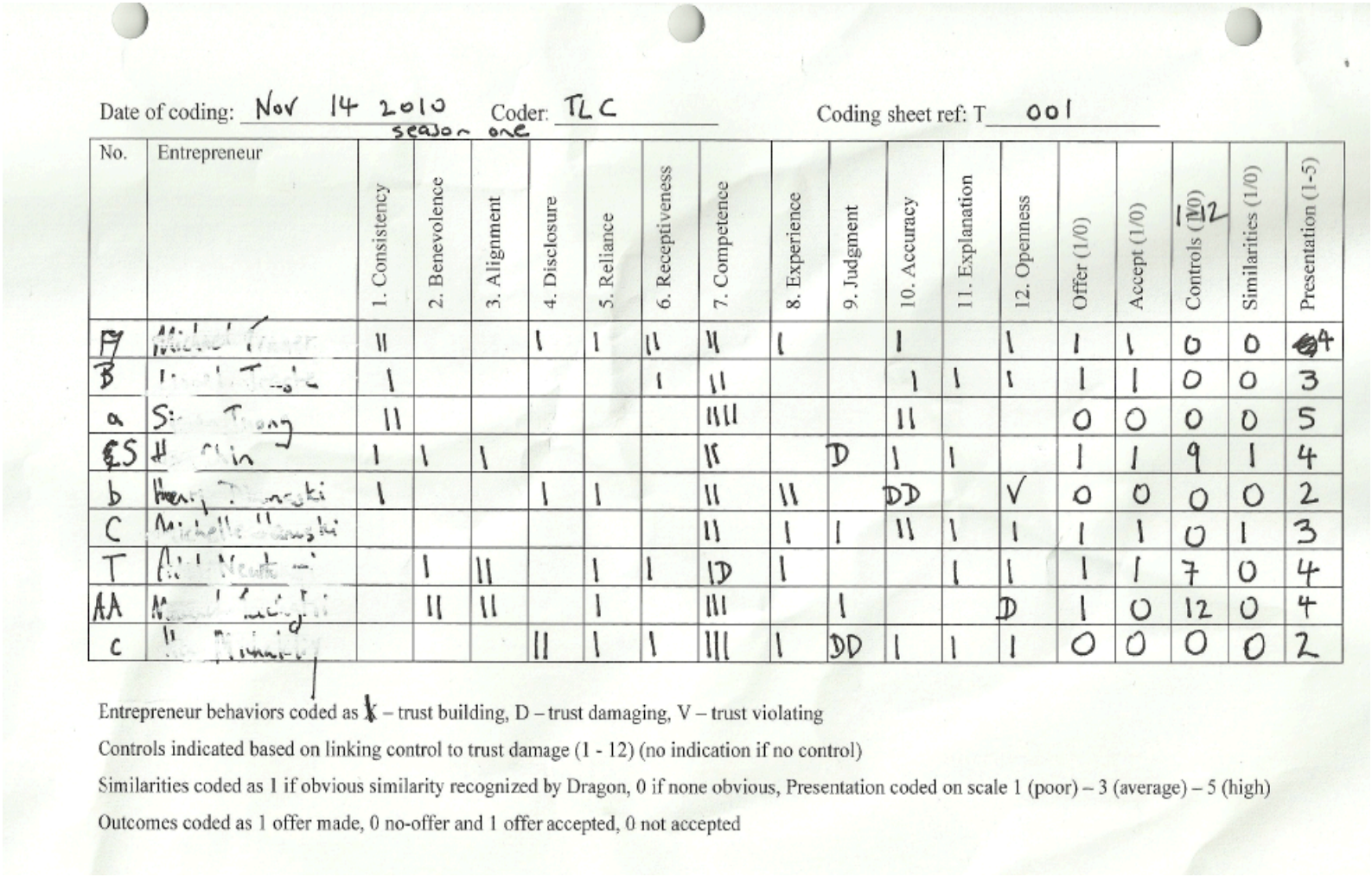
No.	Entrepreneur	1. Consistency	2. Benevolence	3. Alignment	4. Disclosure	5. Reliance	6. Receptiveness	7. Competence	8. Experience	9. Judgment	10. Accuracy	11. Explanation	12. Openness	Offer (1/0)	Accept (1/0)	Controls (1/0)	Similarities (1/0)	Presentation (1-5)

Entrepreneur behaviors coded as X – trust building, D – trust damaging, V – trust violating

Controls indicated based on linking control to trust damage (1 - 12) (no indication if no control)

Similarities coded as 1 if obvious similarity recognized by Dragon, 0 if none obvious, Presentation coded on scale 1 (poor) – 3 (average) – 5 (high)

Outcomes coded as 1 offer made, 0 no-offer and 1 offer accepted, 0 not accepted



Date of coding: Nov 14 2010 Coder: TLC Coding sheet ref: T 001

season one

No.	Entrepreneur	1. Consistency	2. Benevolence	3. Alignment	4. Disclosure	5. Reliance	6. Receptiveness	7. Competence	8. Experience	9. Judgment	10. Accuracy	11. Explanation	12. Openness	Offer (1/0)	Accept (1/0)	Controls (1/0)	Similarities (1/0)	Presentation (1-5)
F	[redacted]	II			I	I	II	II	I		I		I	I	I	0	0	4
B	[redacted]	I					I	II			I	I	I	I	I	0	0	3
a	[redacted]	II						IIII			II			0	0	0	0	5
€S	[redacted]	I	I	I				II		D	I	I		I	I	9	I	4
b	[redacted]	I			I	I		II	II		DD		V	0	0	0	0	2
C	[redacted]							II	I	I	II	I	I	I	I	0	I	3
T	[redacted]		I	II		I	I	ID	I			I	I	I	I	7	0	4
AA	[redacted]		II	II		I		III		I			D	I	0	12	0	4
c	[redacted]				II	I	I	III	I	DD	I	I	I	0	0	0	0	2

Entrepreneur behaviors coded as X – trust building, D – trust damaging, V – trust violating

Controls indicated based on linking control to trust damage (1 - 12) (no indication if no control)

Similarities coded as 1 if obvious similarity recognized by Dragon, 0 if none obvious, Presentation coded on scale 1 (poor) – 3 (average) – 5 (high)

Outcomes coded as 1 offer made, 0 no-offer and 1 offer accepted, 0 not accepted

Table D: Sample coded data for elimination due to excess relationship risk

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