

The Role of Emotional vs. Successful Intelligence in New Venture Creation

Karim Hamati

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By: Karim Hamati

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Signed by the final examining committee:

Dr. Nilanjan Basu	Chair
_____	
Dr. Marylene Gagne	Examiner
_____	
Dr. Devasheesh Bhawe	Examiner
_____	
Dr. Pramodita Sharma	Supervisor
_____	

Approved by

Dr. Stephane Brutus
_____
Chair of Department or Graduate Program Director

September 14 2011

Dr. Alan Hochstein
_____
Dean of Faculty

# The Role of Emotional vs. Successful Intelligence in New Venture Creation

Karim Hamati

## **Abstract**

The question of why some people are better than others at creating new ventures has received considerable attention in the entrepreneurship literature. Two streams of research, focused on successful intelligence – a combination of analytical, practical and creative abilities – and emotional intelligence, have studied the influence of each type of intelligence on the success of a new start-up in silos.

This research aims to build on the literature to provide a more comprehensive understanding of the nature of relationship between emotional and successful intelligence, and their impact on the success of a new venture. It does so by exploring three variations of the potential relationships between these variables: 1- emotional intelligence, along with successful intelligence, directly affects new venture creation, 2- successful intelligence mediates the relationship between emotional intelligence and new venture creation, and 3- emotional intelligence moderates the relationship between successful intelligence and new venture creation.

Fifty-seven entrepreneurs who own ventures in their start-up phase completed online tests of successful and emotional intelligence, and reported on the performance of their venture. Findings from this study revealed no significant relationships for any of the three models tested. However, they suggest a possible moderation effect of emotional intelligence on the relationship between successful intelligence and new venture creation. The study also revealed unexpected findings between entrepreneurial past experience, successful intelligence and self-reports of venture performance, a research avenue that may be worthy of further investigation.

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## 1. Introduction

The question of why some people are better than others at creating new ventures has received considerable attention in the entrepreneurship literature. Studies have focused on personal characteristics such as personality (Zhao & Seibert, 2006; Zhao, Seibert & Lumpkin, 2010), motivation (Shaver & Scott, 1991; Baum & Locke, 2004), and previous entrepreneurial experiences (Lamont, 1972) to name a few. Another interesting stream of research attempts to understand the role of individual intelligence in the successful creation of new ventures (e.g., Sternberg, 2004; Nuñez, 1994; Baron, 2000, Baron & Markman, 2000). This study aims to contribute to this research direction.

One of the most influential work on the topic of intelligence and entrepreneurship is a conceptual paper written by Sternberg in 2004, in which he suggested that in order to thrive in an entrepreneurial career, individuals require a mix of three types of intelligence- analytical, practical and creative- a combination that he refers to as **successful intelligence**. Whereas *analytical intelligence* describes a person's ability to complete academic and problem-solving tasks, *practical intelligence* refers to the capability of adapting to everyday life by drawing on existing skills and tacit knowledge (Sternberg, 2000). *Creative intelligence*, on the other hand, refers to the ability to think flexibly and deal with new and unusual situations, allowing the generation of ideas (Sternberg & Lubart, 1995). Sternberg (2004) argues that an entrepreneur needs a balanced combination of all three types of intelligence to come up with ideas (creative), evaluate the validity of the ideas (analytical) and sell the ideas to new markets (practical).

Parallel to this stream of research on successful intelligence, another research stream focused on **emotional intelligence** has been building in the last few years. This theory of intelligence, which is best described in Goleman's book entitled *Emotional Intelligence: Why it can matter more than IQ* (1995) defines emotional intelligence as a set of skills that allows individuals to "know and manage their own feelings" as well as "read and deal effectively with other people's feelings" (p. 36). Goleman argues that individuals have two minds -one rational that thinks and one emotional that feels- and that our intertwined brain circuitry "gives emotional centers immense power to influence the functioning of the rest of the brain, including the centers for rational thoughts" (p. 12). Therefore, emotional intelligence can influence rationality. While scholars have suggested that intelligent thinking is rationally conducted (e.g., Baron, 1985), it may be implied that emotional intelligence influences analytical, practical and creative intelligence. Thus far, the exact nature of relationship between successful and emotional intelligence has not been investigated. Furthermore, it remains unclear whether and how each of these forms of intelligence influences success in new venture creation. This study aims to understand the nature of the relationship between emotional and successful intelligence, and their impact on new venture creation. Specifically, this study is designed to address the following research question: What is the relationship between successful intelligence, emotional intelligence, and new venture creation?

As this is the first study to attempt to understand this relationship, it takes an exploratory form. That is, instead of starting with theory based propositions, we explore three competing explanations of the potential relationship between the two forms of intelligence – emotional and successful, and the outcome variable of interest in this study – new venture creation. In other

words, this study will empirically explore the following three variations of the potential relationships between these variables:

- 1- Emotional intelligence, along with successful intelligence, directly affects new venture creation.
- 2- Successful intelligence mediates the relationship between emotional intelligence and new venture creation.
- 3- Emotional intelligence moderates the relationship between successful intelligence and new venture creation.

For the purpose of this study, only ventures in their start-up phase (younger than 6 years old) are considered, and successful new venture creation is assessed using entrepreneur's self-reports of their firm's performance and success relative to their planned objectives, and to the industry in which their venture operates.

This research contributes to the literature on entrepreneurship and human intelligence by empirically testing how different types of intelligence influence successful creation of a new venture. This study is the first to combine two streams of literature on intelligence – emotional and successful, to study their combined affect on new venture creation. Previous studies have largely been conceptual in nature (Sternberg, 2004; Baron, 2000; Baron & Markman, 2000), and the few that are empirically grounded are not directed to understand the possible interplay between different types of intelligence in the creation of new ventures. (e.g., Nuñez, 1994; Baum & Bird, 2010).

On a practical level, the result of this research will help entrepreneurs better understand the personal requirements for successful venture creation. Emotional intelligence is an ability that

can be developed (Goleman, 1995), and this study will shed light on how entrepreneurs can overcome or compensate for deficits in some types of intelligence by building competencies in other aptitudes. Furthermore, the intelligence effects we find in this research may be used for career counseling and training purposes. Organizations, such as Youth Employment Services (YES) and World Entrepreneurs Society (WES), that provide support for starting entrepreneurs can benefit from the findings of this study in designing training programs for entrepreneurs that help develop their analytical, practical, creative and emotional intelligence. Such organizations can also develop and use instruments that measure entrepreneurs' intelligence in their counseling processes.

This research paper is divided into six chapters. Following this introductory chapter, a review of the theories of intelligence is conducted in chapter 2, with a focus on theories of successful and emotional intelligence. Similarly, theories related to entrepreneurial new venture creation are discussed, and a synthesis of the literature on the relationship between analytical, practical, creative and emotional intelligence and new venture success is presented. The theoretical model and propositions that will be tested in this study are developed in the second chapter. In chapter 3, the various methods used to recruit entrepreneurs for the study are listed, along with a description of the sample collected and the procedures and tests used to gather data from participants. Results from the statistical analyses are summarized in chapter 4, followed by an interpretation of findings and a discussion on the theoretical / practical implications and the limitations of the study in chapter 5. Concluding remarks are provided in chapter 5, and are followed by a personal reflection on the entire thesis process in chapter 6.

## **2. Theoretical Foundation**

In this chapter, a review of the conceptual and empirical literature on the relationship between successful intelligence, emotional intelligence and new venture creation is conducted. The chapter begins by defining and discussing the strength and limitations of the theories of successful intelligence and emotional intelligence, and the theories related to new venture creation. The chapter builds towards three competing propositions on the interplay between the two types of intelligence and success of new ventures start-ups.

### **2.1 The Theory of Successful Intelligence**

To this day, there still exists a great deal of disagreement on how to define intelligence. The debate dates from the nineteenth century following Alfred Binet's attempt to develop a measure of intelligence that differentiates children who are uneducatable and mentally challenged from other students (Binet & Simon, 1916). Since, researchers in the field started asking questions on what exactly constitutes intelligence and what those tests of intelligence really measure. Two schools of thoughts on the nature and properties of intelligence dominate the field: 1- *general intelligence* theory, and 2- *multiple intelligence* theory (Paik, 1998). While proponents of the first school believe that all intelligence can be traced back to a single factor, called *g* (Spearman, 1904; Eysenck, 1982), the advocates of the multiple intelligence theory argue that there are different kinds of intelligence (Gardner, 1983; Thurstone, 1938; Sternberg, 1985). Today, even though there is a general consensus that there are different levels of intelligence and that individuals differ from one another in their capacity to understand, reason, learn from experience

and adapt to their environment (Neisser et al., 1996), the debate on the different types of intelligence continues.

### 2.1.1 General Intelligence: “The g factor”

The concept of general intelligence was developed by Spearman in 1904. After observing schoolchildren’s grades and finding that they were positively related across unrelated subjects, Spearman (1904) proposed that a dominant factor he called “g” for general intelligence influenced these correlations. His research showed that individuals who score highly on one test of cognitive abilities (ex. verbal ability) score highly on all other tests of mental abilities (ex. mathematics), indicating a strong correlation between different types of abilities (Spearman, 1904). He referred to these positive correlations as the *positive manifold*. Through factor analyses, Spearman identified a global factor “g” that governs performance on all cognitive tasks, and that can quantify what is common to all scores of intelligence tests.

The theory of general intelligence was further supported by Jensen (1997) who argued that the positive manifold is not due to “test construction or item selection, as some test critics mistakenly believe”, but to an “inexorable fact of nature” (p. 223). Empirical testing using batteries of measures also provided evidence for the existence of a “unitary high-level general intelligence construct whose measurement is not dependent on the specific abilities assessed” (Johnson, Te Nijenhuis & Bouchard, 2008, p. 81).

### 2.1.2 Multiple Intelligence

While proponents of a unitary general intelligence agree that there is a single factor that determines intelligence, those of the multiple intelligence camp disagree on how many types of

intelligences there are, or how many there could be (Paik, 1998). The most influential theories of multiple intelligence are the works of Gardner (1983; 1997) and Sternberg (1985). Gardner (1983; 1997) believes that intelligence can be defined along eight different abilities - linguistic, spatial, logical-mathematical, kinesthetic, musical, interpersonal, intrapersonal, naturalistic. On the other hand, Sternberg (1985) suggested three main categories of intelligence: *analytical*, *practical* and *creative*. The two theories of multiple intelligences are not mutually exclusive; rather, Sternberg's concept of intelligence reduces some of Gardner's eight abilities into three more defined types of intelligence (Paik, 1998). Moreover, Sternberg (1991), along with other proponents of multiple intelligence, agrees with Gardner that intelligence is a much broader concept than a single general ability revolving around academic skills. However, he believes that some of Gardner's intelligences (such as kinesthetic or linguistic abilities), as he presents them, remain better viewed as individual talents (Eysenck, 1994; Scarr, 1985), and that their inclusion in the definition of intelligence diffuses the construct into broader concepts, making it more difficult to operationalize and assess intelligence (Sternberg, 1991). He believes that the eight types of intelligence proposed by Gardner make it difficult if not impossible to quantify performance (Sternberg, 1991). The several kinds of abilities suggested by Gardner include many other behaviors such as motivation, initiative, socialization etc., which limits the objectivity of scoring and the reliability of the measures (Sternberg, 1991).

### 2.1.3 Sternberg's Theory of Successful Intelligence

*Successful intelligence is the ability to achieve success in life*

Sternberg's defines successful intelligence as an "integrated set of abilities needed to attain success in life, however an individual defines it, within his or her socio-cultural context"

(Sternberg, 1999, p. 274). According to his theory, the ability to achieve success should be measured in terms of one's personal standards, and must capture people's personal notion of success (Sternberg, 1999). Sternberg's theory is comprehensive and more encompassing than other theories of intelligence "because it takes into account social and contextual factors apart from human abilities" (Li, 1996, p. 37). Theories based on a single dimension of intelligence, such as the theories of Binet or Spearman, have been criticized for being culturally biased (Jensen, 1980). According to Sternberg, "intelligence tests should measure, or at least predict, behaviors that are relevant to the socio-cultural context in which an individual lives" and that "there may be no one set of behaviors that is intelligent for everyone" (Sternberg, 1984, p. 11-12). This definition of intelligence attempts to capture the bases of success in all of one's life, rather than being restricted to the criteria imposed by society such as school grades and personal income (Sternberg, 1999). The theories that emphasize academic success fail to define intelligence for individuals who never go to school or for adults when they leave school. For instance, Nunez' (1994) study on Brazilian street children showed that street kids were able to do "street math" such as adding up purchases, bargaining for discount and computing change, despite the fact that they never attended school. In other words, the Brazilian street children who needed to run a street business in order to survive were considered successful in their own environment.

*Successful intelligence consists of a combination of skills and abilities*

Sternberg criticized other theories of intelligence for specifying fixed sets of abilities, be it one general factor "g" as in the case of Spearman (Spearman, 1904), or eight different abilities as



in the case of Gardner (Gardner, 1999). Instead, he proposes that success can be achieved in many different ways, and that a person's ability to thrive in life depends on capitalizing on one's strength and compensating for one's weaknesses (Sternberg, 1999). Rather than a single formula, or a determined list of abilities predicting success in an "all-or-nothing" manner, Sternberg's theory entails that individuals succeed with different blends of skills (Sternberg, 1999).

*Success can be achieved by adapting to, shaping, and selecting environments*

The theory of successful intelligence does not conform to the traditional definitions of intelligence, which emphasize the importance of *adapting* to one's environment (Sternberg & Detterman, 1986). On the contrary, it expands the notion of success by including other possibilities such as *shaping* and *selecting* environments relevant to one's life. While adaptation refers to changing oneself to suit an environment, shaping and selecting respectively involve modifying the environment to suit oneself and appropriating a more suitable environment for one's skills, values and desires (Sternberg, 1999). As Sternberg puts it, "the normal course of intelligent functioning in the everyday world entails adaptation to the environment; when the environment does not fit one's values, aptitudes, or interests, one may attempt to shape the environment so as to achieve a better person-environment fit; when shaping fails, an attempt may be made to select a new environment that provides a better fit" (Sternberg, 1984, p. 269).

*Success requires a balance of three types of abilities*

Sternberg's theory of intelligence suggests that in order to succeed in life, individuals require a mix of three types of intelligence- analytical, practical and creative- a combination that he

refers to as successful intelligence (Sternberg, 1999). Whereas analytical intelligence describes a person's ability to complete academic and problem-solving tasks, practical intelligence refers to the capability of adapting to everyday life by drawing on existing skills and tacit knowledge (Sternberg et al., 2000). Creative intelligence, on the other hand, refers to the ability to think flexibly and deal with new and unusual situation, and allows the generation of ideas (Sternberg & Lubart, 1995). Sternberg's argument is that success does not only rely on the ability to think analytically and to analyze one's or other's ideas, but also requires generating ideas and persuading others of their validity and value (Sternberg, 1999).

This idea of a multidimensional intelligence is not revolutionary. The belief in the existence of more than just analytical intelligence dates back to the sixties, when psychologist Seymour Sarason observed children from a school for the mentally challenged who managed to strategically escape from the school's restricted grounds but failed to score high on a conventional test of intelligence (Sternberg, 1984). This observation, along many made by other researchers in the field, support the idea that measures of general intelligence are too narrow, as they do not cover the entire spectrum of abilities that constitute intelligence. For one, Nunez (1994) found that Brazilian street children had no problem doing "street math" such as adding up purchases, bargaining for discount or computing change, yet they were unable to perform comparable math when presented in abstract form in a pen and pencil test. Similarly, housewives in California who had no problem comparing deals and choosing the best buys were unable to carry out paper and pencil tests requiring the same mathematical operations (Lave, 1988). All these examples suggest that the school kids who escaped from the school ground, the Brazilian street children who needed to form a street business in order to survive, and the women shoppers

who successfully engaged in comparison shopping, all seem to have a kind of intelligence not measured by conventional tests.

*Successful intelligence is caused by three universal information-processing components*

Sternberg (1988) criticized Gardner's theory for merely listing different types of intelligence, rather than specifying the processes underlying each one of them. Sternberg (1988) expresses that "it is one thing to identify a linguistic intelligence but quite another to specify the underlying processes", and that "Gardner's theory names the so-called intelligences without pinning down just what they are, and aren't" (Sternberg, 1988, p. 42). The theory of successful intelligence attempts to explain how its three types of intelligence work. Sternberg's successful intelligence is referred to as the *triarchic theory* as it suggests three kinds of information-processing components that underlie the processes behind intelligent thought. These components are referred to as: 1- *meta-components*, 2- *performance components*, and 3- *knowledge-acquisition components* (Sternberg, 1999). Meta-components are the processes involved in "recognizing the existence of a problem, defining the nature of the problem, deciding on a strategy for solving the problem, and evaluating the solution after the problem is solved" (Sternberg, 1999, p. 298). The role of performance components is to "execute the instructions of the meta-components" (Sternberg, 1999, p. 298). In other words, "they solve the problems according to the plan laid out by the meta-components" (Sternberg, 1991, in H. A. Rowe p. 188). Knowledge-acquisition components are used to learn from the meta-components and the performance components on how to solve problems, and to expand one's intelligence repertoire (Sternberg, 1999). Sternberg

explains that most individual differences in intelligence are found in the meta-component processes (Sternberg, 1999).

The three processing-components underlie all aspects of intelligent thought (analytical, practical and creative), and are believed to be universal since they do not depend on how a culture defines intelligence (Sternberg, 1997). In other words, intelligent mental processes- starting with defining a problem to translating strategies to solve the problem- are the same for all cultures, regardless of their different conception of intelligence (Sternberg, 1999). The components represent one of the three types of intelligence depending on the type of problem they are applied to (Sternberg, 1984). So for instance, components represent analytical abilities when applied to familiar abstract and academic problems. They represent creative abilities when applied to novel situations, and finally, they represent practical intelligence when applied to everyday problems requiring adaptation, shaping and selection (Sternberg, 1984; 1985).

#### 2.1.4 Strengths of Sternberg's Successful Intelligence

Sternberg's theory of intelligence remains controversial to this day within the scientific community. Opponents to the theory of successful intelligence (i.e. Brody, 2003; Gottfredson, 2003) have rejected the idea that practical and creative intelligence predict future success as well or even better than g. However, what those researchers did not take into account was that Sternberg's theory was "augmenting" rather than "replacing" the traditional concepts of intelligence (Sternberg, 2006). With the inclusion of analytical abilities, and the addition of two other facets of intelligence (practical and creative), Sternberg's theory maintains the notion of a general form of intelligence, and broadens the range of skills beyond the analytical and the memory skills addressed in earlier tests (Sternberg, 2006). In a reply to Gottfredson's (2003)

criticism, Sternberg clearly expresses that his theory is “not interested in trashing the so-called g”, and that “the psychological set of constructs called g constitute an important aspect of intelligence” (Sternberg, 2003, p. 400). Moreover, practical intelligence, which has been suggested to be a form of personality that has nothing to do with intelligence, has been shown to have no significant correlations with tests of personality, and to be a general factor of intelligence in itself that is distinct from g (Sternberg et al., 2000). Studies conducted in rural Kenya, for instance, revealed that measures of practical intelligence on how to use herbal medicine were negatively correlated with measures of analytical intelligence such as school achievement, and therefore that the “positive manifold” suggested by proponents of the unitary-view of intelligence does not apply (Sternberg et al., 2001).

Another strength of the theory of successful intelligence is that it is not only based on explicit theories that revolve around intelligence-test scores, but also implicit theories, which address people’s conception of intelligence (Sternberg, 2003). Implicit theories of intelligence are interested in the way people view intelligence (Sternberg, 2003). They are important to consider in theories of intelligence not only because they form the basis for the explicit theories, but also because “the majority of judgments made in the world about people’s intelligence are made on the basis of people’s implicit theories, not on the basis of intelligence-test scores” (Sternberg, 2003, p. 401). Many studies investigating people’s implicit theories of intelligence resulted in a different picture of intelligence than the one proposed by the g theorists, and showed that the skills behind intelligent thought fall outside the range of skills suggested by the traditional theories (Sternberg, 2003). The explicit theories support the concept of multiple intelligence and confirm that conventional intelligence tests do not represent the full spectrum of abilities that

constitute intelligent thinking. For instance, Sternberg (2006) showed in a study on college kids that his measure of successful intelligence predicted a considerable proportion of variance in GPA beyond that captured by the Scholastic Aptitude Test (SAT), proving that Sternberg's theory and assessment of successful intelligence have *incremental validity*.

One of the major reasons why Sternberg's successful intelligence has received so much acclaim is because it has proven itself to have high *external validity*. By conducting studies around the world, researchers have shown that intelligence is culture-dependent and that it is in fact comprised of more than simply the g factor in all societies (Grigorenko & Sternberg, 2001; Lave, 1988; Ceci & Liker, 1986). Practical and creative intelligence for instance were found to predict success in life in many of the cultures that were investigated, whether it involved Brazilian street children trying to survive on the streets (Nunez, 1994), Kenyans combating parasitic and other illnesses (Sternberg et al., 2001), American housewives looking for the best bargain (Lave, 1988), or Alaskan teenagers engaging in fishing and hunting in difficult conditions (Grigorenko et al., 2004).

In summary, the theory of multiple intelligence, and more specifically the concept of successful intelligence appears to be one that is more comprehensive and more predictive of individual success than the concept of a unitary general form of intelligence. By capturing people's personal notion of success, Sternberg's theory of successful intelligence allows a definition of success that 1) comprised of three separate abilities – analytical, practical and creative, 2) goes beyond the traditional criteria imposed by society and applies to different socio-cultural contexts, and more importantly, 3) recognizes individuals who do not conform to their environment, and instead modify it to accommodate their needs. As Sternberg (2004) suggests,

entrepreneurship is a phenomenon that occurs when the environment does not fit one's values, aptitudes, or interests, and entrepreneurs are individuals who attempt to shape the environment so as to achieve a better person-environment fit. Successful intelligence may be a stream of research that is worthy of investigation in the field of entrepreneurship. The other stream of research on the topic of entrepreneurs' intelligence focuses on the ability to perceive, identify, understand, and manage emotions. These abilities form components of the type of intelligence Goleman (1995) calls emotional intelligence.

## **2.2 The Theory of Emotional Intelligence**

Emotional intelligence is a concept that can be traced back to the work of Darwin on the importance of emotional expression for survival and adaptation (Bar-On, 2006). However, it has recently began receiving popularity following the release of the book by Goleman (1995) entitled: "*Emotional Intelligence: Why it can matter more than IQ*". Despite the diversity of views on emotional intelligence, all the definitions of the construct can be grouped into one of two competing schools of thoughts (Mayer et al. 2000): the *Mixed model* and the *Ability model* of EI.

The mixed model describes the construct as a set of personality traits and dispositional attributes such as happiness, self-esteem and optimism (Bar-On, 2004; Boyatzis & Sala, 2004; Petrides & Furnham, 2001), whereas the ability model views it as a set of cognitive skills and mental abilities that focus on emotions themselves and their interactions with thought (Mayer, Salovey, 1997; Salovey & Mayer, 1990; Mayer, Salovey & Caruso, 2008). The former theory is referred to as mixed model mainly because it combines mental abilities with personality attributes such as motivation, social activity and optimism together as a single entity (Bar-On,

1997; Goleman, 1995). It has received a fair share of criticism due to the breadth of its coverage, its inclusion of non-ability traits and a variety of human endeavors other than mental ability (Matthews et al., 2004; Daus & Ashkanasy, 2003). The mixed model view of EI has been criticized for having low discriminant validity in its operationalization of emotional intelligence (Brackett & Mayer, 2003) and for confusing the construct with other personality variables (Landy, 2005; Locke, 2005; Conte, 2005). Emotional intelligence under this theory for example has been shown to correlate highly with the five-factor model of personality (Brackett & Mayer, 2003) among many other variables, thereby straying from a true “intelligence-focused” definition of EI.

The ability model of emotional intelligence has best been described by Mayer and Salovey (1997), who defined emotional intelligence like any other type of intelligence by making sure it meets the four criteria of intelligence (Mayer et al., 2001):

- 1- Emotional intelligence has a definition of its own- “It is the ability to perceive emotions, to access and generate emotions as to assist thought, to understand emotions and emotional meanings, and to reflectively regulate emotions so as to promote both better emotion and thought.” (Mayer & Salovey, 1997)
- 2- Emotional intelligence is low-to-moderately correlated to other types of intelligence (Mayer et al., 2001), proving that it is distinct from previous intelligences and that it tells us something new about a person. Moreover, it is different from traits and talents that “lie beyond the consensual definition of intelligence” (Scarr, 1989, p. 78), and that are not expected to correlate with measures of general cognitive ability.



- 3- Emotional intelligence predicts real-world criteria like leadership and career progression (Goleman, 1998), along with general intelligence, which is said to account for only 10-20% of success (Goleman, 1995).
- 4- Emotional intelligence can be measured with tests of abilities and performance like other tests of mental abilities that measure the successful completion of a task of defined difficulty (Carroll, 1993).

The more focused ability model of emotional intelligence makes it easier to operationalize the construct and measure it distinctively from previously described intelligences (Mayer & Salovey, 1993).

#### 2.2.1 The Mayer & Salovey Model of EI

Mayer & Salovey's (1997) model of emotional intelligence revolves around the idea of an intelligence that "processes and benefits from emotions" (Mayer, Salovey & Caruso, 2000, p.105). Like other types of intelligences, EI focuses on mental abilities, skills and capacities that draw on emotions to successfully complete a task (Mayer, Salovey & Caruso, 2000). The model views emotional intelligence as operating across both the cognitive and emotional systems and emphasizes that EI is concerned mainly with problem solving (Mayer & Salovey, 1997).

The ability model by Mayer and Salovey (1997) can be divided into four branches in which skills are arranged hierarchically from lower-level skills such as perceiving emotions accurately to higher-level abilities such as managing emotions properly (Mayer & Salovey, 1997). The four branches can be described as follow:

- 1- *Emotional Perception and Identification*: Recognizing, perceiving and inputting information from the emotion system. This first basic branch of EI involves "registering,

attending to, and deciphering emotional messages.” (Mayer, Salovey & Caruso, 2000, p.109), and will guide the higher-level processes of emotional intelligence.

- 2- *Emotional Facilitation of Thought*: Using emotions to improve the cognitive processing of emotion. This branch focuses on “how emotions enter the cognitive system and alter cognition to assist thought” (Mayer, Salovey & Caruso, 2000, p.109) and directs attention to important information.
- 3- *Emotional Understanding*: Interpreting the meaning of and reasoning with emotions.
- 4- *Emotional Management*: Regulation and monitoring of emotions in self and others and coping with feelings. The branch constitutes the highest level processing of emotions and involves the ability to engage or detach from an emotion depending on its judged utility.

This paper will use the aforementioned definitions of successful and emotional intelligence in its mission to examine how analytical, practical, creative and emotional intelligence interact in the process of creating successful new businesses. The next section reviews the entrepreneurship literature to shed light on the different definitions of new venture creation, and to identify which stages of the entrepreneurial journey this concept represent. Following the different operationalizations of venture creation, a synthesis is provided on studies that have addressed the role of entrepreneurs’ intelligence in creating new successful firms.

### **2.3 The Theory of New Venture Creation**

In an intuitive sense, new venture creation refers to the steps that lead to the birth of a new business. While many agree on this definition of venture creation, researchers in the field of entrepreneurship disagreed as to the type, number and sequence of activities involved in starting a business (Carter, Gartner & Reynolds, 1995; Kamm & Nurick, 1993). For instance, the concept

of new venture creation has been defined by Bhave (1994) as “the process that roughly begins with the idea for a business and culminates when the products or services based upon it are sold to customers in the market” (p. 224). This definition involves three main stages: the opportunity recognition stage, the technology set-up and organization creation stage, and the exchange stage, and it implies that new venture creation carries on even after the physical foundation of the firm (Bhave, 1994). These stages involve activities such as 1- identifying an opportunity, 2- committing to the physical creation of the venture, 3- setting-up production technology, 4- creating the organization and the product, 5- linking with markets, and finally 6- obtaining feedback from customers (Bhave, 1994).

Conversely, in an article by Van Gelderen, Thurik, & Bosma (2006) on the success and risk factors in the pre-startup phase, the stage of new venture creation in the entrepreneurial course is clearly demarcated from other phases. The authors suggest that the new venture creation process, also referred to as nascent entrepreneurship, involves the “active pursuit of organization creation” (Van Gelderen, Thurik & Bosma, 2006, p. 320) in which entrepreneurs recognize opportunities, develop a business concept, and assemble resources to create an organization (Van Gelderen, Thurik & Bosma, 2006). They strictly differentiate it from potential entrepreneurship where individuals develop the intention to start an enterprise (Shapiro & Sokol, 1982) and starting entrepreneurship, the phase in which the organization starts exchanging with the market. According to Carter, Gartner & Reynolds (1996), nascent entrepreneurs are individuals who have taken steps towards the creation of a new business, but who “have not yet succeeded in making the transition to new business ownership” (p. 151). The limitation with this theory lies in the difficulty to study the earlier stages of new venture creation: potential and nascent

entrepreneurship (Reynolds, 1997). Potential and nascent entrepreneurs are a difficult population to sample, because they are unregistered individuals (Reynolds, 1997). This pushed scholars in the field to adopt a broader definition of venture creation and to consider business owners at early stages of their venture's life instead when assessing the creation of new enterprises (e.g. LeBrasseur, Zanibbi & Zinger, 2003; Chandler & Hanks, 1993; Stuart & Abetti, 1987).

The majority of empirical research refers to “success in early-stages of small business start-ups” (e.g. LeBrasseur, Zanibbi & Zinger, 2003), or to “initial success” (Stuart & Abetti, 1987) when studying the successful creation of new ventures. Bhide (2000) suggests that the first stage after founding is the most important as it determines a firm's future economic and social impact. It is during those first years of operation that the fate of the new venture is determined. The early-stages represent the first 3-6 years following the birth of the venture (Kirchoff & Philips, 1988). This range is agreed upon because of the high incident of failure and growth during this period (Thornhill & Amit, 1998). Researchers have sometimes used this range to operationalize venture creation and success; Roure & Maidique (1986), for example, have defined a successful venture in the high-technology industry as one that has been in existence for more than three years and unsuccessful venture as one that has been discontinued within the first five to six years of its birth (Roure, & Maidique, 1986). These years represent a crucial phase in the venture's life and determine whether a new venture will “wither and die”, survive with an insignificant growth rate, or grow to have “an enduring economic impact” (Chandler & Hanks, 1993, p. 392).

#### **2.4 The Role of Successful Intelligence in New Venture Creation**

Two streams of research exist in the field of entrepreneurship: one that places the entrepreneur at the center of new venture creation by focusing on entrepreneurs' skills, abilities,

and traits to name a few, and another that is interested in the entrepreneurial activities themselves and the behaviors that generate such activities. One of the proponents of the behavioral view of entrepreneurship, William Gartner, believes that it is “the act of entrepreneurship that warrants study, and not who is engaged in the act” (in Carland, Hoy & Carland 1988, p. 34), and that entrepreneurship research needs to focus on topics that aim at behavior modification. As the title of his theoretical article “Who Is an Entrepreneur? Is the Wrong Question” suggests, investigation of the individual entrepreneur should not be the focus when explaining the phenomenon of new venture creation (Gartner, 1989). Rather, Gartner proposes that a behavioral approach that focuses on activities leading to new ventures (Gartner, 1985) is more appropriate as it answers the long-asked question “how do organizations come into existence?” (Herbert & Link, 1982; Shapero & Sokol, 1982). The behavioral approach has been supported by other researchers, such as Jenks (1950) and Kilby (1971), who criticized the examination of entrepreneurs’ profiles at the expense of behavior.

In a response to Gartner’s criticism of the individual view of entrepreneurship (1989), Carland, Hoy & Carland (1988) express that “one cannot modify a behavior pattern without first understanding why an individual behaves in a particular manner” (p. 35); the authors require that both individual and behavioral approaches be taken into account in the study of entrepreneurship, as the two are inseparable. Herron and Sapienza (1992) agree with this idea, and further stress that “behaviors are the act of individuals” (p. 49). This means that entrepreneurial behaviors are a function of particular people, and that understanding the people is a crucial first step for explaining the phenomenon of new venture creation. Understanding entrepreneurs’ motivation for instance has provided insight into the activities undertaken by individuals during the

entrepreneurial journey (Shaver & Scott, 1991). Scholars from the camp that considers entrepreneurs' traits and abilities along with their behaviors, emphasize that investigation of behaviors alone does not capture the entire entrepreneurial process as it removes the entrepreneur's skills from the equation (Bird, 1989; Herron, 1990), leaving the theory of new venture creation to be explained solely by contextual and circumstantial factors. Personal characteristics were shown to be among the strongest predictors of venture performance (Baum, Frese, Baron & Katz, 2007), especially in the early stages of the venture's life (Shepherd, 1999; Zopounidis, 1994). As Baron (2004) boldly states in one of his conceptual work on cognition and entrepreneurship: "trying to understand the entrepreneurial process without considering entrepreneurs is like trying to bake bread without yeast" (p. 222). The concept of "person-entrepreneurship fit" (Markman & Baron, 2003) nicely illustrates the importance of considering personal characteristics when predicting the success of new enterprises. According to Markman and Baron (2003), "the closer the match between entrepreneurs' personal characteristics and the requirements for being an entrepreneur - the more likely they will be successful" (p. 281).

Among the scholars who have defended the approach to entrepreneurship that considers the entrepreneur himself, Baron (2004) identifies cognitive factors that are relevant at different steps in the entrepreneurial process in a work entitled "The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions". More specifically, his work addresses the three central questions of: 1- why do some people and not others decide on becoming entrepreneurs? 2- why do some people and not others recognize opportunities, and 3- why are some entrepreneurs more successful than others? By using the cognitive perspective, Baron (2004) suggests that mental processes influence everything entrepreneurs do. Baron (2004)

mentions counterfactual thinking (a tendency to imagine alternatives to reality), problem solving styles, and reduced susceptibility to cognitive biases as factors explaining why some entrepreneurs are more successful than others. He also lists other factors such as alertness, basic perceptual processes and signal detection (ability to detect between signal and noise) that influence why some persons and not others recognize opportunities (2004). Even though Baron (2004) specifies that his cognitive factors are different from abilities, skills and other traits, his assumptions should not be taken at face value, specifically when adopting the ability-based view of intelligence. Intelligence as an ability (Spearman; 1904; Gardner, 1999; Sternberg, 1999) is the result of many cognitive processes we use in thinking, such as analytical, creative and practical processing skills (Sternberg, 1999), and cognitive factors can be thought of as components to intelligence (Pretz & Sternberg, 2005).

Intelligence has not received a fair share of attention in the entrepreneurship research. This may be due to the common misconception that adult intelligence is a stable ability that is cannot be improved (Jensen, 1998; Cici, 1996). Probably the most influential work on the topic is the conceptual paper by Sternberg (2004) in which he suggested that successful entrepreneurial activity requires successful intelligence, a balance of three types of abilities: analytical, practical and creative intelligence. Sternberg explains that starting a new business requires coming up with a novel idea (creative intelligence), evaluate the validity and quality of the idea (analytical intelligence) and selling the idea to new markets or to a particular audience (practical intelligence). Although not many scholars in the field have associated the success of new ventures to intelligence in a general sense, a review of the literature reveals an interest in the

different components of intelligence in relation to new venture creation, particularly in the three types of abilities suggested by Sternberg (2004).

#### 2.4.1 Analytical Intelligence in New Venture Creation

There is not enough empirical evidence on the relationship between analytical intelligence, the component of successful intelligence that is often regarded as “conventional” intelligence, and new venture success. This could be due to the fact that most research has focused on cognitive abilities instead and empirically studied the relationship between the cognitive components of analytical intelligence and new venture (e.g. Gimeno et al., 1997; Baron, 2004). Conceptually, it has been suggested that analytical intelligence allows individuals to evaluate and solve problems or situations that are abstract in nature (Sternberg, 1999; Sternberg, 2004), and to be a strong predictor of entrepreneurial success. A recent study by Baum and Bird (2010) confirmed these propositions by proving the positive relationship between the analytical intelligence of entrepreneurs and new venture growth.

#### 2.4.2 Practical Intelligence in New Venture Creation

Practical intelligence, the ability to practically implement ideas (Sternberg, 1988) and to skillfully apply knowledge gained from everyday experience (tacit knowledge) to specific situations (Sternberg, 2000), has been described as an “experience-based accumulation of skills, dispositions, tacit knowledge” (In Baum & Bird, 2010, p. 399), and has been shown to be related to personal success (Sternberg et al., 1995). Following these findings, Sternberg suggested that practical intelligence could be a strong predictor of entrepreneurial success (Sternberg, 2004). An explanation for this relationship is that practical intelligence allows “entrepreneurs to cope with



their extreme situations (high uncertainty, urgency, insufficient personal resources, and rapid change)” (Baum & Bird, 2010), by facilitating pattern recognition and accelerating the decision making process in situations where there is limited information or resources available (Baum & Bird, 2010). Empirical evidence for the relationship between practical intelligence and new venture success showed that entrepreneurs with higher scores on tests of practical intelligence realize higher levels of venture performance and growth (Baum & Bird, 2010). Other studies captured the value of tacit knowledge in the field of entrepreneurship (Dyke et al., 1989; Marchisio & Ravasi, 2001).

#### 2.4.3 Creative Intelligence in New Venture Creation

Creative intelligence is the ability to generate new ideas (Sternberg, 2004) and ways of solving problems (Sternberg & Lubart, 1995). Contrary to analytical intelligence, creativity has received a great deal of attention from scholars in the field, and has been described as an “integral ingredient of entrepreneurship” (Manimala, 2008, in Rickards, Runco & Moger, 2009, p. 119). This belief date backs to the 1930’s when Schumpeter (1934) suggested that creativity and innovation are the key characteristics that distinguish entrepreneurs, and that an entrepreneur’s main challenge resides in the recognition of new ideas. Ideation, the process of generating ideas, has been suggested to be a crucial stage in the creation of new ventures, as ideas form the starting point of the entrepreneurial journey (Ames & Rumco, 2005). The importance of ideation in the creation of new ventures has also been linked to the “conception of novel commercial paths during opportunity recognition and – of novel operating solutions during startup and early growth” (Baum & Bird, 2010, p. 400).

The difference between entrepreneurs and non-entrepreneurs (managers) was suggested to be in the entrepreneur's direction towards the creative process (Bird, 1988). Research in this field has validated the relationship between creativity and both personal and business success (Czikszentmihalyi, 1996; LePine et al., 2005; Baume & Bird, 2010). Amers et al. (2005) also found that the more successful entrepreneurs are (or the more businesses they own), the higher they score on tests of creative intelligence. Moreover, Shane et al. (2000) proposed that creative intelligence is a predictor of new venture success, specifically for ventures in a technology-related industry.

## **2.5 The Role of Emotional Intelligence in New Venture Creation**

The literature in the field of entrepreneurship is particularly scarce on the topic of emotional intelligence. Emotional Intelligence as an ability to monitor and manage one's emotions to "guide one's thinking and action" (Salovey & Mayer, 1990, p. 189), and the emotions of others, has been associated early on with the personality attributes and the competencies of managers and leaders in organizational settings (Boyatzis, 1982; Goleman, 1998). Emotional intelligence was found to be associated specifically with dynamic leadership, and success in the workplace by increasing performance and productivity in the workplace (Thi Lam & Kirby, 2002). More specifically, high levels of emotional intelligence contribute to improvements in productivity by promoting challenge appraisal, a stress coping mechanism that focuses on potential gain and growth opportunities from a situation, while low emotional intelligence generally results in poor performance by fostering threat appraisal, a coping response that emphasizes potential harm and threat to one's well-being (Lyons & Schneider, 2005). These findings have been applied

specifically to two of the components of emotional intelligence: emotional understanding and emotional management (Lyons & Schneider, 2005).

However, because previous research on entrepreneurs have stressed the differences in characteristics between entrepreneurs and salaried managers (Busenitz & Barney, 1997; Collin, Moore, & Unwalla, 1964), a resistance to translate the construct of emotional intelligence to the field of entrepreneurship may have delayed research in this area. In the early 2000's, some scholars began to show interest in social skills as a determinant of entrepreneurial success (e.g. Baron & Markman, 2000), and attempted to empirically support such claims by linking social competence to financial success of new ventures (Baron & Markman, 2003). The emotions of entrepreneurs were not considered in entrepreneurship research until recently, when Baron & Markman (2000) published a conceptual paper identifying the importance of social skills for entrepreneurial success. Among the dimensions of social competence that were shown to predict entrepreneurial success, Baron & Markman (2003) identified the accuracy in perceiving others' emotions, as well as social adaptability (the ability to adapt to different social situations) and expressiveness (the ability to express emotions in an appropriate manner). Baum and Locke (2004), on the other hand, looked at the effect of passion, or positive intense feelings as they describe it, on the success of entrepreneurial ventures. Positive emotions were also found to influence entrepreneurs' thinking (Baron, 2008) and to help entrepreneurs in dealing with the constant stress they are exposed to (Craver & Scheier, 2001).

Social competence was further studied in this field, especially as it relates to the management of the human side of business. Many researchers confirmed the critical role of managing employees and clients well in the success of a new venture (Barber, Wesson, Roberson & Taylor,

1999). Boren (2010) states that “one of the most crucial aspects of employees and client management has to do with how skillfully emotions are handled” (p. 56), as emotions affect clients’ perceptions of the venture, and subsequently their decision to invest in the new company (Mulligan & Hasite, 2005).

While many of the publications in the field focused on social intelligence, Goleman’s (1998) extension of the “social competence” construct to include emotional dimensions led researchers to shift the scope of their research to emotional intelligence, and consider this ability when investigating the individual differences in entrepreneurs’ performance (e.g. Baum & Bird, 2010; Cross & Travaglione, 2003; Hmieleski, 2005). A study on entrepreneurial behaviors within organizations proved that emotional intelligence correlates with individual entrepreneurial behaviors such as “independent/autonomous- integrative/cooperative behavior aiming at entrepreneurial ways of getting things done” (Zampetakis, Beldekos & Moustakis, 2009, p. 167). Cross & Travaglione (2003) empirically demonstrated that entrepreneurs are characterized by high levels of emotional intelligence. Even though the findings do not provide any explanation as to why EQ is the “missing factor” in explaining entrepreneurial success, they further imply that EQ is a construct that is worth looking into in entrepreneurship research. Moreover, Baum & Bird (2010) proposed the addition of emotional intelligence as a fourth component to Sternberg’s Successful Intelligence (practical, creative and analytical) after finding a significant relationship between entrepreneurs’ emotional intelligence and the growth of their new venture.

Empirical research has shown that emotional perception and emotional management correlate more highly with performance than emotional understanding (Thi Lam & Kirby, 2002); the authors argue that “the ability merely to describe emotions and their relations to other sensory

experiences- a function of emotional understanding- may have very little impact on one's ability to harness emotions in the service of performing cognitive tasks" (Thi Lam & Kirby, 2002, p. 140). In addition, a meta-analysis by Joseph and Newman (2010) showed that the facets of emotional intelligence influence performance in a cascading manner with emotional perception preceding emotional understanding, which in turn precedes emotional regulation and job performance. This model supports the proposition that emotional management is the highest branch in the EI hierarchy (Mayer & Salovey, 1997). Moreover, the model supports the claim that emotion regulation allows individuals to induce and sustain positive affective states, which broaden behavioral repertoires, improve behavioral flexibility, increase attentional scope (Fredrickson, 1991) and enhance performance (George, 1991). We can extend those findings to the field of entrepreneurship and suggest that in the start-up process of venture creation: 1- "performance" consists of coming up with an idea, evaluating the validity of this idea, and selling the idea to new markets; and 2- good performance is likely to result in a successful venture creation. Therefore, it can be proposed that out of the four branches of EI, emotional management is the one that best predicts success of new venture creation.

## **2.6 The Role of Emotional Intelligence Vs. Successful Intelligence in New Venture Creation**

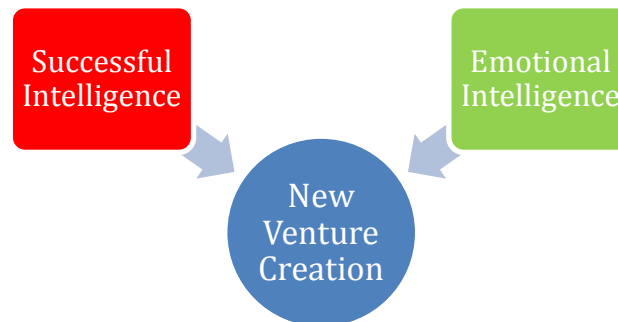
Even though the relationships between successful intelligence, and emotional intelligence with new venture creation have been established in the literature, and have, in a few studies, been all brought together to compare the magnitude of the relationships, no research has provided a comparative evaluation of how these different variables interact. The question of how different types of intelligence work together to lead to a successful new venture has not been previously

examined. This study is exploratory in nature and aims to describe the directed dependencies among the different sets of variables- emotional intelligence, successful intelligence and new venture creation- by testing the following three competing models:

- 1- Emotional intelligence, along with successful intelligence, directly affects new venture creation.
- 2- Successful intelligence mediates the relationship between emotional intelligence and new venture creation.
- 3- Emotional intelligence moderates the relationship between successful intelligence and new venture creation.

The three competing models are illustrated below:

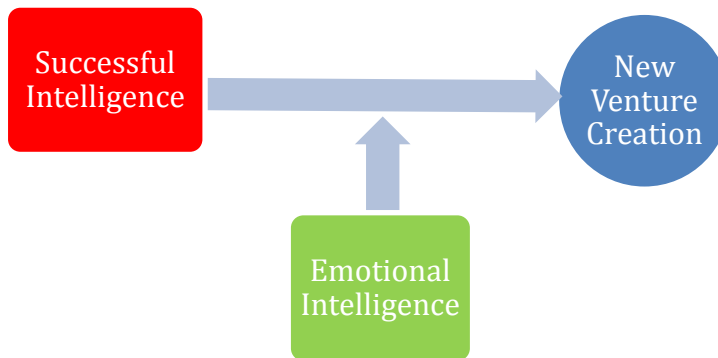
**Figure 1: Competing Models for the Relationship Between Successful Intelligence, Emotional Intelligence, and New Venture Creation**



*Model 1:* Emotional intelligence, along with successful intelligence, directly affects new venture creation



*Model 2:* Successful intelligence mediates the relationship between emotional intelligence and new venture creation



*Model 3:* Emotional intelligence moderates the relationship between successful intelligence and new venture creation

### 2.6.1 Model 1: Emotional Intelligence, Along With Successful Intelligence Directly Affects New Venture Creation

The first model proposed is derived from existing studies conducted on the topic of intelligence and new venture creation (e.g. Baum & Bird, 2010), which explored analytical, practical, creative and emotional intelligence as separate abilities influencing new venture growth.

### 2.6.2 Model 2: Successful Intelligence Mediates the Relationship Between Emotional Intelligence and New Venture Creation

The second and third models are based on Goleman's (1995) idea that the emotional and rational minds, although two semi-independent faculties, "operate in harmony" to guide one's actions through intertwined circuitry (Goleman, 1995, p. 8). As emotional intelligence influences rational thinking by "feeding into and informing the operations of the rational mind" (Goleman, 1995, p. 9), the second model proposed in this study places emotional intelligence as an antecedent to successful intelligence in the relationship leading to successful new ventures. This model is supported by previous research showing the mediating effect of some components of successful intelligence (creativity) on the positive relationship between emotional intelligence and attitudes towards entrepreneurship (Zampetakis et al., 2009). Moreover, the causal effects of positive emotions on creativity and on the subsequent recognition of entrepreneurial opportunities have been demonstrated by Baron (2008), and further validate this model.

### 2.6.3 Model 3: Emotional Intelligence Moderates the Relationship Between Successful Intelligence and New Venture Creation

The intertwined brain circuitry allowing the emotional and rational mind to influence one another can also entail a different type of relationship between successful intelligence and emotional intelligence in new venture success. Emotional intelligence can be viewed as a moderator of the "successful intelligence - new venture creation" relationship, affecting the direction and the strength of the relationship by either acting as a buffer or a catalyst to the effect of successful intelligence on venture performance. The influence of successful intelligence on venture success may therefore be augmented or diminished for individuals with different levels of emotional intelligence.



The concept of “emotional hijacking” presented by Goleman (1995) nicely illustrates how our emotional center can influence the work of the rational mind, and sometimes “take control over what we do even as the thinking brain is still coming to a decision” (Goleman, 1995, p. 15). Goleman uses this as a foundation for his theory to justify how the abilities to interpret and regulate emotions, two components of emotional intelligence, can allow individuals to control their emotions and subsequently to be in control over their actions. This notion is supported by a study by Thi Lam & Kirby (2002), which empirically showed that individuals’ emotional intelligence increases performance and productivity over and above the level attributable to general intelligence.

In line with Goleman’s reasoning, Thi Lam & Kirby (2002) suggested that perceiving and regulating emotions allow individuals to segregate emotions into positive and negative experiences, and use such information to either “guard against” or “build on” (Thi Lam & Kirby, 2002, p.140) the distractive or enhancing effects of emotions on the rational mind, and consequently on performance. In their paper, Thi Lam and Kirby (2002) refer to the “buffering” and “personal engagement” (p. 140) mechanisms of emotional intelligence that control the effect of emotions on task performance. Following the work of previous scholars such as Ashforth and Humphrey (1995), Kahn (1990, 1992), and Csikszentmihalyi (1990), Thi Lam and Kirby (2002) explain that buffering “involves encapsulating and segregating emotions so they do not interfere with the task at hand”, while personal engagement refers to emotional involvement in a task, and “reflects the highest level of motivation” that results in high performance. Individuals with high emotional intelligence are believed to be more capable of utilizing such mechanisms than individuals with low levels of emotional intelligence, in order to minimize the “hijacking”

impact of negative emotions on performance such as fear and anxiety (Seipp, 1991), and to channel positive emotions to achieve maximum productivity. This is in line with Lyon and Schneider's (2005) theory of challenge appraisal and threat appraisal that result from high and low emotional intelligence respectively, and that direct individuals' attention to either growth or threat opportunities.

These findings can be extrapolated to the field of entrepreneurship, and more specifically to the creation of new venture, a period during which entrepreneurs go through an emotional rollercoaster, and a time when taming the emotional mind may be important for successful decisions to be made and higher levels of performance to be attained.

In conclusion, this chapter provides a synthesis of the existing literature on intelligence and new venture creation, and highlights the value of analytical, practical, creative and emotional intelligence in the study of entrepreneurship, and more specifically in successfully creating a new venture. In addition to Sternberg's (2004) suggestion that entrepreneurs need a balanced combination of all three components of successful intelligence to 1) come up with ideas (creative), 2) evaluate the validity of the ideas (analytical) and 3) sell ideas to new market (practical), research in the fields of intelligence, performance and entrepreneurship all testify to the importance of a fourth kind of intelligence that deals with emotions. The emotional and rational minds are not completely independent faculties. However, the exact nature of relationship between cognitively driven intelligence, emotionally driven intelligence and success of new venture start-up has not yet been investigated. This study aims to explore three competing hypotheses on the role of emotional and successful intelligence in new venture creation. Below is a summary description of the key variables in the study:

**Table 1: Key Variables and their Definitions**

<i>Variable</i>	<i>Definition</i>
Successful Intelligence	Integrated set of analytical, practical and creative abilities needed to attain success in life, however an individual defines it, within his or her socio-cultural context ( <i>Sternberg, 1999, p. 274</i> )
Emotional Intelligence	Ability to perceive emotions, to access and generate emotions as to assist thought, to understand emotions and emotional meanings, and to reflectively regulate emotions so as to promote both better emotion and thought ( <i>Mayer &amp; Salovey, 1997, p.5</i> )
New Venture Creation	Process that roughly begins with the idea for a business and culminates when the products or services based upon it are sold to customers in the market” ( <i>Bhave, 1994, p. 224</i> )

### **3. Research Design: Measures and Methodology**

This chapter describes the research design used in this study to explore the potential interplay between successful and emotional intelligence in predicting success of new venture creation. Details on methods of recruitment, mode of data collection, measures used for each construct and analysis are discussed. Based on the literature related to new venture creation, and the definitions of the stages of new venture start-up, this study will focus on entrepreneurs who own a venture that is within the first six years of operations.

#### **3.1 Recruitment Procedures**

Five different approaches were used to recruit entrepreneurs for this study. Associations, such as the Youth Employment Services (YES) in Montreal (Canada) and the Young Entrepreneurship Council (YEC) in New Jersey (USA) that offer training and consulting services for entrepreneurs were contacted either by phone or by email. Representatives from these associations were briefed on the goals and objectives of the study, as well as on the potential benefits this research could bring to their organizations and to their members. The Youth Employment Services (YES) Montreal agreed to share the contact information of 138 entrepreneurs they had in their database, while the Youth Entrepreneurship Council (YEC) volunteered to forward an invitation to the study to their members. The number of entrepreneurs contacted through the YEC cannot be reported, as no records of the email blast sent to the YEC members were kept.

Academics from Concordia University with an interest in entrepreneurship were also approached and asked to share the contact information of entrepreneurs from the database they

have built through different school projects. The name and email address of 41 Canadian entrepreneurs was provided for this study.

Fourteen young entrepreneurs in the Montreal downtown area were personally approached and informed about the study. The researcher selected those entrepreneurs as potential candidates for this study. In addition the research and the research assistant used their connections, and reached out to 95 entrepreneurs within their international network to participate in the study by email.

Finally an advertisement targeting entrepreneurs in the United States and Canada was developed and launched through the social network website Facebook; the advertisement targeted profiles that contained the words “entrepreneurs”, “entrepreneurship”, “owner” and “founder”. The ad has been shown a total of 124,241 times on the website and resulted in 58 people clicking on the advertisement.

### **3.2 Sample Characteristics**

Of the estimated 346 entrepreneurs that were contacted for the study, 101 agreed to participate. Eight participants were screened out as they reported that their venture has been in existence for more than 6 years among which. In total 57 provided complete data. The group of participants who completed the study represents the sample of entrepreneurs used in all analyses.

The sample consisted of both men (59.6%) and women (38.6%) with a majority of participants between 25 and 34 years of age (66.7%). Most participants in the study were White/Caucasians (61.4%), and reported having a university undergraduate degree (45.6%) or a university graduate degree (36.8%). Entrepreneurs who had previous experience with venture creation represented 57.9% of the sample. More than half of entrepreneurs in this study (57.9%)

owned ventures in Canada, while the rest had businesses in other regions such as the Middle-East (26.4%), the United States (5.4%) and Central and South America (8.8%). Approximately half of those ventures were still in their first year of operation (45.6%), and entrepreneurs reported that their ventures operated in various industries such as Retail and Food Services (33.3%), Wholesale and Distribution (12.3%), Business and Professional Services (14.0%), Telecommunication and Information (5.3%), Transportation (5.3%), Tourism and Recreation (3.5%), or Other (21.1%) (For a more detailed description of the sample, refer to Appendix A).

### **3.3 Data Collection Procedures**

This study received a certificate of ethical acceptability by the University Human Research Ethics Committee (UHREC), before the research was conducted

Depending on the recruitment approach pursued to generate interest, participants received either 1- an email describing the study, with a link to an online test of intelligence, 2- a package containing a letter explaining the study and a hard copy of the test of intelligence, or 3- an advertisement link for the study through their Facebook profile, that redirects them to a new page with a description of the research and the online test of intelligence (Refer to Appendix B for a copy of the invitation letter). For entrepreneurs contacted by email, a total of 2 additional reminders (at a 2 week interval) were sent to further generate interest.

Participants were first asked to read and sign a consent form before participating in the study. Upon consenting, participants were given the option to provide their email address if they wished to receive a report at the end of the study comparing their performance on the tests of intelligence to that of other entrepreneurs within the sample and highlighting their strengths and potential areas of improvement, as well as to enter a draw for fourteen CA \$100 gift certificates

from Amazon.com. Participants were reassured that their participation will remain anonymous and confidential, and that their contact information will not be used for any reason other than sharing the report and the monetary compensation.

At the beginning of the questionnaire, participants had to answer a series of multiple-choice demographic questions (6 items), and other multiple-choice questions related to the venture (2 items) and venture performance (2 items). Participants were screened out from the study if they responded that their venture has been in operation for more than 6 years. The online survey was programmed in a way to redirect participants who provide such answer to the end of the questionnaire where they were informed that they were not eligible to continue the study and were thanked for their participation. For entrepreneurs who completed the hard copy of the test, it was confirmed with them prior to distributing the packages that their venture had been operating for less than 6 years.

Eligible participants were then given two tests of intelligence: the Sternberg's Triarchic Abilities Test (STAT) and the Situational Test of Emotion Management (STEM). They were provided with instructions, and informed of the amount of time required to answer each of 9 sections in the STAT, and the STEM, and were encouraged to complete the entire questionnaire (consisting of 36 items for the STAT and 30 items for the STEM) in no more than one hour. However, the time taken to complete the tests could not be tracked due to limitations in the survey-hosting website, and the inability to record time for entrepreneurs completing the hard copy version of the test. In order to account for entrepreneurs' busy schedules, participants were allowed to save their progress, and resume the tests at a later time, yet they were encouraged to complete it in one sitting. Upon completion of the questionnaire, participants were thanked for

providing their input to this study, and asked to confirm a second time their interest in receiving a report.

Email addresses for the 57 entrepreneurs who completed the study were entered in the draw to win one of the 14 CAN \$100 gift certificates from Amazon.com. A witness oversaw the process to ensure the fairness of the draw. Fourteen entrepreneurs were randomly selected as the winners of the gift certificates. These certificates to the winners were emailed with information on how to redeem their prize.

Two months following the end of data collection, participants received a report highlighting how they performed on the various tests of intelligence, and comparing their performance to that of other entrepreneurs in the sample, by reporting the percentile in which their scores are. The report also provided recommendations as to which abilities can be improved, and suggested a few readings based on the identified needs of each participant (See Appendix C for a template of the report).

### **3.4 Measures**

Four types of measure were used in this study; the Sternberg Triarchic Abilities Test (STAT) and the Situation Test of Emotion Management (STEM) - two previously validated tests in the literature - and two measures of venture performance that were developed for the purpose of this research.

#### **3.4.1 Measures of Successful Intelligence: Sternberg's Triarchic Abilities Test (STAT)**

Sternberg accompanied his theory of successful intelligence by a test referred to as the Sternberg's Triarchic Abilities Test (STAT), a multiple-choice assessment of analytical, practical



and creative intelligence (Sternberg & Clinkenbeard, 1995). The STAT is designed to measure each of the three cognitive skills-analytical, practical and creative- with three types of items: *verbal*, *quantitative* and *figural* (Sternberg, 1993; Sternberg et al., 1996), creating nine subscales: analytical-verbal, analytical-quantitative, analytical-figural, practical-verbal, practical-quantitative, practical-figural, creative-verbal, creative-quantitative, creative figural.

Sternberg refers to his test as STAT-H. Each of the 9 subscales consists of four items for a total of 36 items (Sternberg, 1996). Each of the multiple-choice items has four different response options (Sternberg, 1996). The different subtests consist of questions such as (Sternberg et al., 1996):

- 1- *Analytical-Verbal*: Figuring out the meaning of artificial words from the context in which they are presented.
- 2- *Analytical-Quantitative*: Figuring out the next logical number in a series.
- 3- *Analytical Figural*: Figuring out the next logical shape in a figural matrix.
- 4- *Practical-Verbal*: Finding the best solution to an everyday problem
- 5- *Practical-Quantitative*: Finding the solution to everyday math problems such as buying tickets for a game.
- 6- *Practical-Figural*: Finding the best route to navigate through an area depicted by a map.
- 7- *Creative-Verbal*: Solving verbal analogies proceeded by counterfactual premises such as “money falls off trees”, as though the premises were true.
- 8- *Creative-Quantitative*: Solving mathematical problems using new and unusual operations.
- 9- *Creative-Figural*: Figuring out the next shape in a figure series using the same pattern as a reference series.

Although three supplementary essay sections are present in the STAT, they were not included in the measure of successful intelligence for this study. Removing these items from the STAT does not affect the reliability of the measure, as Sternberg has already confirmed it in previous study (Sternberg, 2006).

Validation studies for the test of successful intelligence showed that Sternberg's Triarchic Ability Test (STAT) in all three subsections (analytical, practical and creative) correlate with measures of general intelligence (Koke & Vernon, 2003), a finding that is consistent with Gottfredson's (2003) argument that all mental abilities are related. Yet, in a study by Sternberg et al. (1999), the independence of the three types of intelligence (analytical, practical and creative) has been demonstrated, showing that each dimension of Sternberg's theory is a unique ability, and further confirming the independence of the different subsections of the STAT. These findings suggest that the theory of successful intelligence and the STAT both have *convergent-discriminant validity*.

Respondents' score on the STAT are determined using a scoring key. Respondents on the STAT are given a score of 1 if they select the correct option, and a score of 0 for all other options. A total for the STAT (STAT<sub>total</sub>) can then be developed, on which participants can score between 0 (if all answers are incorrect) and 36 (if all answers are correct). Totals can also be computed for the three sub-scales of the STAT (STAT<sub>analytical</sub>, STAT<sub>practical</sub> and STAT<sub>creative</sub>)

### 3.4.2 Measures of Emotional Intelligence - Situational Test of Emotion Management (STEM)

Scholars have disagreed on the best way to measure EI. With the many definitions that have been proposed, researchers have attempted to evaluate emotional intelligence with instruments

that differ in terms of content and methods of assessment. The distinction between “ability” and “trait-based” EI that respectively describe the construct as either a cognitive ability or an emotional self-efficacy, as well as the distinction between the ability- and the mixed-models of EI have led to two types of instruments for measuring EI: one that uses self-reports and another that employs maximum-performance or ability assessment procedures (Conte, 2005).

In line with the arguments for the ability theory of emotional intelligence, ability-based measures of emotional intelligence are believed to better represent an individual’s performance level on a task (Mayer, Salovey & Caruso, 2000) and to be more distinct from personality dimensions, therefore having higher discriminant validity than do self-report measures of EI (Conte, 2005). In addition, ability-based EI measures show higher correlation with general measures of intelligence (Van Rooy & Viswesvaran, 2004). According to Carroll (1993), ability tests are the most accurate measures of intelligence because intelligence corresponds to the actual capacity to perform well rather than people’s beliefs about those capacities. Therefore this research will focus on task-based ability measures of emotional intelligence, based on the theory that EI is an intelligence related to processing information (Mayer & Salovey, 1997). Ability tests seem to best represent emotional intelligence in terms of their content since they truly capture the abstract reasoning and adaptation facets of intelligence (Terman, 1921). Moreover, these measures seem to have incremental validity, and add to our understanding beyond what is already known or what can already be measured with existing measures such as tests of personality (Mayer, Salovey & Caruso, 2008)

### *The Ability-Based Measures of EI*

Many instruments measuring emotional intelligence as an ability have been developed based on Mayer and Salovey's (1997) four branches: emotional perception, emotional facilitation of thoughts, emotional understanding and emotional management. While some of the most popular instruments are encompassing of all EI branches and measure emotional intelligence as a global construct like the Multifactor Emotional Intelligence Scale (MEIS) (Mayer, Salovey & Caruso 1997) and its newer version, the MSCEIT (Mayer, Salovey, Caruso & Sitarenios, 2003), others focus on a specific branch and are intended to assess a specific facet of EI (e.g., Archer, Costanzo & Akert, 2001; Geher, Warner & Brown, 2001; Lane et al., 1996; MacCann & Roberts, 2008; Mayer & Geher, 1996). There are two problems with the MSCEIT: 1- it is not theoretically grounded (MacCann & Roberts, 2008), and 2- not all subtests are measured using the same scale. For instance, six of the eight subtests use a "rate-the extent" scale, in which test takers rate the appropriateness of each alternative, while the other two rely on a multiple-choice scale with a single correct response (Roberts, Schulze, & MacCann, 2008). This makes it difficult to know whether results are attributable to the construct examined or the measurement methods used (MacCann & Roberts, 2008).

### *STEU and STEM*

Two tests, the Situational Test of Emotional Understanding (STEU) and the Situational Test of Emotional Management (STEM) were developed to resolve the issues raised by the MSCEIT (MacCann & Roberts, 2008). The STEU is a multiple-choice questionnaire assessing emotional "understanding", in which test-takers are asked to choose among five emotions that are most

likely to result following a specific situation. Based on Roseman's (2001) theory of emotions, the STEU addresses the problem of MSCEIT not being theoretically grounded, and not relying on selecting the theoretically correct answers (MacCann & Roberts, 2008).

The STEM, on the other hand, was developed to address the test- vs. construct-effect that does seem to bias the MSCEIT results. This questionnaire, which assesses the "management" branch of EI, was shown to eliminate the test-effects that contaminate findings (MacCann & Roberts, 2008). According to MacCann & Roberts (2008), the two tests empirically verify the four criteria for the validity of an EI test:

- 1- STEU and STEM both correlate positively to other intelligence tests, demonstrating their belonging among other tests of intelligence.
- 2- STEU and STEM both correlate more strongly to other tests of EI such as the MEIS, demonstrating the distinctiveness of the EI they measure from other types of intelligences.
- 3- STEU and STEM both correlate to outcomes indicative of facility with emotions such as coping with stress.
- 4- STEU and STEM both correlate moderately with personality tests (.24) like other tests of ability, demonstrating that the EI they measure is part of the intelligence rather than personality domain.

Furthermore, empirical research has shown that emotional management and emotional understanding correlate with all three dimensions of successful intelligence:

## 1- Analytical Intelligence

According to Roberts et al. (2001), emotional understanding is most related to cognitive processing and abstract reasoning despite the common belief that emotional management is the most cognitive facet of EI. Emotional management is believed to be “at the interface between the cognitive system and the more general personality system” (Mayer, Salovey, Caruso & Sitarenios, 2001, p. 235) because it includes motivational, emotional and cognitive factors (Mayer, 2001). Empirical testing showed that among the four branches, emotional understanding correlates most highly with IQ; for instance, scores on the emotional understanding section of the MSCEIT were found to have the highest correlation with analytical intelligence measured by traditional tests, such as the SAT (Lopes et al., 2003). Moreover, studies have shown that emotional management is related to intellectual activities and performance on IQ tests (Baumeister & Tice, 1990) because emotional management deals with self-regulation and executive functioning abilities such as the ability to sustain attention (Lynam, Moffitt & Southamer-Loeber, 1993). Unregulated emotions, such as anxiety, were found to lead to harmed intellectual activity and performance (Baumeister & Tice, 1990).

## 2- Practical Intelligence

Although research on the relationship between emotional and practical intelligence is not extensive, the two construct are thought to be associated because “emotional abilities reflects attunement to social norms and expectations, and thus reflect common sense” (Brackett, Lopes, Ivcevic & Salovey, 2004) just like practical intelligence (Sternberg, 1999). Scores on the understanding and management branches of the MSCEIT were found to correlate modestly with

scores on a test for practical intelligence, the Tacit Knowledge Inventory (Grigorenko, Gil, Jarvin & Sternberg, 2002).

### 3- Creative Intelligence

Even though no direct correlations between emotional and creative intelligence have been investigated, it is believed that emotions are involved in the creative process. Based on previous research on the relationship between creativity and affect (Csikszentmihalyi, 1996), it can be suggested that emotional intelligence abilities are related to creativity. More specifically, it can be suggested that emotional facilitation of thought and emotional management influence creative intelligence because these two branches of EI are believed to aid people in planning and directing their behavior to optimize their creative performance (Csikszentmihalyi, 1996). Brackett et al. (2004) propose that being aware of the influence of mood on thinking allows people to “capitalize on emotional ups and downs so as to enhance their creativity” (p. 184).

The emotional management component of emotional intelligence has been suggested to be the highest branch of EI (Mayer & Salovey, 1997), and the strength of the STEM lies in its ability to provide a more integrative assessment of one’s emotional intelligence, including all the lower sub-branches: emotional perception, emotional regulation of thought and emotional understanding. Thus the STEM was considered as an appropriate measure of emotional intelligence for this study.

The Situation Test of Emotion Management (STEM) consists of 30 questions in which test-takers are presented with details about an emotional situation, and asked to choose among four responses the most effective course of action, or in other words the best strategy, to manage the emotions the person is feeling and the problems they face in a specific situation. The test does

not have right or wrong answers, as more than one course of action might be acceptable. Rather participants are asked to choose what they believe is the best response would be for the person facing a situation. While the STEM can be administered in both multiple-choice and rate the extent formats, this study only considered the multiple choice format, based on the findings of McCann & Roberts (2008) that multiple-choice tests of EI correlate more strongly with intelligence.

The multiple-choice format of the STEM is scored according to expert weights identified by McCann & Roberts (2008) while developing the STEM. Expert weights were developed by 13 Australian members of an emotional intelligence research consortium, professionally trained psychologists holding a master's degree or equivalent, or life coaches with experience in counseling or psychology" (McCann & Roberts, 2008, p. 544). To score test-takers' responses to the STEM, each option on a question is awarded with the proportion of experts choosing that option. For instance if 42% of experts selected option B for question 2, a response of B was awarded a score or .42. A total for the STEM ( $STEM_{total}$ ) can then be developed, on which respondents can score between 0.16 (if all answers match lowest expert weights) and 23.33 (if all answers match the highest expert weights).

### 3.4.3 Measures of New Venture Creation

Measuring performance and success of new ventures is a topic that has not always led to agreement among scholars. In a review of the literature conducted by Brush and Vanderwerf (1992), the multiple methods of measuring new venture success were identified and analyzed in order to make suggestions as to the best ways to collect performance information of new ventures. Among more than 35 measures extracted from the literature, the authors recognize the



prevalence of growth in sales, changes in number of employees and changes in profitability, along with the categorization of enterprises as operating vs. discontinued (Brush & Vanderwerf, 1992). Moreover, it was suggested that efficiency, growth and profitability are the most commonly used dimensions of performance (Murphy, Trailer & Hill; 1996). Brush and Vanderwerf (1992) also acknowledge the use of both objective and subjective measures in assessments of performance (Brush & Vanderwerf, 1992; Stuart & Abetti, 1988). Although one may think that subjective self-reported measures of success may be biased as they depend on the respondents' satisfaction with their ventures and do not provide exact numerical values (Dess & Robinson, 1984), it is agreed that their use is as reliable and as valid as objective measures (Brush & Vanderwerf, 1992; Orpen, 1993; Wall et al., 2004), especially in situations where performance indicators and financial records from company books are difficult to access. Wall et al. (2004) provided evidence for the convergent and discriminant validity of subjective measures of company performance by respectively showing their positive association with objective measures, and the strength of this relationship in comparison to the relationship between various measures of the same method (Wall et al., 2004). Moreover, they showed that subjective indicators of company performance have construct validity by showing that the relationship between subjective measures and a range of independent variable is equivalent to the relationship between objective measures and these same variables (Wall et al., 2004).

Two measures used to assess the degree of success of the new ventures were developed based on Murphy et al.'s (1996) prioritization of sales, profitability and number of customer as valid and reliable measures assessing venture performance. Business areas covered by other measures (such as marketing campaign investments, number of employees or suppliers, cash

flow and capital investments and debt levels) are more reflective of strategies new ventures can adopt to improve their performance, rather than performance outcomes resulting from decisions taken by entrepreneurs. The measures were also based on Wall et al. (2004) arguments for the use of subjective measures of performance, which, for the purpose of this study, helps reflect the individual's perceptions of success as defined by the concept of successful intelligence. Both measures developed consisted of a 5-point Likert scale where respondents rated performance of their venture in terms of sales, profitability and number of customers. In the first, participants are asked to self-report the change in the performance of their enterprise relative to their planned objectives (1- very low; 5- very high). In the second, they are asked to self-rate the change in performance of their enterprise relative to the performance of their industry (1-very low; 5- very high) (See Appendix D). Below is a summary of the measures used for each of the key variables, along with reported reliabilities and validities in the literature.

**Table 2: Measures Used for Each Variable, and their Reported Reliabilities**

<i>Variable</i>	<i>Measures Used</i>	<i>Reported Reliability</i>
Successful Intelligence	Sternberg's Triarchic Abilities Test	$\alpha = .80$ (Sternberg, Prieto & Castejon, 2000)
Emotional Intelligence	Situational Test of Emotion Management	$\alpha = .68$ (McCann & Roberts 2008)
New Venture Creation	Venture performance compared to planned objectives Venture performance compared to industry	Not Applicable

### 3.5 Analyses

Preliminary diagnostics were conducted to gain an overall view of the data collected, and inspect any errors, outliers, or other problems in the distribution of data. Tests for scale reliability were also performed, particularly tests for internal consistency to ensure that items within the STAT, the STEM, and the developed measures for new venture creation are consistent, and in line with reliabilities obtained in previous studies validating the scales. Correlations were run to detect significance of relationships across all variables. Furthermore, the assumptions for linearity, normality and collinearity were tested prior to the main regression analyses.

A regression model was generated for each of the three competing hypothesis in order to determine the directed dependencies among the sets of variables: Successful intelligence, emotional intelligence, and new venture creation. Independent variables were entered either simultaneously into the regression model in order to test their separate effect on the dependent variable (hypothesis 1), or in a stepwise fashion in order to assess the mediating effect of successful intelligence on the relationship between emotional intelligence and new venture creation (hypothesis 2). Centered scores were computed for each independent variable ( $SI_{centered}$ ,  $EI_{centered}$ ), along with a centered variable for the interaction between SI and EI ( $EI \times SI_{centered}$ ) (hypothesis 3). The regression equations that were used can be described as follow:

#### Hypothesis 1

$$NVC_{total} = b_0 + b_{SI} SI + b_{EI} EI + e$$

#### Hypothesis 2

$$NVC_{total} = b_0 + b_{SI} SI + b_{EI} EI + e$$

$$NVC_{total} = b_0 + b_{EI} EI + e$$

$$SI = b_0 + b_{EI} EI + e$$

### Hypothesis 3

$$\mathbf{NVC}_{\text{total}} = \mathbf{b}_0 + \mathbf{b}_{\text{SI}} \mathbf{SI}_{\text{centered}} + \mathbf{b}_{\text{EI}} \mathbf{EI}_{\text{centered}} + \mathbf{b}_{\text{EIxSI}} \mathbf{EIxSI}_{\text{centered}} + \mathbf{e}$$

where,

$\mathbf{NVC}_{\text{total}}$  = New venture creation

$\mathbf{SI}, \mathbf{SI}_{\text{centered}}$  = Successful intelligence

$\mathbf{EI}, \mathbf{EI}_{\text{centered}}$  = Emotional intelligence

$\mathbf{b}_0, \mathbf{b}_{\text{SI}}, \mathbf{b}_{\text{EI}}, \mathbf{b}_{\text{EIxSI}}$  = Parameter estimates

$\mathbf{e}$  = error

## 4. Results

### 4.1 Reliability

Table 3 shows the reliabilities and descriptive statistics for scores on the Situational Test of Emotion Management (STEM), the Sternberg Triarchic Abilities Test (STAT) and the two measures of venture performance. Reliabilities were acceptable for both the STEM<sub>total</sub> ( $\alpha = .58$ ) and the STAT<sub>total</sub> ( $\alpha = .70$ )<sup>1</sup>, and were in line with prior findings for those measures. For instance, McCann & Roberts (2008) reported an internal reliability of .68, while Sternberg et al. (2001) reported reliabilities for the STAT of .82 and .67 for three samples of students from different regions. Dividing the STAT into its sub-components, on the other hand, resulted in low reliabilities for the STAT<sub>analytical</sub> ( $\alpha = .46$ ), STAT<sub>practical</sub> ( $\alpha = .25$ ), and STAT<sub>creative</sub> ( $\alpha = .64$ ). These findings are in line with the low reliabilities obtained by Sternberg et al. (2001) for sub-components of the STAT. For their three samples of students, Sternberg et al. (2001) reported modest internal consistency for analytical ( $\alpha = .51; .32; .52$ ), practical ( $\alpha = .47; .28; .42$ ) and creative ( $\alpha = .57; .46; .70$ ) portions of the test. Therefore, only STAT<sub>total</sub> was considered for analyses.

The sub-sections within each measure of new venture creation were shown to be significantly correlated across all items (sales, profitability, and number of customers) as indicated in Table 4. This allowed to add the items on the two measures of new venture creation into two summative scales with high reliability: 1- New venture creation compared to industry, labeled NVC<sub>industry</sub> ( $\alpha$

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<sup>1</sup> Question 22 on the STAT was removed from the test, as responses showed zero variance. This resulted in a test of successful intelligence comprised of 35 items

= .90), and 2- New venture creation compared to planned objectives, or  $NVC_{objectives}$  ( $\alpha = .92$ ). Furthermore, participants' responses on these two scales were found to be highly correlated ( $r = .712, p < .000$ ), which in turn encouraged the combination of those two measures into a single summative scale representing performance of new ventures in relation to both industry and planned objectives, and labeled  $NVC_{total}$  ( $\alpha = .93$ ).<sup>1</sup> The new summative measure consisted of six 5-point Likert scale items, on which participants can obtain a total score of 6 (if they rated performance of their venture as "1-very low" on all items) and 30 (if they rated performance of their venture as "5-very high" on all items). Given that responses to a single item on the scale can be influenced by many factors not considered by this research, it is beneficial to combine items from each scale into an overall summative scale of new venture creation, as it allows detecting the consistency of participants' responses, and subsequently results in more reliable indicators of performance.

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<sup>1</sup> Analyses were conducted separately on both  $NVC_{industry}$  and  $NVC_{objectives}$ , and on  $NVC_{total}$ . Findings did not differ for the different operationalizations of the dependent variables, and therefore only the combined results into one scale of new venture performance ( $NVC_{total}$ ) were elaborated upon.

**Table 3: Reliability Estimates for the Measures of Successful Intelligence, Emotional Intelligence and New Venture Creation**

Variables	Current Study		Previous Studies	
	N	$\alpha$	N	$\alpha$
STAT <sub>total</sub>	35	.70	36	.80
STAT <sub>analytical</sub>	12	.46	12	.66
STAT <sub>practical</sub>	11	.24	12	.60
STAT <sub>creative</sub>	12	.64	12	.75
STEM	30	.58	30	.68
NVC <sub>industry</sub>	3	.90	-	-
NVC <sub>objectives</sub>	3	.92	-	-
NVC <sub>total</sub>	6	.93	-	-
NOTE:				
STAT <sub>total</sub> = successful intelligence				
STAT <sub>analytical</sub> = analytical intelligence				
STAT <sub>practical</sub> = practical intelligence				
STEM= emotional intelligence				
NVC <sub>industry</sub> = new venture creation compared to industry in terms of sales, profitability and number of customers				
NVC <sub>objectives</sub> = new venture creation compared to planned objectives in terms of sales, profitability and number of customers				
NVC <sub>total</sub> = new venture creation compared to industry and planned objectives in terms of sales, profitability, and number of customers				
n = number of items				
$\alpha$ = Cronbach alpha				

## 4.2 Correlations and Descriptive Statistics

Table 4 shows correlations between participants' scores on the test of successful intelligence, their scores on the test of emotional intelligence and their ratings for the performance of their new ventures (compared to both their objectives and the industry in which their ventures operate). Results show that total scores on tests of SI ( $M = 19.09, SD = 4.90$ ) and EI ( $M = 19.42, SD = 3.77$ ) do not correlate with one another ( $r = .19, p = .16$ ), and that there are no significant correlations between NVC<sub>total</sub> ( $M = 17.39, SD = 6.34$ ) and successful intelligence ( $r = -.05, p = .70$ ), nor between NVC<sub>total</sub> and emotional intelligence ( $r = .12, p = .39$ ).

In addition, the table reports correlation among the different demographic variables, the predictor variables of interest and the dependent variable. A significant correlation was observed between participants' educational level and the years of operation of their ventures ( $r = .31, p =$

.02), which is in line with the findings of Robinson and Sexton (1994) that highlighted the existence of a strong and positive influence of entrepreneurs' education on the success of ventures (Robinson & Sexton, 1994). This is also in concordance with the suggestions of Davidsson's (1991) who argued that higher education is a determinant of venture growth.

Moreover, entrepreneurs who reported having had a past experience in starting a new business gave lower ratings of performance for their new venture ( $r = -.30, p = .02$ ) than entrepreneurs who reported having no previous experience. This is in contradiction with the findings of Gartner (1990) and Rerup (2005) suggesting that entrepreneurs that have been raised by entrepreneurial parents, and that have had more experience (and failures) in starting a new venture are more likely to have successful firms.

Results also show that past entrepreneurial experience correlated with scores on the test of successful intelligence ( $r = -.31, p = .02$ ), but not with scores on the test of emotional intelligence ( $r = -.05, p = .69$ ). The significant negative correlation means that entrepreneurs with previous experience in starting a new business scored lower on tests of successful intelligence than entrepreneurs with no past experience. The findings also suggest that these correlations may depend on gender, as gender was found to be significantly correlated with entrepreneurial past experience ( $r = .30, p = .02$ ), and scores on successful intelligence ( $r = -.30, p = .03$ ) but not emotional intelligence ( $r = .09, p = .96$ ). The significant positive correlations between gender and past entrepreneurial experience, and scores on successful intelligence indicate that more women have had past experience in starting new ventures, but that women were more likely to score lower on the test of successful intelligence than men. No other



differences related to age, ethnicity, or industry type were observed for either tests of intelligence or for new venture performance.

**Table 4: Correlation Matrix of all Variables for the Sample of Entrepreneurs (N=57)**

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	1												
2. Sex	.05	1											
3. Education	-.20	-.39*	1										
4. Ethnic Background	-.16	.04	.12	1									
5. Past Experience	.04	.30*	-.19	-.08	1								
6. Country	.08	-.02	.04	-.04	-.14	1							
7. Years of Operation	.12	-.14	.31*	.04	-.23	.30*	1						
8. Industry Type	-.02	.11	-.12	-.17	.16	-.19	-.11	1					
9. Score on Successful Intelligence	-.20	-.30*	.16	-.03	-.31*	-.08	.17	.04	1				
10. Score on Emotional Intelligence	-.01	.09	.19	-.08	-.05	-.03	.10	-.11	.19	1			
11. New Venture Creation/Industry	.01	-.19	.03	-.21	-.26	.22	.17	.12	.02	.07	1		
12. New Venture Creation/Objectives	.02	-.20	.22	-.16	-.30*	.25	.17	-.08	-.12	.14	.71**	1	
13. New Venture Creation/Industry&Objectives	.01	-.20	.14	-.20	-.30*	.27	.18	.02	-.05	.12	.92**	.93**	1

\*  $p < .05$ , \*\*  $p < .001$  Note: Numbers in diagonal represent the reliabilities of the tests (Cronbach  $\alpha$ )

### 4.3 Model Fit

The three regression assumptions- linearity, normality and homoscedasticity, were verified through the visual scanning of histograms and scatter plots, while the assumption of multicollinearity was evaluated through the correlations among the predictor variables. None of the assumption was violated, and further screening of variables was considered unnecessary (See Appendix E).

As Table 5 indicates, Hypothesis 1 exploring the relationship between EI and SI as separate variables with new venture creation was not supported. Findings show that successful and emotional intelligence- entered simultaneously into the model- only accounted for 1.9% of the variation in new venture performance, and that subsequently the resulting model does not predict any significant relationship among variables ( $F = .53$ ,  $p = .59$ ). Moreover, the model suggests

that if successful intelligence were to predict new venture creation, it would be negatively related to entrepreneurs' venture performance ( $b = -.09, p = .58$ ). This unexpected finding means that as entrepreneurs' intelligence decreases, their ratings on the performance of their new venture would improve by .099 units. Emotional intelligence, on the other hand, would be positively related to new venture creation ( $b = .22, p = .34$ ).

$$\text{NVC}_{\text{total}} = 15.013 - .099 \text{ SI} + .220 \text{ EI} + e$$

Similarly, Hypothesis 2, which proposes that successful intelligence mediates the relationship between emotional intelligence and new venture creation, was not supported. EI and SI - entered in the regression model in a stepwise fashion - did not lead to any significant predictor effects. Nevertheless, results showed that the addition of successful intelligence slightly reduced the significance of the direct relationship between EI and NVC ( $b = .19, p = .39$ ) and increased the extent to which predictors account for the dependent variable by .06%. Although these reported values are minimal, they could imply the existence of a potential mediation effect. A SOBEL test was conducted to test whether successful intelligence carried the influence of emotional intelligence on new venture creation, and indicated that the mediation effect was non-significant ( $z = -0.38, p = .71$ )<sup>1</sup>.

$$\text{NVC}_{\text{total}} = 15.013 - .099 \text{ SI} + .220 \text{ EI} + e$$

$$\text{NVC}_{\text{total}} = 13.589 + .196 \text{ EI} + e$$

$$\text{SI} = 14.315 + .245 \text{ EI} + e$$

For Hypothesis 3, centered polynomials were computed for each independent variable ( $\text{SI}_{\text{centered}}, \text{EI}_{\text{centered}}$ ), along with a centered variable for the interaction between SI and EI ( $\text{EI} \times \text{SI}_{\text{centered}}$ ) to reduce possible multicollinearity among variables. These centered polynomials

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<sup>1</sup> The mediating effect of emotional intelligence on the relationship between successful intelligence and new venture creation was also tested using a SOBEL test, but did not lead to any significant results ( $z = -.48; p = .63$ )

were obtained by subtracting the mean scores on test of SI and EI from all values of SI and EI. Moreover, the interaction effect (EIxSI<sub>centered</sub>) was generated by multiplying the centered scores for SI and EI. Hypothesis 3 testing the moderating effect of emotional intelligence on the relationship between successful intelligence and new venture creation did not show any significant results. The generated model only accounted for 5.5% of change in the dependent variable, and was non-significant ( $F = 1.03, p = .39$ ). Moreover, the interaction effect (EIxSI), which represents moderation, was found to be non-significant ( $b = .05, p = .21$ ). The positive effect of the interaction variable may signify that if emotional intelligence were to moderate the relationship between successful intelligence and new venture creation, it would do so in an augmenting fashion, alleviating the negative effect of SI on NVC<sup>1</sup>.

$$NVC_{total} = 17.660 - .113 SI_{centered} - .194 EI_{centered} + .055 EIxSI_{centered} + e$$

#### 4.4 Post-Hoc Analyses

The unexpected findings obtained for the relationship between past experience, successful intelligence and new venture creation were further investigated using post-hoc analyses. Regression models were generated for 1- the impact of past experience and successful intelligence on new venture creation, and 2- the impact of past experience and emotional intelligence on new venture creation. Results showed that the relationship between past experience, successful intelligence and new venture creation was significant ( $F = 3.41; p = .04$ ), with the predictor variables accounting for 11.2 %.

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<sup>1</sup> Centered polynomials were also generated for all variables to test the three competing models on the relationship between successful intelligence, emotional intelligence and new venture creation. Yet they did not lead to any significant results

Model 1: ( $F = .297; p = .744$ )

Model 2: ( $F = .218; p = .643$ )

Model 3: ( $F = .264; p = .851$ )

$$\mathbf{NVC_{total} = 15.065 + 4.441 \text{ PastExperience} - .209 \text{ SI} + e}$$

On the other hand, results showed that the relationship between past experience, emotional intelligence and new venture creations was non-significant ( $F = 2.96$ ;  $p = .06$ ), with the predictor variables accounting for 9.9%.

$$\mathbf{NVC_{total} = 8.800 + 3.727 \text{ PastExperience} + .169 \text{ EI} + e}$$

It is important to note however that in both instances, successful intelligence ( $b = -.21$ ;  $p = .24$ ) and emotional intelligence ( $b = .169$ ;  $p = .44$ ) do not significantly predict new venture creation, and that the models generated are significant mainly due to the effect of past experience on new venture creation.

**Table 5: Regression Models and Coefficients for the Three Competing Hypotheses**

<i>Hypotheses</i>	<i>Model</i>	<i>R</i> <sup>2</sup>	<i>F</i>	<i>p</i>	<i>Coefficients</i>	
					<i>b</i>	<i>p</i>
1. Emotional intelligence, along with successful intelligence, directly affects new venture creation.	$NVC_{total} = 15.013 - .099 SI + .220 EI + e$	.019	.528	.593	$b_0 = 15.013$	.005*
					$b_{SI} = .099$	.578
					$b_{EI} = .220$	.345
2. Successful intelligence mediates the relationship between emotional intelligence and new venture creation.	$NVC_{total} = 13.589 + .196 EI + e$	.013	.752	.389	$b_0 = 13.589$	.004*
					$b_{EI} = .196$	.389
					3. Emotional intelligence moderates the relationship between successful intelligence and new venture creation.	$SI = 14.315 + .245 EI + e$
$b_{EI} = .245$	.159					
$NVC_{total} = 17.660 - .113 SI_{centered} - .194 EI_{centered} + .55 EI \times SI_{centered} + e$	.055	1.030	.387	$b_0 = 17.660$		
				$b_{SI} = -.113$	.476	
				$b_{EI} = -.194$	.407	
					$b_{SI \times EI} = .055$	.209

## **5. Discussion**

This research study was directed toward empirically testing three competing models on the relationship between successful intelligence, emotional intelligence and new venture creation: 1- Emotional intelligence, along with successful intelligence, directly affects new venture creation, 2- Successful intelligence mediates the relationship between emotional intelligence and new venture creation, and 3- Emotional intelligence moderates the relationship between successful intelligence and new venture creation.

The study did not show any statistical significance for the interaction between successful and emotional intelligence in predicting the success of new venture creation. More specifically, the findings suggest that the three competing hypotheses- 1- EI and SI as separate abilities influencing NVC, 2- SI as a mediator of the relationship between EI and NVC, and 3- EI as a moderator of the relationship between SI and NVC- were not supported and were unable to provide a clear a valid explanation as to the possible interaction among the three variables of interest. Nevertheless, the insignificant findings do not dismiss the existence of a relationship between different types of intelligence and performance of entrepreneurial ventures during start-up phases, and do not contradict previous studies that have established a link between successful intelligence, emotional intelligence, and new venture success (Baum & Bird, 2010). For instance, a positive relationship was found between EI and NVC, which is in line with previous studies such as the empirical work of Baum & Bird (2010) and Cross & Travaglione (2003).

An interesting finding, although insignificant, is the negative effect of SI on NVC, which is contradictory to previous studies (e.g. Baum & Bird, 2010; Baron, 2004; Czikszentmihalyi, 1996; LePine et al., 2005, Amers et al., 2005; Marchisio & Ravasi, 2001). The findings from this research suggest that entrepreneurs who are higher on successful intelligence give lower ratings for the performance of their venture than entrepreneurs who are low on SI. The discrepancy between results from this study and previous research could be due to the use of self-report measures of NVC. The literature on entrepreneurial venture performance has mainly employed objective measures of success such as annual sales growth rate and annual employment growth rate (Baum & Bird, 2010), positive cash flow (Carter et al., 1996), or a combination of subjective and objective measures (Gartner, 1990) that allow the triangulation of methods and findings. An interpretation of these findings could be that entrepreneurs with higher SI are better at identifying, evaluating and predicting their environment, the risks and uncertainties associated with it, and therefore are more realistic and critical in their self-reports of venture performance.

Nevertheless, findings from this study lead us to believe that a moderating effect of emotional intelligence may indeed influence the relationship between successful intelligence and new venture creation, as the coefficient of SI on NVC decreases when a moderation variable is considered. This is further supported by the slight improvement in the fit of the model.

Other unexpected findings were obtained for the relationship between previous experience and success of new venture creation. While the literature on the topic has not always been in agreement (Reuber, Dyke & Fischer, 1990), this research shows a negative correlation between past experience and self-reported measures of venture performance. In other words, this study suggests that entrepreneurs with past experience in creating a firm give lower ratings for their

venture success than entrepreneurs who had no such entrepreneurial experience. The difference between this study and others in the literature could be due to the self-report nature of the NVC variable. Entrepreneurs, who may have developed skills and abilities from previous ventures, could be more realistic in their ratings of success as they are more aware of risks and difficulties involved in creating a new company. This is in line with the findings by Fraser and Greene (2006) who empirically demonstrated the role of previous experience in reducing the optimistic bias of entrepreneurs (a tendency to be overly optimistic and overestimate one's talent and success). The different findings could also be due to the basic approach used to assess past venture experience (self-reports assessing whether entrepreneurs had or did not have previous experience in creating new businesses). The other research that studied past experience have considered more objective and comprehensive measures such as 1- number of previously created ventures (Dyke et al., 1992), 2- year of existence of previous businesses (Dyke et al., 1992), 3- other entrepreneurial influences such as family history (Hisrich & Brush, 1984; Duchesneau & Gartner, 1990). Furthermore, Reuber, Dyke and Fischer (1990) argued that mixed results were obtained when studying the relationship between experience and success, and that those conflicting findings may due to the different contexts, such as industry, in which ventures operate, and how relevant experience is within different industries. The sample recruited for this study consisted of start-up ventures from diverse industries, such as retail and food services, business and professional services, telecommunication and information etc. One can assume that previous entrepreneurial experience may be of value to ventures operating within the retail and food services industry but not relevant to ventures within the telecommunication industry.



In addition, the significant negative relationship obtained between SI and past entrepreneurial experience means that learnings from previous experiences in creating a new firm negatively influence the intelligence level of entrepreneurs. This is in disagreement with the findings by Rerup (2005), who proposes that past entrepreneurial experience, and more particularly past failures, positively affects opportunity discovery and exploitation, two processes driven by intelligent thinking (Baron, 2006). Again, this unexpected finding could be due to the use of a basic self-report measure of past experience, through which entrepreneurs may have overestimated or underestimated their past experiences in creating a venture.

### **5.1 Theoretical and Practical Implications**

Even though the proposed relationships between successful intelligence, emotional intelligence and new venture creation were found to be insignificant, the findings from this study demonstrate the value of considering both streams of research on intelligence- successful and emotional- to further investigate their combined effects on the success of a new start-up. Previous studies have largely been conceptual in nature (Sternberg, 2004; Baron, 2000; Baron & Markman, 2000), and the few that are empirically grounded are not directed to understand the possible interplay between different types of intelligence in the creation of new ventures (e.g., Nuñez, 1994; Baum & Bird, 2010). The existing literature in the field, supported by the results of this study, suggest that there is a possible moderation effect of emotional intelligence on the relationship between successful intelligence and new venture creation. This research indicate that successful and emotional intelligence are not separate abilities; rather they confirm Goleman's (1995) suggestion that the rational and emotional mind are interconnected, and that the centers for emotions influence or "hijack" (Goleman, 1995, p. 15) the operations of the thinking brain.

Moreover, the various studies describing the processes of emotional intelligence, and more specifically the mechanisms of emotion regulation - such as buffering and personal engagement (Thi Lam & Kirby, 2002) or challenge appraisal and threat appraisal (Lyon & Schneider, 2005) - lead to believe that the moderation effect of emotional intelligence on the relationship between successful intelligence and new venture creation is the most likely model.

On a practical level, the three competing models are worthy of further investigation as they can provide scholars, entrepreneurs, and organizations that support starting entrepreneurs, with a better understanding of the personal requirements for successful venture creation. Emotional, practical, and creative intelligence are abilities that can be developed (Goleman, 1995; Sternberg, 1997; Baum & Bird, 2010); understanding how the different types of intelligence interact to influence the success of a new start-up will shed light on how entrepreneurs can compensate for deficits in some types of intelligence by building competencies in other aptitudes. Similarly, it can inform organizations that support entrepreneurs on how to design training programs for entrepreneurs. Nevertheless, some types of intelligence may be less malleable than others, especially in adulthood where intelligence is malleable within much more limited parameters (Brody, 1985), and organizations providing training on intelligence should consider this in the design of training curricula. According to Goleman (1995), emotional intelligence is a malleable ability that could be nurtured even in adult years. Goleman's suggestions, coupled with the findings from this study, imply that training entrepreneurs in emotional intelligence may be the most beneficial as it allows individuals to identify and regulate emotions and to subsequently optimize the operations of the rational brain and the processes behind analytical, practical and creative thinking.

## **5.2 Limitations**

Many factors could have contributed to the insignificant findings for the three competing hypothesis. For instance, the sample size used in this research may have been too low to find effects. Also, the time taken to complete the different test of intelligence was not recorded due to limitations in the survey-hosting platform. Despite the fact that entrepreneurs were given instructions on the time required to complete each section of the STAT, and the STEM, there was little control over how long each participant took to complete the tests of intelligence. While some entrepreneurs taking part in this study may have respected the accorded time to complete the entire test, others may have spent a longer time responding to the questions, which subsequently may have influenced the consistency of results of the study. Moreover, the different formats of the test of intelligence administered to the sample (either web-based or paper-based version) may have accounted for some variability in responses.

In addition, due to the length of the tests of intelligence, and the option given to complete the tests in more than one sitting, a fatigue effect may have unequally influenced the performance of participants on the STAT and STEM, which in turn may have unevenly impacted scores across the sample. Furthermore, the sample consisted of entrepreneurs whose ventures operated in various industries and markets that could have different standards of performance and success, and diverse regions, where appropriate reactions to emotional situations may vary.

The scoring of the STEM using Australian or “Western” expert weights may have resulted in some variability in scores that are not representative of true entrepreneur abilities, but rather of regional differences in responding to emotional situations. Even though not all entrepreneurs operated their ventures in a “western” city, it is important to note that they were all exposed at

some point in their life to a western culture (north American), and therefore, that the limitation resulting from regional differences on STEM scores was minimal. It can also be stated that participants' exposure to a western civilization reduced to some extent the variability in responses to the STAT and the STEM that is due to language differences.

Finally, as previously discussed, the use of self-measures in assessing success of new venture creation may have accounted for the unexpected correlations between NVC, SI and past experience. Self-reports were used for convenience as it was difficult to access more objective measures of company performance. Participants' responses on those measures may have been influenced by previous experience and entrepreneurs' level of intelligence, with more intelligent and more experienced entrepreneurs providing more realistic estimation of their venture's performance.

### **5.3 Future Studies**

Despite not leading to significant results, the study validates the value of conducting research on the relations successful intelligence, emotional intelligence and new venture creation; more specifically, it is worth exploring the moderating effect of emotional intelligence on the relationship between successful intelligence and new venture, and to investigate the type of moderation involved in this relationship. It would be interesting to see if there is a threshold under or above which the levels of emotional intelligence influence the impact of SI and NVC.

Therefore, it is encouraged to replicate this study using a larger sample size to increase the power of the analyses, and concurrently administer shorter versions of the STAT and STEM to remove any confounding effect, such as fatigue, that may influence the results. A new version of the STEM comprised of 20 items was developed towards the end of 2010 (McCann & Roberts,

2010), and scholars interested in pursuing research on this topic may want to consider using it in future studies. Alternatively, as the sample size increases, participants can be randomly assigned to complete one of the two tests (STAT & STEM) instead of both, in order to reduce the fatigue effect that may influence reliabilities of the measures and the overall findings. It is also important to control for the time taken to complete the tests.

As previously discussed, it may be useful to consider assessing success of new venture creation using more objective measures of company performance such as annual sales growth, profitability, number of sales/clients, or using self-reports of objective measures, such as entrepreneurs' report of a positive cash flow, revenue stream etc. The unexpected findings in this study highlight an interesting area of research to consider; for instance, the question of whether self-reports are a valuable approach to assess new venture creation may be tested and compared to results from studies employing more objective measures of company performance. Subsequently, understanding how and why entrepreneurs with higher levels of intelligence report lower performance compared to entrepreneurs with low levels of intelligence could further inform the literature in entrepreneurship and intelligence on the relevance of subjective self-report measures in research on performance. Moreover, exploring how and why lower ratings of success are reported by entrepreneurs with past entrepreneurial experience compared to those with no previous experience could bring value to the field of entrepreneurship by revealing new entrepreneurial characteristics or by shedding light on other attributes of intelligence in the entrepreneurial context.

Another finding that may be worthy of further investigation is the relationship between gender, past entrepreneurial experience and new venture success. This study has shown

significant correlations between the three variables and suggests that women are more likely to have successful new ventures than men despite having lower scores on the test of successful intelligence. It would be valuable to understand why such findings were obtained, and more specifically confirm, if possible, whether there are gender differences in the four types of intelligence and in the way women and men rate the performance and success of their firms.

Finally, a new concept of intelligence labeled as *Appreciative Intelligence* has been developing in the field of entrepreneurship. This new concept, defined as “the ability to perceive the positive inherent generative potential within the present” (Thatchenkery & Metzker, 2006, p. 1) refers to the ability to perceive and reframe situations in a different light, “to see and select aspects of the present that are useful, valuable or desirable” (p. 2), and to identify ways in which the “possibilities of the present moment could be channeled” (p. 3). The idea of appreciative intelligence is one that is in line with the abilities of entrepreneurs to recognize opportunities and act upon them to create new ventures. It has also been linked to the entrepreneurial nature to shape the environment, and has been defined as a combination of four traits- persistence, conviction that one’s actions matter, tolerance for uncertainty, and resilience (Thatchenkery & Metzker, 2006). While the concept is still theoretical in nature, future research on entrepreneurial intelligence may want to include some aspects of this theory to the types of intelligence already investigated in the literature.

## **6. Conclusion**

An attempt has been made in this research to identify the relationship between successful intelligence (analytical, practical, creative), emotional intelligence and success of new venture creation in order to understand why some people are better than others at creating new ventures. Even though this study has not led to any significant findings, and was unsuccessful at determining the interplay between different types of intelligence in predicting the performance and success of ventures in their start-up phase, the results suggest a possible moderation effect of emotional intelligence on the relationship between analytical, practical and creative intelligence and new venture success, and showcase the importance of conducting additional research in this field. By fine-tuning the methodology, researchers may be able to build on this study to further explore the relations between the three variables of interest, and potentially confirm the strength and direction in which emotional intelligence moderates the relationship between SI and NVC, if such effect exists. Such investigations are valuable as they can provide entrepreneurs with a better understanding of the competencies needed to start a business, and ways to compensate for deficits in some types of intelligence by developing other abilities, or partnering with entrepreneurs who have complementary skills. Replicating this study can also bring valuable insights to associations who support entrepreneurs, investors and financiers on how to develop entrepreneurial competencies and how to allocate resources more efficiently.

This study also identified to need to further investigate the relationships between past entrepreneurial experience, successful intelligence and self-reports of new venture success. This may be an interesting avenue for future research to identify the effect of past entrepreneurial

experience on entrepreneurs' abilities and characteristics, and more specifically on the way entrepreneurs define success and set objectives for their venture performance.



## **7. Reflections**

The thesis process has been a great experience for me. Working full time while completing my research, even though challenging at times, has taught me to be more disciplined and has allowed me to develop my skills and competencies in managing projects. Overall the experience has been very valuable, and I was fortunate to have had the chance to apply the learnings from the thesis process to my job, and vice-versa.

Had I been given an opportunity to complete my graduate research again, I am positive I would have chosen a topic in the field of entrepreneurship, specifically a subject related to entrepreneurial characteristics and behaviors. The more I worked on this research, the more I grew to like the topic I selected with the help of my supervisor, and the more I found myself to be a proponent of the multi-dimensional school of intelligence and the inclusion of emotional intelligence as a component of entrepreneurial ability. Of course, the methodology used to test the influence of successful and emotional intelligence on new venture creation was developed, first and foremost, based on feasibility within the limited timeframe, and there are definitely aspects of the research design that I would have liked to do differently and findings that I would have liked to investigate more thoroughly.

Finally, despite not obtaining any significant findings, I can confidently say that I am proud of the outcome of this research. The key take home message for me is that research does not have to generate significant results to be considered informative and to contribute to knowledge; this study has clearly demonstrated to me that research with non-significant findings can inform future studies and have both theoretical and practical implications in its field.

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## 9. Appendices

### 9.1 Appendix A: Descriptive Statistics for Demographic and Venture Information

**Age**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	5	8.8	8.8	8.8
	25-29	22	38.6	38.6	47.4
	30-34	16	28.1	28.1	75.4
	35-39	7	12.3	12.3	87.7
	40-44	2	3.5	3.5	91.2
	45+	5	8.8	8.8	100.0
Total		57	100.0	100.0	

**Sex**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	34	59.6	60.7	60.7
	Female	22	38.6	39.3	100.0
	Total	56	98.2	100.0	
Missing	System	1	1.8		
Total		57	100.0		

**Education**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	4	7.0	7.1	7.1
	College	5	8.8	8.9	16.1
	University Undergraduate	26	45.6	46.4	62.5
	University Graduate	21	36.8	37.5	100.0
	Total	56	98.2	100.0	
Missing	System	1	1.8		
Total		57	100.0		

**Ethnic Background**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White/Caucasian	35	61.4	61.4	61.4
	Hispano/Latino	2	3.5	3.5	64.9
	Asian	7	12.3	12.3	77.2
	Black/African American	1	1.8	1.8	78.9
	American Indian/Native	1	1.8	1.8	80.7
	Other/Mixed	11	19.3	19.3	100.0
	Total	57	100.0	100.0	

**Past Experience**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	33	57.9	57.9	57.9
	No	24	42.1	42.1	100.0
	Total	57	100.0	100.0	

**Country**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Canada	33	57.9	57.9	57.9
	Middle East	16	28.1	28.1	86.0
	Central/South America	5	8.8	8.8	94.7
	United States	3	5.3	5.3	100.0
	Total	57	100.0	100.0	

**Industry**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manufacturing	1	1.8	1.8	1.8
	Telecommunication & Information	3	5.3	5.3	7.0
	Wholesale & distribution	7	12.3	12.3	19.3
	Transportation	3	5.3	5.3	24.6
	Business & professional services	8	14.0	14.0	38.6
	Agriculture, forestry, mining & fisheries	1	1.8	1.8	40.4
	Construction	1	1.8	1.8	42.1
	Tourism, accommodation & recreation	2	3.5	3.5	45.6
	Retail & food services	19	33.3	33.3	78.9
	Other	12	21.1	21.1	100.0
	Total	57	100.0	100.0	



## 9.2 Appendix B: Invitation to the study

### **The Role of Emotional Vs. Successful Intelligence in New Venture Creation**

Are you an entrepreneur? Did you know that different types of intelligence are necessary for the successful creation of a new firm?

Would you like to know how you perform on different tests of intelligence, and contribute to knowledge creation on the role of intelligence in new venture success?

Dear Mr./Ms.,

You are invited to participate in a study entitled: “The Role of Emotional Vs. Successful Intelligence in New Venture Creation”, which examines the relationship between different types of intelligence and the creation of a new business.

This study is in partial fulfillment of the requirements for the Masters of Science degree in Administration at the John Molson School of Business, Concordia University.

This study will:

- Shed light on how different types of intelligence (analytical, practical, creative, and emotional) influence new venture creation
- Involve a 1-hour test of intelligence
- Allow you to see how you compare to other entrepreneurs who participated in this study, and highlight opportunities to improve
- Allow you to enter a draw to win one of fourteen 100\$ gift certificates from Amazon.com

To participate in this study please click on the link below:

**<http://lms.concordia.ca/limesurvey/index.php?sid=26331&lang=en>**

Please note that the information you provide will not be disclosed to any third party and that the results of this study will only be used for research purposes.

Also note that you can save your answers and complete the questionnaire at a later time by clicking on the “Resume Later” button located at the lower left side of the page.

However, completing the test in one sitting is encouraged.

Thank you for your time and for providing your input to this study.

Karim Hamati

Master of Science in Administration Candidate  
John Molson School of Business  
Concordia University

### 9.3 Appendix C: Example of report shared with entrepreneurs at the end of the study

## The Role of Emotional Vs. Successful Intelligence in New Venture Creation

### Study Overview

The question of why some people are better than others at creating new ventures has received considerable attention in the entrepreneurship literature. One of the most influential work on the topic of intelligence and entrepreneurship is a paper written by Sternberg in 2004, in which he suggested that in order to thrive in an entrepreneurial career, individuals require a mix of three types of intelligence- analytical, practical and creative- a combination that he refers to as **successful intelligence**. Whereas *analytical intelligence* describes a person's ability to complete academic and problem-solving tasks, *practical intelligence* refers to the capability of adapting to everyday life by drawing on existing skills and tacit knowledge. *Creative intelligence*, on the other hand, refers to the ability to think flexibly and deal with new and unusual situation, and allows the generation of ideas. Sternberg (2004) argues that an entrepreneur needs a balanced combination of all three types of intelligence to come up with ideas (creative), evaluate the validity of the ideas (analytical) and sell the ideas to new markets (practical).

Parallel to this stream of research on successful intelligence, another research stream focused on **emotional intelligence** has been building in the last few years. This theory of intelligence, which is best described in Goleman's book entitled *Emotional Intelligence: Why it can matter more than IQ* (1995) defines emotional intelligence as a set of skills that allows individuals to "know and manage their own feelings" as well as "read and deal effectively with other people's feelings". Goleman argues that individuals have two minds -one rational that thinks and one emotional that feels- and that our intertwined brain circuitry "gives emotional centers immense power to influence the functioning of the rest of the brain, including the centers for rational thoughts"

The goal of this research is to build on the literature to provide a more comprehensive understanding of the nature of the relationship between emotional and successful intelligence, and their impact on the success of a new venture.

### Methods

Fifty-seven entrepreneurs who own ventures in their start-up phase completed online tests of successful and emotional intelligence, and reported on the success of their venture by comparing its performance to their planned objectives and to industry. The sample consisted of men and women entrepreneurs, mainly between 25 and 35 years of age, who owned businesses in different regions (North America, Central & South America, Middle East), and in different industries. The assessments used in the study were scored in the following manner:

Test of successful intelligence: Scores were determined using a scoring key. Correct responses were given a score of 1; incorrect responses were given a score of 0. Scores can range between 0 (if all answers are wrong) and 36 (if all answers are correct).

Test of emotional intelligence: Given that there are no correct or incorrect answers for the test of emotional intelligence, scores were determined according to expert weights identified by McCann & Roberts (2008). Expert weights were developed by members of an emotional intelligence research consortium, professionally trained psychologists holding a master’s degree or equivalent, or life coaches with experience in counseling or psychology. Scores can range between 0.16 (if all answers match lowest expert weights) and 23.33 (if all answers match the highest expert weights).

New venture performance: Using a 5-point Likert scale, participants were asked to self-report the performance of their venture relative to their planned objectives (1- very low; 5- very high), and relative to the performance of their industry (1-very low; 5- very high). Scores were combined into a single summative scale representing performance of new ventures in relation to both industry and planned objectives.

## Results

Despite not being significant, the findings from this study imply the existence of a possible effect of emotional intelligence on the relationship between successful intelligence and new venture creation, and thereby suggest the important of all four types of intelligence – analytical, practical, creative and emotional – on success of a new venture. These findings are worthy of further investigation as they can provide scholars, entrepreneurs, and organizations that support starting entrepreneurs, with a better understanding of the personal requirements for successful venture start-up.

Below is a breakdown of your performance on the test of successful intelligence (assessing analytical, practical and creative abilities) and the test of emotional intelligence. Your scores have been compared to those of other entrepreneurs who participated in the study.

Test	Score	Percentile
<i>Analytical intelligence</i>		
<i>Practical intelligence</i>		
<i>Creative intelligence</i>		
<i>Emotional intelligence</i>		
<i>Venture Performance</i>		

## Recommended Readings

The key message to take from this study is that analytical, practical, creative, and emotional intelligence are abilities that can be developed (Goleman, 1995; Sternberg, 1997; Baum & Bird, 2010). Below are some recommended readings on how to develop different types of intelligence.

### Successful Intelligence:

Albrecht, K. (2007). *Practical intelligence: The art and science of common sense*. San Francisco, CA: John Wiley & Sons.

Baum, J. R., & Bird, B. J. (2010). The successful intelligence of high-growth entrepreneurs: links to new venture growth. *Organization Science*, 21 (2), 397-412.

Buzan, T. (2001). *The power of creative intelligence: 10 ways to tap into your creative genius*. Thorsons

Sternberg, R. J. (1997). *Successful intelligence: How practical and creative intelligence determine success in life*. New York, NY: PLUME.

Sternberg, R. J. (2004). Successful intelligence as a basis for entrepreneurship. *Journal of Business Venturing*, 19 (2), 173-188.

### Emotional Management:

Boren, A. E. (2010). Emotional intelligence: the secret of successful entrepreneurship. *Leadership in Agriculture*, 2, 53-61.

Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. New York, NY: Bentam Dell.

#### 9.4 Appendix D: Measures of New Venture Creation

On a scale of 1 to 5 (with 1 = very low; 5 = very high), please rate the performance of your venture, relative to your planned objectives, on the following items

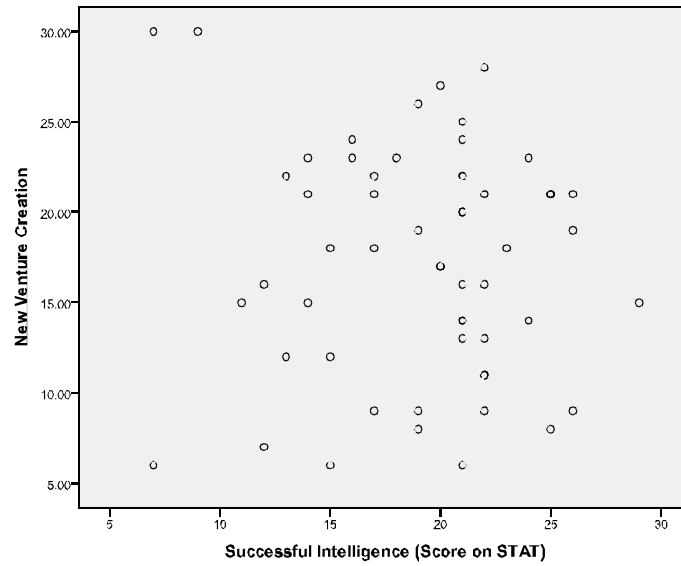
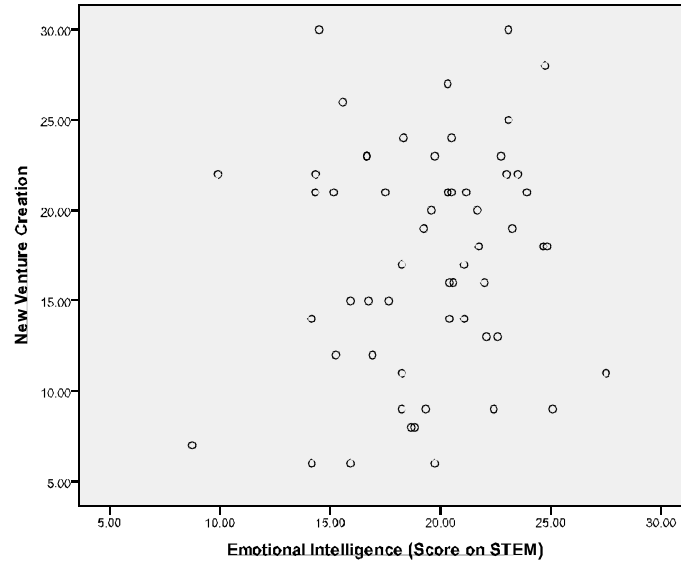
Sales	1	2	3	4	5
Profitability	1	2	3	4	5
Number of customers	1	2	3	4	5

On a scale of 1 to 5 (with 1 = very low; 5 = very high), please rate the performance of your venture, relative to your industry, on the following items

Sales	1	2	3	4	5
Profitability	1	2	3	4	5
Number of customers	1	2	3	4	5

## 9.5 Appendix E: Regression Assumptions

Figure 2: Regression Assumptions of Linearity



**Figure 3: Regression Assumptions of Normality**

