ABSTRACT

The purpose of this study is to better understand whether emotional aspects affect entrepreneurs’ and owner-managers’ decisions in investment situations when escalation of commitment can be observed and where the level of uncertainty was also added to the emotional aspect. The study was performed using conjoint analysis (a.k.a stated preference technique) and yielded following results: positive emotions (self-confidence and hope) increase the decision-maker’s propensity to escalate. The same effect is observed if the situation is perceived as challenging. Frustration and embarrassment do not, on the other hand, make the entrepreneur prone to escalate. The result remains the same for all emotions but strain regardless of the level of uncertainty. Strain does not in any case affect escalation propensity.

INTRODUCTION

Entrepreneurs’ and SME managers’ decisions about investments have a major impact on an organization’s efficiency and, in the end, its future existence. Decisions may have unforeseen consequences and in a business context we therefore rely on entrepreneurs and managers to make the right decisions. The theoretical area of decision-making is widely explored from numerous perspectives, such as a formal-empiricist perspective (Cohen, 1993). This perspective focuses on behavioural testing of normative models, however, not so much on cognitive processes underlying decisions. The formal-empiricist perspective is quite similar to the rational (also called analytical [Cohen, 1993]) perspective, which suggests various techniques for applying decision theory in management consulting (Ulvila and Brown, 1982; Keeney and Raifa, 1976). This perspective also identifies and investigates numerous decision biases (Tversky and Kahneman, 1974, Einhorn and Hogarth, 1981; Slovic, Fischhoff and Lichtenstein, 1977). We also hold knowledge why decisions – and thereby investments – sometimes fail when bounded rationality puts limitations on what is humanly possible (Simon, 1957). What we lack, however, is insights into reasons why entrepreneurs and managers make decisions that they know will probably not lead to the desired outcome, in other words, what makes decision biases, such as escalation of commitment, so persistent. How come that experienced entrepreneurs and managers decide to keep investing financial resources into a project that they beforehand know is probably a failure and that might be nothing but throwing good money after bad? There are strong reasons to assume that emotions play a major role for decision-makers in cases where sunk monetary costs, i.e. resources already used up (Ross and Staw, 1993) are already a fact. Most people can probably relate to situations where decisions have been made (or taken) in affect when the decision is emotional rather than financially rational (cf. Simon 1955). Further, Simon (1987) has added emotions as a human aspect embedded in decisions. That entrepreneurs and managers are not merely rational “computers” and that emotions matter in entrepreneurial and managerial processes is today a well established argument (Baum, 1995; Baron and Hannan, 2002; Brundin, 2002; Markman et al., 2002; Nair, 2003; Shepherd, 2003; Cardon et al., 2004). Emotions constitute an asset that is
unexploited and most probably underestimated and there is thus reason to pursue an interest in how emotions matter in decision-making about investments combined with the phenomenon of escalation.

A novel approach to this phenomenon is demonstrated by Karlsson et al. (2004). According to the authors, escalation of commitment is driven by powerful emotions, namely that this behaviour tends to dampen the feeling of disappointment arising from unsuccessful prior investments and increase feelings of happiness and hope/challenge resulting from increased commitment. Although the results of Karlsson’s et al. (2004) study are conclusive, it should be noted that the subjects of the study were laymen (psychology students). In order to fully understand the phenomenon among professionals there is a need to turn to this category in order to increase the ecological validity. Therefore the present paper attempts at studying escalation of commitment among professionals, i.e. entrepreneurs and managers of small and medium-sized businesses, henceforth labelled entrepreneurs.

In this paper we will suggest and test a set of hypotheses of entrepreneurs’ emotions when making decisions about underperforming investments. We will investigate how emotions will affect the willingness to escalate or not to escalate. We will test our hypotheses on 3136 decisions nested within 98 entrepreneurs. We will rely on empirically as well as theoretically based emotions that have proven to play a role in entrepreneurial and strategic leadership (Brundin, 2002) as well as in escalation of commitment (Karlsson et al., 2004) namely challenge, hope, frustration, strain, embarrassment and self-confidence.

However, there is also reason to believe that the level of uncertainty is a factor of importance in decision-making situations where the entrepreneur faces sunk cost. Is it more likely that entrepreneurs make decisions if they feel hope or self-confidence than when they are frustrated or strained? Likewise, is it reasonable to think that the higher the uncertainty is, the more would these emotions matter? The present study therefore also aims at investigating another aspect of the escalation phenomenon, which has not been previously addressed by research, namely, how the level of uncertainty concerning the project might affect the decision-maker’s propensity to escalate in connection with felt emotions. According to the correspondence-accuracy principle (Hammond et al., 1987; Gustafsson, 2006) decision-making tasks at different levels of uncertainty would induce different decision modes in order to yield an adequate decision. Thus low uncertainty tasks would call for analytical (rational) decision-making, whereas moderately to highly uncertain tasks would induce non-analytical (heuristic or intuitive) decision-making mode. In this respect it becomes possible to assume that escalation of commitment in highly uncertain projects could, in fact, represent useful heuristics, and not a decision bias. In order to empirically test these assumptions entrepreneurs in a decision-making situation are confronted with the investment situations of high and low uncertainty; decision behaviours in both situations are compared.

This paper aims at several contributions. Our prime contribution is to better understand whether emotional aspects affect entrepreneurs’ decisions in investment situations when escalation of commitment can be observed. We combine the theoretical fields of cognitive psychology/decision bias research (including escalation of commitment) with the emotion literature in order to set our hypotheses which are tested on professionals. However, we take this a step further in showing that when escalation of commitment is a fact it is affected not only by the decision-makers’ emotions but also by the level of uncertainty. This is to our knowledge not yet tested on entrepreneurs and the knowledge is important considering that consequences of such decisions may jeopardize a firm’s existence and its employees. Our second contribution is to the emotion and escalation literatures where the phenomenon of emotions in the setting of an escalation situation is still in a premature stage. Specifically, we add knowledge to theories where the self justification concept is the main explanation of the escalation of commitment.

Next section will present our theory and hypotheses. From there follows a description of our method and the collection of 98 decision-makers’ 3136 investment decisions where the dependent variable is the willingness to escalate in situations characterized by high and low uncertainty levels and where the decision maker perceives a set of emotions. A section of results, discussions and implications will conclude the article.

ESCALATION OF COMMITMENT AND EMOTIONS IN DECISION-MAKING FOR UNDERPERFORMING INVESTMENTS

Following the advances in cognitive psychology, e.g. the emergence of naturalistic paradigm (Cohen, 1993), emotions and cognitive biases have emerged as theoretical phenomena in entrepreneurship research (cf. Mitchell et al., 2002). Escalation of commitment, or propensity of a decision-maker to continue an investment in an unsuccessful project, is a recognized decision bias (Staw and Ross, 1978; Staw, 1981; Brockner, 1992). This decision behaviour, although irrational from a normative point of view, is nevertheless common among laymen as well as entrepreneurs (McCarthy et al., 1993;
Birmingham et al., 2003; Juliusson, 2003; Karlsson et al., 2004; 2005). Psychological research suggests a number of explanations; so far, the self-justification theory when people continue investments in a failing project because they have a need for self-justification has been prevalent (Brockner, 1992). However, self-justification theory provides only partial explanation of a complex phenomenon of escalation (cf. Karlsson et al., 2005). Supplementary theories exist, e.g. escalation can be explained through prospect theory when people demonstrate risk-taking behaviour being confronted with a loss (Northcraft and Neale, 1986). In general, as Brockner (1992) points out, following Staw and Ross (1978), escalation of commitment, being a complex phenomenon, can be explained through studies on the individual level, group level and organisational level of analysis. The present study is conducted on the individual level of analysis being concerned with how the decision-makers’ emotions affect willingness to escalate.

Research has already pointed out that entrepreneurial decision-making often departs from the rational economic model (Kahneman and Tversky, 1973; Bazerman, 1986). More recent studies revealed that entrepreneurs are indeed prone to numerous decision biases, such as counterfactual thinking, affect illusion, self-serving bias, planning fallacy, and self-justification (Brockner, 1998). The self-justification theory shows that project responsibles have a tendency to justify a failing course rather than interrupt it when they realize the upcoming financial setback (Staw, 1976; Ross and Staw, 1986). They simply seem to be more motivated to pursue their investments. If the entrepreneur continues to invest it shows persistence and thereby strong leadership (cf. Staw and Ross, 1980; Yukl, 2006). Other decision biases are overconfidence or representativeness errors (Busenitz and Barney, 1997); and overconfidence, illusion of control, and misguided belief in the law of small numbers (Simon, Houghton and Aquino, 2000). An explanation of this decision behaviour can be found in the role of entrepreneurial environments, characterised by information overload, high uncertainty or novelty, strong emotions, time pressure and fatigue (Brockner, 1998). Further, it has been proven that it is hard to separate from something that you have invested a lot of time, effort and even yourself in (Belk, 1988; Pierce et al., 2001). Taking all these factors into account it is not surprising to assume that entrepreneurs can be prone to escalation of commitment, and this propensity can be influenced by strong emotions, such as these that will be tested here: Challenge, Embarrassment, Frustration, Hope, Self-confidence, and Strain (Brundin, 2002; Karlsson et al., 2004).

Following Rafaeli and Sutton (1987), Isen, Daubman and Nowicki (1987) and Kopelman, Rosette and Thompson (2006) and others (cf. Russell, 1980) we categorise emotions into positive or negative emotions. An emotion is positive when the individual perceives the situations as favourable and has a good feeling in general and therefore aims higher (Brockner, 1990). Positive emotions also tend to make people more prone to creative thinking (Carnevale and Isen, 1986; Barbalet, 1996; Dequech, 2000). In an underperforming situation this would imply that the decision-maker appreciates the situation as surmountable and believes that the outcome is positive. On the other hand, an emotion is negative when the individual is not certain about his/her own capacity and is blurred or blocked by the emotion from thinking straight; the emotion makes him/her avert to uncertainty (Dequech, 2000). In accordance with the prevailing discourse on positive and negative emotions, Challenge, Hope and Self-confidence are here classified as positive whereas Embarrassment, Frustration and Strain are classified as negative.

**Positive emotions and escalation of commitment**

Hope is an emotion that involves goal achievement, agency and pathways to one’s goals (Snyder, 1995; Henry, 2004). It is a firm belief in one’s capacity to reach goals (Snyder et al., 1996) and “an overall perception that goals can be met” (Henry, 2004, p.385). In a similar way, however more social in character, Averill, Catlin and Chon (1990) argue that hope is governed by a goal that is under control to a certain degree and is in between probability to be attained and in accordance with social acceptance. Hope and optimism are two related emotions and both are part of control expectancies but the source of hope is clearer than that of optimism (Henry, 2004; Magaletta and Oliver, 1999). Optimism is a generalized expectation, possibly influenced by outside forces whereas hope involves both agency and pathways at equally important levels. However, the goal achievement, agency and pathway do not necessarily change simultaneously; it is more likely that one component is a catalyst for a change in one or two of the others (Snyder, 1995) and it takes practice and experience to be able to make use of them (Henry, 2004; Ames and Archer, 1988). In conclusion, entrepreneurs are thus positive about the probability to reach the goal in an escalation situation, and ways to do it, regardless of the setback of having lost money initially. For a definition, hope is experienced when the entrepreneur feels that it is likely and possible that the situation will turn out as expected and s/he feels there are good chances for the investment to end up as s/he wishes.
Challenge is a call to fight or battle (Collin’s Co-build, 1987). Instead of making an individual passive, challenge calls for action and is an action-motivating emotion where the individual perceives possible gains (Henry, 2004). Henry connects challenge to hope insofar that when the individual is in the process of overcoming challenge, s/he develops new solution pathways. Brundin (2002) has empirically found challenge to be an emotion that matters in radical change processes for strategic leaders in order to face exciting or difficult tasks. For entrepreneurs, challenge thus involves readiness to act and to find new solutions in order to achieve a positive investment outcome. For a definition, challenge means that the entrepreneur feels that something is exciting and new or is a difficulty that s/he can face and that demands his/her efforts and decisiveness in order to succeed.

Self-confidence is an emotion that refers to a belief in one’s self. The concept of ‘self’ stands for a reflection of what an individual thinks about him- or herself of being capable of (Pierce et al., 1989). Confidence involves action and agency (Barabaelet, 1996) and we therefore claim that self-confidence involves self-projection that spurs the individual to action. Further, in a parallel argumentation to that of Barbalet, self-confidence is a feeling that is future orientated insofar that it “brings the future into the present by providing a sense of certainty to what is essentially unknowable so that assured action with regard to it may be engaged” (1996, p.81). For entrepreneurs, self-confidence make them goal directed and keen to pursue highly esteemed projects (cf. Snyder, 2002) as well as willing to face uncertainty (Dequech, 2000). For a definition, self-confidence is experienced when the entrepreneur feels certain that the investment will turn out well and that s/he has the ability to manage and s/he is not afraid.

Thus, the following hypotheses are formulated:

Main effects:

\[ H1: \text{The stronger the positive emotions ([a] self-confidence, [b] hope, [c] challenge) entrepreneurs perceive about an investment, the more likely they will escalate their commitment to this investment.} \]

\[ H2: \text{The relationship between the strength of positive emotions ([a] self-confidence, [b] hope, [c] challenge) entrepreneurs perceive an investment and the likelihood that they will escalate their commitment to this investment is more positive when uncertainty of the investment is high than when it is low.} \]

Negative emotions and escalation of commitment

The prevailing discourse for entrepreneurs is to be successful. Success stories are reinforced in media as well as in teaching cases, whereas sustaining a loss is not as ‘sexy’ and glamorous. Even if these cases are an excellent source of learning (cf. Shepherd, 2003) it is reasonable to think that it is not easy to confess a failure and thereby face embarrassment. Darwin (1872/1965) touches upon embarrassment in his classical account about shame as preachment of etiquette. Similarly, embarrassment and shame are equalled by Izard (1977) whereas Flicker and Hill Barlow (1996) from an experiment draw the conclusion that they are two separate emotions. Since it is probably not easy to separate embarrassment and shame and people do intend to experience a mixture of the two we will view them as pat of the same phenomenon, albeit slightly different in intensity, where the former is connected to one’s presented self and the latter to one’s core self (Shott, 1979). Embarrassment is the result of the threat a person feels about his/her social identity (Goffman, 1956); Keltner and Buswell (1997) argue that embarrassment is part of violating social convention insofar that it increases the exposure. From a literature review the authors find reasons for embarrassment being, among others, cognitive shortcomings and loss of control. In a decision-making process, embarrassment probably have cognitive connotations (cf. Campos et al., 1983) where the decision-maker relates a possible failure to uneasiness in light of losing self-esteem, concern for other’s evaluation or lack of scripts for how to act (Keltner and Buswell, 1997). Most people would avoid embarrassment (Brown, 1970) however the fear for embarrassment is, according too van Boven, Loewenstein and Dunning (2004) so strong that it makes people passive rather than forcing them to face social exposure of inaccurate behaviour. Miller and Leary (1992) claim in a similar way that a person’s desire to avoid embarrassment governs what s/he does not do more than what s/he actually does. Embarrassment for entrepreneurs in decision-making about failing investments implies that they anticipate other people’s negative evaluation and they do not want to lay bare their incompetence and face a possibly greater loss. So they cut off the investment instead of pursuing a lost course. For a definition, embarrassment in this study is when the entrepreneur feels uneasy and awkward since he/she risks to ‘lose face’.

Frustration stems from the so-called basic emotion anger (Ekman, 1992) and has been widely investigated (e.g. Averill 1983; Tavris, 1989; Lazarus, 1991; Braithwaite, 2001). Most researchers consider frustration as a dysfunctional emotion, often leading to stress (Fineman, 2003; Hutri and
Lindeman, 2002; Levinson, 1996); having a bad influence on performance (McColl-Kennedy and Andersson, 2002) and correlated to counter-productive behavioural responses (Fox and Spector, 1999). A less pessimistic view of frustration is found in Brundin’s (2002) classification of emotions in a strategic change context. She claims that frustration is a feeling of ‘something being in the way’ and disturbing the leader’s plan and therefore the leader wants to get rid of this obstacle (2002, p.250). For entrepreneurs this implies that their frustration about an underperforming investment affects them in such a way that they are prone to make a decision which is at the time the easiest ‘way out’. They therefore cut off the investment in order to get rid of the obstacles instead of the possibility to face more hindrances. For a definition, frustration is when the entrepreneur feels upset and annoyed because something is out of the usual control and disturbs the plans and renders the entrepreneur difficulties.

The underpinning meaning of strain is embedded in Shaver at al.’s (1987) listing of sadness words with emotions such as agony, suffering, anguish, despair, hopelessness and the like. Strain is an emotion that has a negative impact on a person’s well-being leading to tension, fatigue, exhaustion and in some cases to mental illness (Fineman, 2003; Karasek, 1979). Brundin (2002) found in her study on emotions that strain may make strategic leaders vulnerable and less compassioned about the strategic goal. Strain/stress encompasses appraisal as well as coping (Lazarus, 1991; 1999) i.e. strain is how the individual interprets the situation and how s/he responds to it. Strain arises when what the entrepreneur appraises severely thwarts or jeopardizes his/her goals and intentions. In a decision about a seemingly failing venture s/he is therefore not his/her usual self and avoids making any further efforts to save the investment. The decision-maker wants to get rid of the burden that the investment represents and therefore cuts the investment off. For a definition, strain is when the entrepreneur is worried and tensed by the situation that is physically and/or mentally trying.

From the above we pose that
H3: The stronger the negative emotions ([a] frustration, [b] embarrassment, [c] strain) entrepreneurs perceive about an investment project, the less likely they will escalate their commitment to this project.

and that
H4: The relationship between the strength of negative emotions ([a] frustration, [b] embarrassment, [c] strain) entrepreneurs perceive about an investment project and the likelihood that they will escalate their commitment to this project is more negative when uncertainty of the project is high than when it is low.

RESEARCH METHOD

Experimental technique
We used a metric conjoint experiment to analyze entrepreneurs’ decisions to escalate their commitment to an investment. In conjoint experiments, individuals draw decisions based on a number of attributes, which are described by different levels (e.g., high and low) and represent the independent research variables (the decision represents the dependent variable). The combination of several attributes with predetermined levels constitutes a profile (scenario) to which the individuals assign their judgements. Conjoint studies have been applied widely in the fields of marketing, psychology, strategic management, and many other disciplines (Green and Srinivasan, 1990). In entrepreneurship research, for example, Choi and Shepherd (2005) studied how stakeholders judge a venture’s newness, and Shepherd, Etterson, and Crouch (2000) investigated how venture capitalists assess the profitability of a new firm depending on its strategy.

The particular advantage of an experimental design is that, as compared to post-hoc methods such as questionnaires, interviews or surveys, individuals’ assessments are not biased due to their mistaken or missing introspection (Shepherd and Zacharakis, 1997). Research has shown that this bias can be substantial and likely influences the results obtained (Fischhoff, 1988; Zacharakis and Meyer, 1998). Moreover, in contrast to rank-order conjoint techniques, metric conjoint analysis has the advantage that it enables researchers to analyze contingent relationships between variables (Hitt and Barr, 1989; Prem and Harrison, 1994). Since our hypotheses 3 and 4 postulate such relationships, a metric conjoint experiment is the appropriate technique for this study.

Despite these advantages, we would like to point out potential limitations of conjoint experiments. Specifically, scholars have stated that participants may only take the attributes described in the scenarios as relevant for their assessments because those are part of the experimental task, and that the experimental design may be too abstract for individuals to be perceived as real-world situations (Shepherd and Zacharakis, 1997). That is, conjoint experiments have been criticized for sometimes lacking face (or ecological) validity. To counteract these limitations, we followed the recommendations of Shepherd and Zacharakis (1997) and Karren and Barringer (2002) and a) included only emotions where strong theoretical argumentation as presented above suggests that they impact
entrepreneurs’ escalation decisions, and b) asked individuals after performing the experimental task -
to self-report the importance of the described emotions for their decisions on a Likert-type scale from 1 (not important) to 7 (very important). Average responses were as follows: self-confidence 5.7, hope 5.3, challenge 4.4, frustration 2.8, embarrassment 1.9, strain 2.7. These values suggest that all emotions at least to a certain extent influence the decisions of the individuals participating in our study. Finally, it is important to stress that the face validity of conjoint experiments was already verified in the early days of the methodology (Brown, 1972; Hammond and Adelman, 1976), which certainly was a prerequisite for its extensive use across disciplines over the last 30 years (Green, 2001).

Sample description
Our sample frame is entrepreneurs and managers of Swedish SMEs. A web-based conjoint questionnaire was sent out to 898 entrepreneurs and SME managers nationwide, i.e. to the companies’ CEOs who might also be full or partial proprietors. The study is carried out in the recent entrepreneurial cognition frame, which means that an entrepreneur is defined by his/her behaviour under condition of novelty, risk and/or uncertainty (cf. Mitchell et al., 2002; Gustafsson, 2006). In this case the CEOs are assumed to act entrepreneurially while facing the experimental conditions of risk and uncertainty. This definition relies implicitly on the assumption of Austrian economic school that any individual, possessing the necessary information, can behave entrepreneurially (cf. Casson, 2003).

Given the time and finance constraints, the web-based tool provided an acceptable compromise compared to personal visits. Out of the total, 98 questionnaires were valid. The response rate of 11% can be explained by the questionnaire’s character and by the fact that many entrepreneurs of SMEs are still unused to work with web designed tools and to read text on the screen. According to the comments from the participants they perceived the questionnaire as complex and at times difficult to comprehend. However, there was also evidence of intrigued participants by comments sent to us by e-mails such as: “a topic of major interest so let me know the result” and “I wish I knew how emotions affect me when I make important decisions, so let me know what comes up”. The 98 valid answers were considered sufficient grounds for statistical analysis and conclusions.

With respect to age, 2% of the participants were younger than 35 years old, 25.3% were between 35 and 45 years of age, 38.4% between 46 and 55 years old, and 34.3% older than 55 years. Two per cent were female, and 75% held a college or university degree. Areas of education included business administration, technology, social sciences, arts and humanities, with the majority of the participants holding their education majors in business administration (37.8%) and technology (41.8%). On average, participants held their current positions in their firms for 6.4 years (std. dev. 5.4 yrs.) with 74% of participants being CEOs. Twenty six per cent of participants were also owners of their firm. The firms were on average 50.1 years old (std. dev. 44.7) and on average employed 209 people (std. dev. 296). The majority of the companies in the sample fall in the category of small and medium-sized firms. This is in accordance with an EU definition from 2005 where company size can be broken down into micro firms including 1-9 employees; small firms – 10-49 employees; medium-sized firms – 50-249 employees and large firms if they employ over 250 employees. It ought to be pointed out that the sample can be subject to survival bias, due to the companies’ average age of 50 years. This is clearly a limitation of the study; however, statistical analysis so far has not revealed any side effect from the “company age” variable.

We also took an interest in experienced entrepreneurs. Experience was defined by the number of years in the top managerial position. We assume that sufficient experience is obtained when the decision-maker reaches the stage of “proficient performer” (Dreyfus and Dreyfus, 1989) or “expert” (Ericsson et al., 1993). According to Ericsson et al. (1993) to reach the “expert” stage takes between 7 and 10 years of practice in the chosen area. Thus entrepreneurs who held their current position for 7 or more years were considered experts and those holding the position for 5 or more years were considered proficient performers. In our sample 60 per cent of participants have 5 or more years of experience in their current position and are labelled experienced entrepreneurs.

Research instrument and experimental design
Our data collection is based on an online survey instrument. Potential participants were invited by email to participate in our study. As part of our email invitation letter, contacted individuals were provided with a link to the web page of the experiment. In order to exclude double participation, this link was deactivated once the entrepreneurs completed the experimental task. The first three pages of the experiment provided a short description of its purpose and the task of the participants, as well as a more detailed description of the attributes and their levels (see below). Moreover, participants were told to assume that they were acting in today’s economic environment in Sweden and to consider all other factors potentially influencing their decisions as constant across all profiles. They were then
asked to decide whether they would increase their investments into a subsequently described hypothetical investment based on the emotions and uncertainty they perceived about the project. Each investment project was presented on one web page. After completion of their task, participants had to fill out a post-experiment questionnaire where they were asked to provide demographic information including the information reported above.

Since each scenario in our experiment includes seven attributes with two levels each, \(2^7 = 128\) attribute combinations are possible. The evaluation of 128 scenarios appears a time-consuming task for professionals, and conjoint experiment typically contains about 30 scenarios. In order to reduce the attribute combinations to a similar number, we applied an orthogonal factorial design (Hahn et al., 1966). This resulted in 16 different profiles. The orthogonal design ensured that correlations of attributes are zero and multicollinearity is eliminated (Huber, 1987). Our fractional factorial design confounded main effects and all two-way interactions of most interest (involving project uncertainty) with other two-way and higher order interactions which makes is unlikely that the latter will bias our results (Green et al., 1990; Louviere, 1988).

We followed Shepherd and Zacharakis (1997) and Karren and Barringer (2002) and tested for reliability of answers by replicating profiles and performing test-retest checks. Full replication of all 16 attribute combinations resulted in 32 profiles. Since some authors have argued that the order of profiles and attributes affects results of conjoint experiments, we randomly assigned the 32 profiles as well as the attributes in two ways each, which yielded four versions of our experiment. These were then randomly distributed among participants. Consistent with other studies, we found no significant difference across versions and conclude that order effects had little impact on our results.

Finally, we included a ‘practice’ profile as a first evaluation task in order to make participants familiar with the decision situation before entering into the experiment (Shepherd and Zacharakis, 1997). This profile was excluded from the statistical analysis. Our final experimental design thus consisted of 33 profiles.

**Description of the decision situation and variables**

In a general description of the *decision situation*, participants were asked to imagine a situation in which their company “has made a major investment (about 2% of the annual turnover) in a new project. As it turns out there is a need of an additional 15% of the invested sum.” This description indicates that (a) the project has been ongoing for some time and sunk costs have occurred, and (b) that the project will fail if the investment is not substantially increased. Thus, it describes a typical situation where decision-makers may escalate their commitment to a failing course of action by increasing investment (e.g. Staw 1981, Garland 1990). Such a situation which includes novelty, uncertainty and relatively high stakes also represents a typical entrepreneurial context (cf. Baron, 1998; Gustafsson, 2006).

The *dependent variable* of our study is the entrepreneur’s willingness to allocate further resources to the above described project. A similar dependent variable analyzing allocation of resources has been used in experimental studies on escalating commitment and persistence of underperforming projects before (Garland 1990, Sabherwal et al. 2003). We asked entrepreneurs to assess their willingness to allocate further resources to the project on a seven-point Likert-type scale anchored by the end points “completely willing to cut off the investment” and “completely willing to continue the investment”.

The *independent variables* in our experiment are described by seven attributes, each of which is described by two levels. These attributes are split among six that describe the emotions perceived by the decision-maker (Self-Confidence, Hope, Challenge, Frustration, Embarrassment, Strain), one that describes the uncertainty associated with the project. In the scenarios, feelings of emotions were described as either strong or weak, whereas uncertainty was described as either high or low. A sample profile is included in appendix A.

We used *control variables* on the individual level to account for variance across individuals. First, we controlled for the age of the participant. Older individuals are usually more risk-averse than younger individuals and may thus be more willing to cut-off a potentially failing project instead of taking the risk to waste further resources. Second, we used a binary variable to describe whether the participating entrepreneur was also an owner of her/his company. Ownership may indicate an enhance feeling for project responsibility, which is main driver of escalating commitment (Staw, 1981). Third, we controlled for the age of the participant’s firm. Older firms may be less entrepreneurially oriented than younger firms and thus entrepreneurs of these firms may be more willing to cut off investment projects. Finally, we controlled for firm size. Larger firms have more resources and thus continuing an uncertain project which fails afterwards has likely less devastating effects on survival and performance than for small firms. Thus, entrepreneurs of larger firms may be more willing to invest further resources in a failing investment.
RESULTS

Our statistical analysis draws on 32 decisions from 98 individuals, thus yielding a total of 3136 data points. However, these data points are not independent since each set of 32 observations is nested within an individual entrepreneur. We therefore applied Hierarchical Linear Modelling (HLM), which accommodates autocorrelation and potential heteroskedasticity of data (Hofmann 1997). HLM has been applied in conjoint experiments before (e.g. Hitt et al. 2004).

Table 1 presents our results. We report for each variable the standardized coefficient, the corresponding standard error, the t-ratio, and level of significance (indicated by the asterisks).

Results in Table 1 show that all emotions except strain have a direct effect on the entrepreneurs’ decision to escalate their commitment to an entrepreneurial project. That is, the entrepreneurs’ willingness to increase their investments in the failing project increases with stronger feelings of (a) self-confidence, (b) hope, and (c) challenge, and decreases with stronger feelings of (d) frustration, and (e) embarrassment. In terms of our hypotheses, H1a-c and H3a and H3b receive support, whereas H3c is not supported.

However, our theory also suggested that the impact of entrepreneurs’ perceived emotions on their escalation decisions is moderated by the uncertainty of the project. Thus, our model also includes interactions between emotions variables and uncertainty. Table 1 shows that two out of six interactions are significant. Specifically, we find interactions between (a) self-confidence and (b) hope and project uncertainty in entrepreneurs’ decision policies to escalate commitment. In order to understand these interaction effects in more detail, we plot self-confidence/hope (x-axis) against the entrepreneurs’ willingness to increase the investments (y-axis) and draw plot separate lines for low and high uncertainty (Figure 2). Since we do not find significant interactions between uncertainty and challenge, frustration, embarrassment, and strain, our hypotheses H2c and H4a-c are not supported.

Figure 2A demonstrates that, based on their decision policy, entrepreneurs are more likely to escalate their commitment to an entrepreneurial project when they feel self-confidence with respect to the investment and that this relationship is more positive when uncertainty is high than when it is low. The nature of this significant interaction provides support for Hypothesis 2a. Moreover, Figure 2B demonstrates that, based on their decision policy, entrepreneurs are more likely to escalate their commitment to an investment when they feel hope with respect to the investment, and that this relationship is more positive when uncertainty is high than when it is low. The nature of this significant interaction provides support for Hypothesis 2b.

DISCUSSION AND IMPLICATIONS

This paper sets out to hypothesise whether emotions matter in escalations situations. In conclusion, it is possible to say that entrepreneurs, while making re-investment decisions, are strongly affected by various emotions, which can lead to the escalation of commitment. Self-confidence and Hope significantly increase decision-maker’s propensity to escalate. Similar effect is demonstrated when a decision-maker perceives the investment situation as challenging. On the other hand, negative emotions such as Frustration and Embarrassment decrease the escalation propensity. The emotion of Strain shows no significant correlation with the propensity to escalate. This paper contributes to and enhances our knowledge about escalation in investments in several ways:

Regarding implications, the result is intended to render entrepreneurs in decision-making positions an increased insight and understanding for their behaviour in the aspect of escalation of commitment. The paper supplements what has been found about self justification and adds the fact that emotions play a role among professionals when they decide to further invest or not. Further, different emotions play a different role which has practical implications. First, that professionals who feel hope and self-confidence are willing to increase their propensity to invest when the uncertainty is high is a good sign in general. Without people taking such decisions we would probably miss out on great opportunities. For these reasons it can also be argued that it is not desirable to computerise all decision-making. In fact, our findings are quite in line with the Todd and Gigerenzer’s (2000) assumption of “fast and
frugal” decision-making. According to the authors, in the situations that lack information (e.g. under conditions of risk and/or uncertainty), decisions are often made by use of heuristics, or mental shortcuts. These decisions are fast, as they don’t involve much computation, and they are frugal, because decision-makers only take into consideration the most salient cues. Notably, Todd and Gigerenzer point out that emotions often pose as such cues and make grounds for making “fast and frugal” decisions.

A question that remains unanswered by the present study is whether making emotion-based decisions can be considered an adequate behaviour. The answer, however, would to a certain extent depend on the researcher’s theoretical frame. It is widely known that the rational decision-making paradigm regards any decision which departs from the strict rules of statistics as irrational – and, therefore, biased or harmful (cf. Kahneman and Tversky, 1973). The modern naturalistic paradigm (cf. Cohen, 1993), and especially the correspondence-accuracy principle (CAP; Hammond et al., 1987) have relaxed this assumption. According to CAP, no decision is good or bad per se, but can be adequate or non-adequate, depending on the correspondence of the decision-making mode and the situation’s cognitive properties. Thus, conditions of uncertainty would call for the use of heuristics in order for a decision to be adequate. However, the ability to match the decision-making mode with the situation’s demand is a property of expert decision-makers (Hammond et al., 1987). Expert entrepreneurs do possess this ability (Gustafsson, 2006); that is why we strongly believe that emotion-based decisions should not be solely regarded as inappropriate and inadequate. Entrepreneurs are notorious action-takers (Sarasvathy, 2001); thus, if they possess expert decision-making skills, it is quite logical to assume them to be able to make adequate heuristics-(or emotions-) based decisions, in accordance with the situation’s cognitive nature.

On the other hand, as Gustafsson (2006) suggested, the strong influence of positive emotions could be the way for decision-makers to cope with the situation’s uncertainty, i.e. to function successfully under conditions which are typical for entrepreneurs and are characterised by high information overload, uncertainty and fatigue (cf. Baron, 1998).

Strain does not affect the propensity to invest which is an important contribution to the literature on the consequences of stress. Professionals seem to be able to disregard this emotion in their decision-making process. That embarrassment and frustration affect the propensity not to escalate is perhaps not surprising considering their definitions. However, the implications to practitioners with employees it is perhaps less advantageous that frustration withholds from pursuing a course since Brundin, Patzelt and Shepherd (forthcoming) have found that displayed frustration tends to increase entrepreneurial orientation among employees.

Some major issues of this study also call for future investigation. First, in this study, uncertainty was not significant on the first level however this was the case on level 2. This calls for further studies on uncertainty.

Karlsson et al (2004) claim that escalation makes decision makers feel good and that hope, challenge and happiness are the result of escalation. In our study we are showing, that these emotions are prior to, or at least simultaneously to the decision making. This calls for future research on the emotionalizing process in decision-making. Further, entrepreneurs in accordance with Wong, Yik, and Kwong (2006) try to avoid negative emotions. This is also what we see in this study, namely in order to avoid frustration and embarrassment the entrepreneur simply puts an end to the investment and thereby try to get rid of such a negative feeling. Future studies can try to understand how this affects entrepreneurs in a longer run. Finally, all emotions in this study are cognitive in character, i.e. based on reflection and evaluation (Lazarus, 1991; Scherer, 2005) and the positive emotions are action-oriented (Barbalet, 1996; Henry, 2002; Snyder, 1995) as well. A future research agenda should take more aesthetic emotions (Lazarus, 1991) into account in escalation processes.

REFERENCES


<table>
<thead>
<tr>
<th>Evaluation criteria</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>t-ratio</th>
</tr>
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<tbody>
<tr>
<td>Intercept</td>
<td>4.245</td>
<td>0.108</td>
<td>39.432***</td>
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<tr>
<td><strong>Positive emotions</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Self-confidence</td>
<td>1.106</td>
<td>0.101</td>
<td>10.929***</td>
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<tr>
<td>Hope</td>
<td>0.510</td>
<td>0.068</td>
<td>7.451***</td>
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<tr>
<td>Challenge</td>
<td>0.327</td>
<td>0.059</td>
<td>5.521***</td>
</tr>
<tr>
<td><strong>Negative emotions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frustration</td>
<td>-0.111</td>
<td>0.041</td>
<td>-2.724**</td>
</tr>
<tr>
<td>Embarrassment</td>
<td>-0.138</td>
<td>0.039</td>
<td>-3.540**</td>
</tr>
<tr>
<td>Strain</td>
<td>0.059</td>
<td>0.039</td>
<td>1.505</td>
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<tr>
<td><strong>Interactions</strong></td>
<td></td>
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<tr>
<td>Self-confidence x Uncertainty</td>
<td>0.346</td>
<td>0.085</td>
<td>4.040***</td>
</tr>
<tr>
<td>Hope x Uncertainty</td>
<td>0.159</td>
<td>0.075</td>
<td>2.136*</td>
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<td>Challenge x Uncertainty</td>
<td>0.030</td>
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<tr>
<td>Frustration x Uncertainty</td>
<td>0.033</td>
<td>0.059</td>
<td>0.553</td>
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<tr>
<td>Embarrassment x Uncertainty</td>
<td>0.076</td>
<td>0.063</td>
<td>1.187</td>
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<tr>
<td>Strain x Uncertainty</td>
<td>0.005</td>
<td>0.057</td>
<td>0.088</td>
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</table>

*p<.05; **p<.01; ***p<.001; n=3360 decisions nested within 105 entrepreneurs
Figure 1: Model for entrepreneurs’ likelihood to escalate commitment to an entrepreneurial project
Figure 2: Interaction effects between entrepreneurs’ perceived uncertainty and (A) self-confidence and (B) hope about an entrepreneurial project

A
Likelihood to escalate commitment

B
Likelihood to escalate commitment
Appendix A. A sample profile: Emotional aspects in decision making

V1 xaz

Your company has made a major investment (about 2% of the annual turnover) in a new project. As it turns out there is a need of an additional 15% of the invested sum. How willing are you to (on a scale from 1 to 7) to cut off or continue the investment if you feel the emotions below:

I feel:

- **Self-confident** Strong: I feel certain that it will turn out well and that I have the ability to manage and I am not afraid.
- **Frustrated** Weak: I feel upset and annoyed because something is out of my usual control and disturbs my plans and renders me difficulties.
- **Challenged** Weak: I feel that something is exciting and new or is a difficulty that I can face and that demands my efforts and decisiveness if I am to succeed.
- **Strained** Weak: I feel worried and tensed by a situation that is physically and/or mentally trying.
- **Hopeful** Weak: I feel that it is likely and possible that it will turn out as expected and I feel there are good chances to be as I wish.
- **Embarrassed** Weak: I feel uneasy and awkward since I risk to ‘lose my face’.

The uncertainty of the situation is **High**

Prognoses are contradictory and hard to interpret and the opinions in the management group are divided. The likelihood to succeed is unknown.

<table>
<thead>
<tr>
<th>Completely willing to cut off the investment</th>
<th>Completely willing to continue the investment</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
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