WHAT DO THEY THINK AND FEEL ABOUT GROWTH NOW? REVISITING SMALL BUSINESS MANAGERS ATTITUDES TOWARDS GROWTH (SUMMARY)

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TRAPPED BY THE ENTREPRENEURIAL MINDSET?
AN EXAMINATION OF REGULATORY FOCUS
AND ESCALATION OF COMMITMENT IN
ENTREPRENEURIAL ACTION

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Abstract

What distinguishes successful from unsuccessful entrepreneurs? Scholars have proposed that, by enabling flexible adaptation to a dynamic environment, the entrepreneurial mindset facilitates pursuit of new venture creation. However, the same cognitive adaptability that is attributed to the entrepreneurial mindset, and deemed responsible for the relentless persistence to which many entrepreneurs ascribe their success, can also lead to undue persistence and escalation of commitment under slightly less favorable circumstances. Building on regulatory focus theory, we examine the conditions under which the entrepreneurial mindset can go from strength to weakness, transforming the entrepreneurial mindset from a core competency that encourages perceptual and behavioral readiness into a core rigidity that is susceptible to escalation of commitment.

Introduction

The entrepreneurial mindset, often portrayed as cognitive adaptability, is considered by most scholars to be a core competency necessary to achieve desired entrepreneurial outcomes. This “ability to be dynamic, flexible, and self-regulating in one’s cognitions given dynamic and uncertain task environments” (Haynie, Shepherd, Mosakowski, & Earley, 2010: 218) allows entrepreneurs to adapt from environmental feedback and continue pursuit of their goals. This persistence in the face of adversity is an important part of the entrepreneurial process (DeTienne, Shepherd, & De Castro, 2008; Holland & Shepherd, 2013) because it allows entrepreneurs to strive for growth and wealth creation (Certo, Covin, Daily, & Dalton, 2001; Ireland, Hitt, & Sirmon, 2003).

However, when entrepreneurs continually persist and “maintain commitment to a losing course of action, even in the face of quite negative news” (Brockner, 1992; Sleesman, Conlon, McNamara, & Miles, 2012: 541; Staw, 1997), persistence can devolve into escalation of commitment. Entrepreneurs have been found to be even more susceptible to escalation of commitment (McCarthy, Schoorman, & Cooper, 1993), which is often operationalized as “throwing good money after bad” (Sleesman et al., 2012: 541). Therefore, the cognitive adaptability of the entrepreneurial mindset can go from a strength to a weakness, transforming the entrepreneurial mindset from a core competency that encourages perceptual and behavioral readiness into a core rigidity that is susceptible to escalation of commitment.

This paper hopes to reconcile conflicting expectations that can be attributed to an entrepreneurial mindset by introducing regulatory focus (Hmieleski & Baron, 2008; Wu, McMullen, Neubert, & Yi, 2008) as a theoretical lens to identify the conditions under which the entrepreneurial mindset is likely to lead to self-regulatory dysfunction known as escalation of commitment. Regulatory
Focus Theory (Higgins, 1997) distinguishes between (1) a promotion focus, which is evoked by approach-oriented motives and goals, such as return maximization, and (2) a prevention focus, which is evoked by avoidance-oriented motives and goals, such as risk minimization.

We use conjoint analysis combined with a post-experimental survey of regulatory focus to test empirically our hypotheses. Participants complete a conjoint analysis aimed at determining the relative importance of the determinants of escalation of commitment and then complete survey measures of regulatory focus. With this research, we make contributions to the existing literature on the entrepreneurial mindset, escalation of commitment, and regulatory focus.

First, we demonstrate that the cognitive adaptability of the entrepreneurial mindset that is supposed to reveal opportunities can actually lead to escalation of commitment. Cognitive adaptability is quite beneficial under many conditions (environment is constant, environment changes in anticipated ways, or environment changes in unanticipated but favorable ways) because it creates a perceptual and behavioral readiness, facilitated by a promotion focus, allowing the entrepreneur to continually exploit opportunities. In turn, this leads to an entrepreneur that is profit-seeking, uncertainty-bearing, and innovation driven (Baumol, 1996; Knight, 1921; Schumpeter, 1934). Ironically, as soon as the environment deteriorates, the entrepreneur's cognitive adaptability, exacerbated by a promotion focus, makes escalation of commitment highly likely when he or she is acting the most “entrepreneurial”.

Second, while existing research has identified many of the determinants of escalation of commitment, it has not yet evaluated which determinant may be more important than the other. For example, according to theories of escalation of commitment, individuals are more likely to continue with their current course of action when the decision involves high sunk costs (Arkes & Blumer, 1985), increased time investment (Soman, 2001), personal responsibility for the initial decision (Brockner et al., 1986; Staw, 1976), close proximity to project completion (Conlon & Garland, 1993), and social pressure from a team (Hogg & Terry, 2000; Janis, 1972; Seibert & Goltz, 2001). We fill this gap by empirically testing the relative importance of the psychological and social variables associated with escalation of commitment by using conjoint analysis, a technique that reveals how the participants weigh the determinants in their decision. Further, we root the context in entrepreneurship by using the decision to persist or abandon new product development in an entrepreneurial venture as the basis for potential escalation of commitment.

Finally, we contribute to regulatory focus by illustrating which focus (promotion focus vs. prevention focus) is more likely to lead to the unintended consequences of escalation of commitment. The rest of the paper proceeds as follows. First, we draw on existing research on the entrepreneurial mindset and escalation of commitment to offer hypotheses on how psychological and social variables are likely to drive escalation. Then we offer hypotheses on how regulatory focus moderates the likelihood of escalation of commitment. We then describe our research methods and present results. Finally, we discuss the results and conclude with implications for theory and practice.
**Entrepreneurial Mindset**

Many scholars suggest that entrepreneurs think differently than managers (e.g., Begley & Boyd, 1987; Busenitz & Barney, 1997) and the general population (e.g., Baron, 2004; Mitchell et al., 2002; Mitchell et al., 2007). This “different way of thinking” is described as the entrepreneurial mindset, portrayed as “ability to be dynamic, flexible, and self-regulating in one’s cognitions given dynamic and uncertain task environments” (Haynie et al., 2010: 218). McGrath and MacMillan (2000) describe the entrepreneurial mindset as “a way of thinking about your business that captures the benefits of uncertainty” (1). These cognitive differences are primarily discussed in terms of their positive consequences because they facilitate the initiation of entrepreneurial action (Krueger Jr, Reilly, & Carsrud, 2000). Haynie and Shepherd (2009) argue that cognitive adaptability defined as “the ability to effectively and appropriately change decision policies (i.e. to learn) given feedback (inputs) from the environmental context in which cognitive processing is embedded” (695), is positively related to performance in contexts that are characterized as complex, dynamic, and inherently uncertain (Earley & Ang, 2003). The entrepreneurship context best exemplifies this environment and is thus an important cognitive process in entrepreneurship (Haynie & Shepherd, 2009). Further, McGrath and MacMillan (2000) argue that the entrepreneurial mindset is clearly evident when one begins to act like a habitual entrepreneur – entrepreneurs that have made careers out of starting businesses. This cognitive distinction that entrepreneurs, especially habitual entrepreneurs, that are ascribed to hold can be attributed to individual differences between populations and are usually assumed to be a cause rather than an effect of entrepreneurial action (Grégoire, Corbett, & McMullen, 2011). See Zhao, Seibert, and Lumpkin (2010), Rauch and Frese (2007), and Zhao and Seibert (2006) for meta-analytic reviews on how personality impacts entrepreneurial status. Therefore, individual differences in the form of personality and the way entrepreneurs think is often portrayed as a selection mechanism that determines who will become an entrepreneur.

Alternatively, the cognitive adaptability of the entrepreneurial mindset, which allows entrepreneurs to adapt to the environment and continue pursuit of their goals, can lead to a number of decision making biases. For example, entrepreneurs tend to be more susceptible than managers in large organizations to overconfidence (overestimating the probability of being right) and representativeness (overestimating the likelihood that something will occur based on few general observations) (Busenitz & Barney, 1997). Further, entrepreneurs tend to be overly optimistic (Cassar, 2010; Hmieleski & Baron, 2008), and have a perceived immunity to the odds (Cooper, Woo, & Dunkelberg, 1988). Baron (1998) explains that entrepreneurs’ susceptibility to decision making biases are a result of operating in highly uncertain environments that involve elevated levels of emotion and severe time pressure which can overload their cognitive information processing. Therefore, it is quite possible that the cognitive differences of the entrepreneurial mindset are actually an effect rather than a cause of entrepreneurial action.

**Escalation of Commitment**

One potential effect which seems to be at odds with the cognitive adaptability of the entrepreneurial mindset is the decision making phenomenon known as escalation of commitment. Escalation of commitment is defined as “the proclivity for decision makers to maintain commitment
to a losing course of action, even in the face of quite negative news” (Brockner, 1992; Sleesman et al., 2012: 541; Staw, 1997), and has been shown to manifest as a behavioral pattern of “throwing good money after bad” (Sleesman et al., 2012: 541). Early research on entrepreneur’s decision making has empirically demonstrated that “escalation bias is a significant and common problem in decision making among entrepreneurs” and further “the characteristics of entrepreneurs and the nature of the decisions they are required to make leave them particularly vulnerable to escalation bias” (McCarthy et al., 1993: 22). Baron (1998) agrees with this sentiment and theorizes that entrepreneurs are more susceptible to escalation of commitment effects than other people. Why are entrepreneurs so susceptible to escalation of commitment? We propose five main reasons.

First, entrepreneurs are often personally responsible for the decisions in their ventures. By definition, entrepreneurs tend be owners and managers of their ventures and are responsible for most if not all of the firm’s strategic decisions. Entrepreneurs must spend a substantial amount of time convincing their stakeholders (investors, customers, suppliers, employees, business partners) and even friends and family about the viability of their business venture. Therefore, entrepreneurs tend be highly committed to their venture and constantly compelled to justify previous decisions. This concept is best explained by self-justification theory, in which “decision makers who were responsible for an initial course of action that is subsequently failing experience a need to justify the original decision and thus escalate in the hope of a turnaround” (Sleesman et al., 2012: 544). Because entrepreneurs tend to be responsible for the initial decision to pursue some course of action, entrepreneurs are highly susceptible to escalation of commitment.

Secondly, entrepreneurs are highly susceptible to escalation of commitment because they are highly confident in their ability to succeed. For example, in a study of 2,994 new entrepreneurs, Cooper and colleagues (1988) found that 81% of entrepreneurs perceived their chance of success to be 7 out of 10 or better, and 33% perceived their odds to be 10 out of 10. This drastic overconfidence becomes clearer when one compares these results to the same entrepreneur’s perceptions of similar businesses chance at success. 68% of entrepreneurs perceived their odds for success as better than others and only 39% of entrepreneurs felt other similar businesses chance of success to be 7 out of 10 or better (Cooper et al., 1988). These statistics demonstrate that entrepreneurs are not naive to think that all entrepreneurs have a high probability of success (7 out of 10) because they rate that probability at 39%. Instead, entrepreneurs are highly confident in their own ability to succeed and think they will be the exception (81% of entrepreneurs think their chance of success to be 7 out of 10 or better). Cooper and colleagues (1988) attempt to explain this phenomenon by suggesting, (1) that decision-makers bolster the attractiveness of an option once it has been chosen, and (2) that entrepreneurs believe they control their own destinies. Therefore in line with self-justification theory and because entrepreneurs suffer from over confidence, they are highly susceptible to escalation of commitment because they think they can overcome negative feedback.

Thirdly, entrepreneurs are highly susceptible to escalation of commitment because they suffer from a strong sense of self-presentation. According to self-presentation theory, decision makers in an escalation situation will attempt to avoid the public embarrassment of being linked to a failed project in order to be viewed as a competent decision maker (Sleesman et al., 2012). Entrepreneurs face extreme social pressure because the ultimate success of the venture is tied so closely with the entrepreneur’s self-esteem and self-identity (Baron, 1998). Therefore, the entrepreneur may do almost anything (escalate their commitment) to “save face”.

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Another reason why entrepreneurs are highly susceptible to escalation of commitment is because they operate in a resource constrained environment. Research on sunk costs indicates that people will continue to persist once they have invested substantial money, effort, or time in order not to appear wasteful (Arkes & Blumer, 1985). This situation is exacerbated by the entrepreneurship context because entrepreneurs work with almost nothing in the way of assets (Aldrich & Martinez, 2001). Further, entrepreneurs who found new businesses typically invest a considerable amount of personal resources, time, and energy. Therefore, entrepreneurs are highly susceptible to escalation of commitment to not be perceived as wasting initial resources (Rosenbaum & Lamort, 1992).

Finally, the way the decision is framed may affect the likelihood of escalation of commitment. Evidence from prospect theory indicates that negatively-framed messages lead to loss aversion and thus risk-seeking behavior (Kahneman & Tversky, 1979). To illustrate, entrepreneurs could frame the decision to continue their course of action in two ways: (1) terminate the course of action immediately and recognize the loss of time, money, and resources, or (2) delay the decision and continue the course of action which results in an uncertain loss. Garland and Newport (1991) found that individuals prefer the uncertain loss even though the uncertain loss would likely result in a higher total loss than the known loss. Because entrepreneurs operate under such high amounts of uncertainty, they are highly susceptible to escalation of commitment under the principles of prospect theory.

A recent meta-analysis on escalation of commitment (Sleesman et al., 2012), has identified various psychological and social determinants of escalation for all decision makers. We propose that entrepreneurs will not be immune to such determinants. Specifically, psychological determinants can cause the decision maker to escalate their commitment based on certain cognitive and affective processing of information (Sleesman et al., 2012). For example, increased financial investment or sunk costs tend to increase escalation as demonstrated by Arkes and Blumer (1985) because the decision maker desires not to appear wasteful. The amount of time invested increases escalation for much of the same reason sunk costs do, as the decision maker does not want to admit their time has been wasted (Soman, 2001). Additionally, personal responsibility for the initial decision increases escalation because self-justification needs are activated (Staw, 1976). Finally, proximity to project completion increases escalation of commitment because the decision maker substitutes a completion goal for their original project goal (Conlon & Garland, 1993). Sleesman and colleagues (2012) found all of these psychological determinants to be significantly correlated with escalation of commitment. As such we hypothesize the following:

Hypothesis 1: Escalation of commitment is more likely when the psychological determinants of (a) financial investment, (b) time investment, (c) responsibility for the initial decision, and (d) proximity to project completion are high than when they are low.

Sleesman and Colleagues (2012) noted a feast or famine dilemma in their recent meta-analysis in which particular attention is paid to the psychological determinants, but there is a “relative dearth of empirical studies examining social determinants” (553). As such, we answer the call of Sleesman and Colleagues (2012) by incorporating a social dimension to our investigation to examine how social pressure from the entrepreneur’s team impacts his or her decision to escalate. The added social pressure to continue with a project can increase the likelihood of escalation as decision makers attempt to manage the impressions of those around them (Brockner, Rubin, & Lang, 1981). As such, we hypothesize the following:
Hypothesis 2: Escalation of commitment is more likely when the social determinant of a team's position to continue is high than when it is low.

Regulatory Focus

Regulatory focus theory (Higgins, 1997) describes the different ways in which individuals pursue goals. It explains “how” individuals process and evaluate information in a way that takes a predominantly approach-oriented versus avoidance-oriented strategy. This self-regulation takes the form of either a promotion focus or prevention focus (Brockner, Higgins, & Low, 2004). Promotion focus is evoked by gain scenarios, nurturance needs, or ideals (Crowe & Higgins, 1997; Friedman & Förster, 2001) and focuses the decision maker's attention on return maximization. The decision maker in a promotion focus strives for hits (true-positives) and against misses (false-negatives) (Crowe & Higgins, 1997) by adopting a strategy oriented toward promoting desired outcomes (Higgins, Roney, Crowe, & Hymes, 1994). Further, decision makers in a promotion focus notice and recall information relevant to success (Higgins & Tykocinski, 1992) and attend to emotions such as happiness and dejection that are related to successful versus unsuccessful achievement of positive outcomes (Higgins, Shah, & Friedman, 1997). Conversely, prevention focus is evoked by loss scenarios, security needs, or a sense of duty (Crowe & Higgins, 1997) and focuses the decision maker's attention on risk minimization. The decision maker in a prevention focus strives for correct rejections (true-negatives) and against false alarms (false-positives) (Crowe & Higgins, 1997) by adopting a strategy oriented toward preventing negative outcomes (Higgins et al., 1994). Further, decision makers in a prevention focus notice and recall information relevant to the avoidance of failure (Higgins & Tykocinski, 1992) and attend to emotions such as quiescence and anxiety that are related to successful versus unsuccessful avoidance of negative outcomes (Higgins et al., 1997).

Decision makers think differently when they are in a promotion focus versus a prevention focus (Higgins, 1997). Decision makers in a promotion focus allocate their attention toward maximizing gains and away from minimizing losses. This narrows the decision maker's attention to the environment and often focuses it strictly on the advancement of some goal. In addition, because the promotion focus evokes the recalling of information that is relevant to success, the decision maker develops an optimistic view of uncertainty (Higgins & Tykocinski, 1992). From previous research on prospect theory, we know that individuals prefer to continue the course of action which results in an uncertain loss over recognizing immediate certain losses (Garland & Newport, 1991) because loss aversion leads to risk seeking behavior. Thus, because the promotion focus evokes optimistic views of uncertainty, the decision maker will be more likely to escalate their commitment. Alternatively, because the prevention focus evokes the recalling of information that is relevant to failure, the decision maker develops a pessimistic view of uncertainty (Higgins & Tykocinski, 1992). A pessimistic view of uncertainty combined with the state of cautiousness and attention allocation toward minimizing losses results in planning around worse case scenarios in which difficulties of goal completion are expected to occur (Higgins et al., 1997). Therefore, the decision maker is less likely to escalate their commitment when in a prevention focus. Formally, we hypothesize the following:

Hypothesis 3a: Escalation of commitment is more likely when the entrepreneur is chronically promotion focused.

Hypothesis 3b: Escalation of commitment is less likely when the entrepreneur is chronically prevention focused.
Method

Sample

We engage a sample of 97 entrepreneurship students with an average age of 21.64 years (s.d. = 2.95). 71% of the sample consisted of men, and the average student was in his or her 3.18 year (s.d. = 1.12) of school. Participants were invited to take part in the experimental study on a voluntary basis as part of being enrolled in an undergraduate entrepreneurship class.

Research Design

Participants accessed the study through a University website, which required proper login and password credentials. We used metric conjoint analysis as our experimental design. Conjoint analysis is a technique that requires the participants to make a series of judgments or choices based on manipulated profiles which reveal how the participant uses the attributes in the profile to make a decision, revealing the relative importance of each attribute in the decision process (Shepherd & Zacharakis, 1997). Identifying entrepreneurs and asking them to report on their own escalation of commitment decisions presents various methodological challenges that often result in retrospective bias (Aaker, Kumar, & Day, 2008; Feldman & March, 1981), attribution bias (Fiske & Taylor, 1991), and self-reporting bias (Sandberg & Hofer, 1987). Instead, we employ an experimental technique (conjoint analysis) by collecting data as the decision is made which helps prevent the biases that often plague survey research. One potential limitation of conjoint analysis is that too many decision attributes or factors can overload the decision maker and results in poor construct validity. Therefore, we use five factors in our conjoint analysis, which is less than the maximum recommendation of eight attributes by Shepherd and Zacharakis (1997). Although conjoint analysis may not be as prevalent in management research, it has been used in thousands of research studies over the past three decades across various disciplines (Green, Krieger, & Wind, 2001), including entrepreneurship (Choi & Shepherd, 2004; Zacharakis, McMullen, & Shepherd, 2007) and specifically with entrepreneurship escalation of commitment research (DeTienne et al., 2008; Holland & Shepherd, 2013).

In this study, participants are asked to make decisions regarding whether to persist or abandon new product development in an entrepreneurial venture as the basis for potential escalation of commitment. We base the escalation of commitment manipulation off of the classic radar blank plane scenario (Arkes & Blumer, 1985), but modify it to fit the context of entrepreneurship. Specifically participants are asked to assume the following: “Please envision yourself as the founder and president of a new venture who has already invested substantial company resources into the commercialization of new technology. The technology is state of the art facial recognition software that identifies a person by their face much like a fingerprint identifies a person by their finger. The technology may not only revolutionize national surveillance and counter terrorism, but has promising commercial potential as well. For example, the facial recognition software would allow businesses to customize their marketing almost instantaneously by capturing information such as age, gender, and race of their customers. However, you have since learned that another firm has just begun marketing similar technology. Also, it is apparent that their product is much faster and far more economical than the software your company is building. Your job will be to decide whether to continue developing your product.” The participants are asked to make a decision as best they can based upon the presentation of different profiles.
The profiles consist of five attributes, aimed at manipulating the determinants of escalation of commitment. Each attribute is varied at two levels, which results in $2^5$ or 32 different profile combinations. We use an orthogonal fractional factorial design (Hahn & Shapiro, 1966) to reduce the number of profiles to 16. We then replicate each profile one time in order to test for the reliability of the participant’s decision policy. We also add in a practice profile to familiarize the participants to the procedure. This results in a total of 33 profiles. We created two unique versions of the experiment in which the order of the profiles were randomized to control for any potential order effects. On average it took the participants 31 minutes to complete both the experimental task and post-experimental survey.

**Variables and Measures**

**Level 1: Escalation of Commitment Determinants.** Consistent with a recent meta-analysis on escalation of commitment (Sleesman et al., 2012), we manipulate psychological and social determinants as our independent variables at high and low levels.

1. We operationalize financial investment as the amount of money already invested into product development at two levels: high, money invested = $10M; low, money invested = $1M.
2. We operationalize time investment as the amount of time already invested into product development at two levels: high, time invested = 3 years; low, time invested = 3 months.
3. We operationalize responsibility for the initial decision as designating who was responsible for the initial decision to develop the product at two levels: high, responsibility for the initial decision = you; low, responsibility for the initial decision = someone else.
4. We operationalize proximity to project completion as designating how close the project is to completion at two levels: high, product development = 90% complete; low, product development = 10% complete.
5. We operationalize team position as designating whether the entrepreneur’s team desires to continue or stop product development at two levels: high, team position = continue development; low, team position = stop development.

**Dependent Variable.** The dependent variable in this study is the likelihood that the participant would continue developing the product. Participants are specifically asked, “Please indicate the likelihood you would continue developing the product.” This decision outcome is measured on 9-point Likert-type scale anchored by (1) very unlikely, (5) somewhat likely, and (9) very likely.

**Level 2: Chronic Regulatory Focus.** We measure chronic regulatory focus at the conclusion of the experiment using The Regulatory Focus Questionnaire (RFQ) (Higgins et al., 2001). The questionnaire consists of 11 items: 6 items for promotion focus and 5 items for prevention focus, which measure a participant’s chronic disposition toward regulating their behavior. A high score on promotion focus indicates the “extent to which the participant is concerned with advancement, growth, and accomplishment” (Hmieleski & Baron, 2008: 286). A high score on prevention focus indicates “extent to which the participant is concerned with protection, safety, and responsibly” (Hmieleski & Baron, 2008: 286). We report adequate internal reliabilities ($\alpha = 0.67$ for promotion focus; $\alpha = 0.74$ for prevention focus) of this scale.

**Control Variables.** We control for the participant age and gender.
Analysis & Results

We replicate each profile one time to test for the reliability between the participant’s original response and his or her answer to the replicated profile. Consistent with previous conjoint analysis studies (Patzelt & Shepherd, 2008; Shepherd, Patzelt, & Baron, 2013), we remove any participants from the study that had a very low reliability (below 0.30). This resulted in a final sample of 76 participants who had an average test-retest correlation of 0.73. Each participant in this study makes 32 decisions which results in a total of 2,432 total observations. Because the data in this study is nested, we relied on hierarchical linear modeling (HLM) for our analysis as HLM controls for autocorrelation and heteroskedasticity (Raudenbush & Bryk, 2002). The results of our HLM analysis are provided in table 1.

To test Hypothesis 1, we examine the coefficients on each of the psychological determinants of escalation in row two through five of the base model. The coefficient on responsibility for the initial decision and proximity to project completion are positive and significant ($p < .001$), indicating that escalation of commitment is more likely when responsibility for the initial decision and proximity to project completion are high than when they are low. This finding supports Hypothesis 1c and 1d. However, we find no support that escalation of commitment is more likely when financial investment is high than when it is low as the coefficient on financial investment is non-significant (coefficient = 0.07, $p = .25$). Thus, Hypothesis 1a is not supported. Moreover, we find significant but opposite results than what is hypothesized on the relationship between escalation and the amount of time invested. We find that escalation of commitment is actually less likely when the amount of time invested is high than when it is low (coefficient = -0.15, $p = 0.015$), which runs counter to Hypothesis 1b.

To test hypothesis 2, we examine the coefficient on the social determinant of escalation in row six of the base model. The coefficient on team position is positive and significant ($p < .001$), indicating that escalation of commitment is more likely when team position is high than when it is low. This finding supports Hypothesis 2.

Hypothesis 3a and 3b examine the relationship between regulatory focus and escalation of commitment and predict that escalation of commitment will be more likely when the entrepreneur is chronically promotion focused and less likely when the entrepreneur is chronically prevention focused. The coefficient on promotion focus in row nine of the main effects model is positive and marginally significant ($p < .10$), indicating that escalation of commitment is more likely when the entrepreneur is chronically promotion focused. Additionally, the coefficient on prevention focus in row ten of the main effects model is negative and marginally significant ($p < .10$), indicating that escalation of commitment is less likely when the entrepreneur is chronically prevention focused. Thus, we find moderate support for Hypothesis 3a and 3b.

Although not specifically hypothesized, we did investigate potential interaction effects between the entrepreneur’s chronic regulatory focus and the psychological and social determinants of escalation. Interestingly we find that promotion focus significantly moderates (coefficient = 0.11, $p < .001$) the relationship between proximity to project completion and escalation of commitment such that the positive relationship between proximity to project completion and escalation of commitment becomes even stronger as promotion focus increases. This relationship was not found to be significant for entrepreneurs with a chronic prevention focus. In addition, we also find that prevention focus significantly moderates (coefficient = 0.06, $p < .001$) the relationship
between team position and escalation of commitment such that the positive relationship between
team position to continue development and escalation of commitment becomes even stronger as
prevention focus increases. This relationship was not found to be significant for entrepreneurs
with a chronic promotion focus.

**Discussion**

The aim of this study is not only to extend existing escalation of commitment research into the
entrepreneurship domain, but also to contribute theoretically to the escalation, entrepreneurial
mindset, and regulatory focus literatures. As expected, our results reveal that higher levels of
responsibility for the initial decision and proximity to project completion increase the likelihood
of escalation. We find no support that sunk costs significantly impact the likelihood of escalation,
but surprisingly find that increases in time invested actually decrease the likelihood of escalation.
We can only speculate for the reasons of this significant but opposite result. For example, it is
possible that the relationship between amount of time invested and escalation is curvilinear, such
that extremely high levels of invested time results in a lower likelihood of escalation because the
decision maker has already perceived project failure. Alternatively, this finding could be the
result of the lack of ecological validity that often plagues experimental research, as perceptions
of time invested is quite different than experiencing the struggle of a new venture first hand that
often becomes difficult to let go as time increases. We directly contribute to the escalation of
commitment literature by demonstrating that social determinants can play just as strong a role in
explaining escalation as many of the psychological determinants can. Specifically, we find that the
social pressure to continue a project from an entrepreneur's team greatly impacts the likelihood of
escalation by the individual decision maker.

We believe these results demonstrate that entrepreneurs are just as susceptible to escalation as
any other decision maker and might be even more so as they face pressure not only psychologically
in their attempts to preserve their own identity as a sound decision maker, leader, and creator
of new ventures, but also socially as they face their friends, family, peers, and team to succeed
in venture development. Entrepreneurial action is characterized by novelty and uncertainty as
entrepreneurs seek to profit by transforming their beliefs into reality (McMullen & Shepherd,
2006). As a result, many entrepreneurs turn to the entrepreneurial mindset as a way to avoid
having to engage in planning and make decisions under environmental uncertainty. This ironically
transforms the entrepreneurial mindset from a proactive strategy into a procrastination strategy,
and causes the entrepreneurial mindset’s cognitive adaptability to entrap rather than liberate
individuals from pursuing sub-optimal goals.

Regulatory focus theory helps explain the conditions under which the entrepreneurial mindset
can go from strength to weakness. We argue that decision makers in a promotion focus have an
optimistic view of uncertainty and allocate their attention toward maximizing gains. This narrows
the decision maker’s attention to the environment and focuses it strictly on the advancement
of some goal. Our results support this argument as we find that escalation of commitment is
more likely when the entrepreneur is chronically promotion focused. Additionally, we argue that
decision makers in a prevention focus have a pessimistic view of uncertainty and allocate their
attention toward minimizing losses. This state of cautiousness encourages the decision maker to
attend to the environment, which when deteriorating, suggests disengagement may be wise. Our
results also support this argument as we find that escalation of commitment is less likely when the
entrepreneur is chronically prevention focused.
Interestingly we also find that regulatory focus interacts with proximity to project completion as well as team position but in different manners. The positive relationship between proximity to project completion and escalation of commitment becomes even stronger as promotion focus increases. Alternatively, the positive relationship between team position to continue development and escalation of commitment becomes even stronger as prevention focus increases. Surprisingly, this indicates that prevention focus increases the likelihood of escalation when it interacts with a social determinant. One possible explanation is that high levels of prevention focus combined with high levels of social pressure result in vigilance over cautiousness. Therefore, the decision maker continues to escalate in fear of suffering the negative outcome of failing product development (Higgins et al., 1994), which only is recognized via disengagement from the goal.

The results of this study provide various avenues for future research. For example, the possibility exists that individual differences may serve as moderators of the effects discussed in our model (Kark & Van Dijk, 2007; Shah, Higgins, & Friedman, 1998). Thus, we believe further investigation into the moderating effects of individual differences, such as personality variables (Begley & Boyd, 1987), heuristics (Busenitz & Barney, 1997), learning styles (Corbett, 2005), or levels of expertise (Mitchell et al., 2007), on the relationship between regulatory focus and entrepreneurial cognition and action may prove to be particularly fruitful. Furthermore, we echo the call of Sleesman and colleagues (2012) to encourage researchers to continually explore the role of social determinants on escalation as we have done, but further investigate the potential interaction effects of social and psychological determinants.

Conclusions

In conclusion, our study shows that increased levels of responsibility for the initial decision, proximity to project completion, and team position to continue development increase the likelihood of escalation. Moreover, escalation of commitment can be explained by the entrepreneur's regulatory focus as those with a chronic promotion focus are more likely to escalate while those with a prevention focus are less likely to escalate. We hope that by better understanding how mindsets influence one's thinking during the goal striving of entrepreneurial action, we have identified some of the antecedents and consequences of entrepreneurial cognition (Grégoire et al., 2011), and helped to identify mechanisms that may allow entrepreneurs to leverage the strengths of an entrepreneurial mindset (increased perceptual and behavioral readiness) without succumbing to its potential weaknesses (increased susceptibility to escalation of commitment).

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References


### Table 1

Results of HLM on the Likelihood of Escalation of Commitment

<table>
<thead>
<tr>
<th>Variable</th>
<th>Base Model</th>
<th>Main Effects Model</th>
<th>Full Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Intercept for overall model</td>
<td>5.33***</td>
<td>5.48***</td>
<td>5.48***</td>
</tr>
<tr>
<td>2. Financial investment</td>
<td>0.07</td>
<td>-0.27</td>
<td>-0.27</td>
</tr>
<tr>
<td>3. Time investment</td>
<td>-0.15*</td>
<td>-0.74</td>
<td>-0.74</td>
</tr>
<tr>
<td>4. Responsibility for initial decision</td>
<td>0.34***</td>
<td>0.98</td>
<td>0.98</td>
</tr>
<tr>
<td>5. Proximity to project completion</td>
<td>2.74***</td>
<td>-3.87***</td>
<td>-3.87***</td>
</tr>
<tr>
<td>6. Team position</td>
<td>1.46***</td>
<td>-0.46</td>
<td>-0.46</td>
</tr>
<tr>
<td>7. Gender</td>
<td>-0.16</td>
<td>-0.16</td>
<td>-0.16</td>
</tr>
<tr>
<td>8. Age</td>
<td>-0.02</td>
<td>-0.02</td>
<td>-0.02</td>
</tr>
<tr>
<td>9. Promotion Focus</td>
<td>0.05†</td>
<td>0.05†</td>
<td>0.05†</td>
</tr>
<tr>
<td>10. Prevention Focus</td>
<td>-0.04†</td>
<td>-0.04†</td>
<td>-0.04†</td>
</tr>
<tr>
<td>11. Proximity to project completion x Promotion focus</td>
<td></td>
<td>0.11***</td>
<td></td>
</tr>
<tr>
<td>12. Proximity to project completion x Prevention focus</td>
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<td>0.02</td>
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<tr>
<td>13. Team position x Promotion focus</td>
<td>0.02</td>
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<td></td>
</tr>
<tr>
<td>14. Team position x Prevention focus</td>
<td>0.06**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† *p < 0.10
* *p < 0.05
** **p < 0.01
*** ***p < 0.001