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2 **RISING FROM THE ASHES: COGNITIVE DETERMINANTS**

3 **OF VENTURE GROWTH AFTER ENTREPRENEURIAL FAILURE**

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30 Forthcoming, ***Entrepreneurship Theory and Practice***

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32 March, 2013

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35 We thank the editor and two anonymous reviewers for their constructive and valuable suggestions
36 for improving this manuscript.

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Rising From the Ashes:

Cognitive Determinants of Venture Growth after Entrepreneurial Failure

[Abstract]

How does previous entrepreneurial failure influence future entrepreneurship? More specifically, under what conditions do entrepreneurs who rebound from failure do better in the next round? Drawing on the cognitive literature in attribution and motivation, we shed light on entrepreneurs' reaction to failure and the growth of their subsequent ventures. Leveraging a survey database of new-venture founders who started another business after previous failure experiences, we investigate how their internal attribution of the cause of failure, their intrinsic motivation to start up another business after failure, and the extent of their failure experiences impact the growth of their subsequent ventures.

Keywords: Entrepreneurial failure, attribution, motivation, new venture growth

1 entrepreneurial failure impact future entrepreneurship? Under what conditions do entrepreneurs
2 who rise from the ashes (rebound from previous failures) attain better venture performance in the
3 future? More specifically, what cognitive determinants impact these entrepreneurs' ability to
4 learn, persist, and attain improved subsequent performance in the form of growth?

5 To the extent that such research exists, studies have gravitated toward the theme of
6 learning from failure (Cope, 2011; Shepherd, 2003), especially how some second-time (as
7 opposed to first-time) ventures lead to greater success (Kawakami 2007). Failure can be an
8 important source for the development of knowledge and skills that can be highly useful in
9 subsequent venturing activities (Baron, 2004; McGrath, 1999; Minniti & Bygrave, 2001; Sitkin,
10 1992). Meanwhile, learning from failure is not automatic (Shepherd, 2003). It does not occur in a
11 vacuum as experience of failure does not inevitably lead to future success (Green et al., 2003).
12 There is heterogeneity in entrepreneurs' ability to maximize their learning from failure (Shepherd,
13 2003). However, "few have explored how entrepreneurs or communities make sense of venture
14 failures that do occur and the implications of such sensemaking for continued entrepreneurship"
15 (Cardon et al., 2010: 79). Endeavoring to start filling in this gap, we focus on entrepreneurs'
16 reaction to failure. Specifically, we investigate (1) how entrepreneurs' attribution of the cause of
17 failure plays a role in learning from the failure, (2) how their aspiration for future start-up plays a
18 role in persisting and overcoming the failure, and (3) how these attributions and motivations
19 impact future entrepreneurship in the form of venture growth. Instead of simply exploring
20 whether entrepreneurs rebound from failure and start another venture or how much they learn, we
21 find it critical to understand the impact of cognitive determinants on subsequent venture growth.
22 That is why we explore venture growth as our dependent variable. Moreover, we investigate (4)
23 how the extent of failure experiences moderates the relationships above to explore the boundary
24 conditions linking entrepreneurs' reaction to failure and subsequent performance.

1 In sum, building on the entrepreneurial action perspective (Shepherd, Wiklund, & Haynie,
2 2009b), we shed light on the importance of *cognition* as action oriented, embodied, situated, and
3 distributed (Mitchell, Randolph-Seng, & Mitchell, 2011), which can offer rich implications for
4 understanding recovery and learning from failure. Among other cognitive-oriented choices in
5 framing our research on entrepreneurial failure, we use attribution (to explore the mechanism and
6 its implication in terms of learning) and motivation (to explore the mechanism and its implication
7 in terms of persistence) as the key conceptual lens. We also investigate the impact of the extent of
8 failure experiences on the boundary conditions. We argue that how entrepreneurs *perceive* and
9 *attribute* the cause of their failures and how they are *motivated* to start up another business after
10 failing impact whether or not and to what extent they achieve success in the next round.
11 Moreover, we suggest that these relationships are moderated by the extent of failure experiences.
12 We endeavor to capture these factors, and investigate the link between prior failure and future
13 entrepreneurship—how entrepreneurs who *rise from the ashes* attain growth after failure. Overall,
14 the entire premise of the study involves the various mechanisms by which entrepreneurs react to
15 failure (e.g., learning, persistence, self-efficacy, escalation of commitment, and grief/emotion)
16 and the implications for future growth. Our theoretical model is illustrated in Figure 1.

17 **[Insert Figure 1 about here]**

18 This study extends the literature in at least four ways. First, we combat the *anti-failure*
19 *bias* in the literature—that is, the tendency to focus on success and to avoid failure as a deserving
20 research topic—as critiqued by Lee et al. (2007) and McGrath (1999). After all, the bulk of
21 entrepreneurial experience is failure. Our study builds on the stream of research that focuses on
22 how entrepreneurs make use of this painful but potentially invaluable experience (Shepherd,
23 Patzelt, & Wolfe, 2011). Second, we highlight the importance of cognitive factors (Baron, 2007;
24 Grégoire et al., 2010) in order to better understand the conditions under which entrepreneurs’

1 experience of failure is associated with the growth of their subsequent ventures. Third, to the best
2 of our knowledge, the secondary survey database of new-venture founders with failure
3 experiences is one of the first databases of its type in the field that allows us to empirically
4 explore questions that have been immune to empirical exploration prior to our work. Last but not
5 least, our sample consists of entrepreneurs in Japan—a country where entrepreneurship is
6 desperately needed. Unfortunately, entrepreneurship research on Japan has been scarce (Bruton &
7 Lau, 2008). Our study captures entrepreneurs' opportunities to revitalize from prior failure for
8 future entrepreneurship that exist even in the harsh climate where the institutional environment is
9 hostile for individuals to embark on an entrepreneurial career, let alone a second chance of
10 coming back from a failure. The context is particularly suitable for understanding failure recovery.
11 In sum, we articulate the usefulness of cognitive factors that help explain the process linking
12 failure to recovery, learning, persistence, and subsequent venture growth, in a context where
13 entrepreneurship really matters.

14 **Main Hypotheses**

16 **Internal Attribution of Blame**

17 According to social psychology theory, attributions are the mechanisms through which
18 individuals explain their own behavior, the actions of others, and events in the world (Martinko et
19 al., 2006; Shaver et al., 2001). Attributions that entrepreneurs make for their failures impact their
20 cognitive, affective, and behavioral responses to failure (Douglas et al., 2008; Weiner & Kukla,
21 1970). Therefore, a better understanding of recovery from failure requires an understanding of
22 attributions of causality (Ford, 1985). Attribution regarding the cause of failure plays an
23 important role in understanding the impact of previous failure on future ventures (Wagner &
24 Gooding, 1997), in particular, the amount of learning from the failure (Sitkin, 1992).

1 When entrepreneurs fail, different causal explanations are employed to account for what
2 went wrong. “Why did this happen?” “What might have been the cause?” These questions signal
3 the beginning of sensemaking—an interpretive process in which entrepreneurs assign meaning to
4 occurrences in conjunction with action (Bradley, 2002; Gioia & Chittipeddi, 1991).
5 Understanding of events is structured through interpretation and sensemaking, which involves
6 retrospectively linking events to possible causes and attributing the causes (Ford, 1985). Given
7 entrepreneurs’ varying levels of reactions over failure (Yanchus et al., 2003), there is also
8 heterogeneity in their ability to maximize the learning from failure (Shepherd, 2003). That is why
9 attribution regarding the cause of failure can have critical implications for entrepreneurs’
10 recovering, learning, and achieving success upon previous failures (Shepherd, 2009).

11 An important aspect of the entrepreneurs’ attribution of failure is the locus of causality,
12 whether an event is due to reasons internal to the person experiencing the event or to reasons
13 beyond their control (Cardon et al., 2010; Weiner, 1985). Using this framework, we posit that
14 entrepreneurs’ learning from failure and their subsequent venture performance will depend upon
15 their attribution of the locus of causality for their previous failures—the level of internal
16 attribution of blame. Indeed, if differences in how entrepreneurs attribute the cause of their failure
17 impact what (or if) they learn from their failure, then the locus of causality may have performance
18 implications for their future entrepreneurial endeavors.

19 The significance of locus of causality (in terms of learning) is that it implies the source of
20 a cause and where to apply corrective action (Ford, 1985). Prior research in psychology has
21 established the link between internal attributions, motivation, and positive learning outcomes
22 (Weissbein et al., 2011). Internal attribution of failure by entrepreneurs not motivated to try again
23 may lead them to conclude that they are not smart enough or good enough to do it and learn little
24 from failure. In the case of entrepreneurs who start again, internal attribution of blame is more

1 likely to be associated with effective post-failure learning since the actions of entrepreneurs are
2 identified as the cause of failure. This leads them to begin asking questions, such as “Where did I
3 go wrong?” and “What could I have done better?” This places the focus on their entrepreneurial
4 resources and capabilities and the areas in which they need to improve. Baron (2004) introduces
5 the concept of “counterfactual thinking” (the tendency to imagine different outcomes in a given
6 situation than what actually happened) as an important entrepreneurial capability. “What might
7 have been, if I...?” This is highly relevant because such thinking can have a profound effect on
8 entrepreneurs’ understanding of cause-and-effect relationships, decision-making, and task
9 performance (Markman et al., 2002; Roese, 1997).

10 We argue that counterfactual thinking is more likely to occur in the case of higher levels
11 of internal attribution of blame. Entrepreneurs who blame their failure internally are predisposed
12 to look back upon what they might have done wrong and consider how they might do better next
13 time, especially if they view the problem as correctable. Engaging in such counterfactual thinking
14 allows entrepreneurs to consider past failures in the process of constructing more effective
15 strategies that generate positive outcomes in the future. What entrepreneurs learn about
16 themselves from their reflection on internal attribution is more readily transferable and is more
17 likely to impact subsequent venture growth – as opposed to some venture-specific knowledge (i.e.,
18 important determinant of success) that is likely to be associated with external attribution of failure
19 but less transferable and applicable to the new venture. “Learning from failure occurs when
20 individuals can use the information available about why the business failed to revise their existing
21 knowledge of how to manage their own business effectively—that is, to revise assumptions about
22 the consequences of previous assessments, decisions, actions, and inactions” (Shepherd, 2003:
23 320).

1 In sum, successful entrepreneurs who recover effectively from failure may be those who
2 engage in counterfactual thinking, those who attribute the cause of their failure internally and
3 become adept at using such thinking to develop enhanced strategies in their subsequent endeavors.
4 As a result, entrepreneurs with previous failure experiences may profit more from past mistakes
5 (Baron, 2004; Sitkin, 1992).

6 On the other hand, low levels or no internal attribution of blame may allow failed
7 entrepreneurs to reduce their sense of shame and guilt, in order to get back in the game. However,
8 this does not necessarily mean that they learned more and/or will perform better in the next round.
9 Rather, since the cause of failure is not considered the entrepreneurs' fault, there is little
10 motivation to change their behavior. Most likely, entrepreneurs, in turn, may fail to learn the
11 valuable lessons available from the experience of failure. Ford (1985) also argues that external
12 attributions can lead to negative outcomes in the form of domain abandonment. Many of the
13 specific lessons entrepreneurs have learned from their failure may become no longer applicable
14 since the domain (not their own actions) is identified as the problem. In sum, for entrepreneurs
15 who rebound from failure to start up another business,

16 **Hypothesis 1: Entrepreneurs' internal attribution of blame for their previous**
17 **entrepreneurial failure will be positively associated with the growth of their**
18 **subsequent ventures.**

19
20 **Intrinsic Motivation to Start Up**

21 Learning and recovering from failure can not only be influenced by individuals' ability, but also
22 by motivation and vision (Greenberger & Sexton, 1988; Herron & Sapienza, 1992; Lorenzet et al.,
23 2005). Baum, Locke, and Smith (2001) find that CEO's visions and motivations are direct
24 predictors of venture growth. Entrepreneurial motivations are often associated with intentionality
25 (Katz & Gartner, 1988). The founding entrepreneurs' intentions determine the direction of an
26 organization at its inception. Subsequent success and growth of the organization are based on

1 these intentions (Bird, 1988). Of course, the entrepreneurial process occurs because entrepreneurs
2 actively choose to pursue opportunities (Baron, 2004; Shane et al., 2003). Extending this line of
3 work, we argue that entrepreneurs' motivation is an integral part of their efforts to start up
4 another business after initial failure.

5 Why do individuals start (and re-start) businesses? While scholars have analyzed various
6 motivations (Carter et al., 2003; Gatewood et al., 1995; Shaver et al., 2001), the performance
7 implications for these various reasons have rarely been addressed, let alone with regards to the
8 reason to start up another business after failure. Because responses to failure reflect the cognitive
9 and motivational orientation of decision makers (Bobbitt & Ford, 1980), we argue that the issue
10 of motivation deserves critical attention.

11 Within the motivation literature, scholars have long discussed the usefulness of intrinsic
12 versus extrinsic motivation, their distinctive characteristics, and their relationship (Brief & Aldag,
13 1977; Dyer & Parker, 1975; Kuratko et al., 1997; Naffziger et al., 1994). Studies have shown that
14 different motivations have different performance effects (i.e., growth) due to their subsequent
15 outcome utility, information content, and the mechanisms through which they operate (Stajkovic
16 & Luthans, 2001). Fundamentally, intrinsic motivation can be associated with higher levels of
17 task satisfaction and task performance than extrinsic motivation. However, these claims are not
18 clearly substantiated in the literature, especially in an entrepreneurial context.

19 Intrinsic motivation (attributing the force of their behaviors principally to intrinsic
20 outcomes), such as passion for entrepreneurship, ensures that the entrepreneur persists in the face
21 of difficulties and keeps enthusiasm high during the pursuit of growth (Cardon et al., 2005).
22 Intrinsically motivated entrepreneurs are more likely to sacrifice their own personal needs to meet
23 the needs of their ventures, persisting, delaying gratification, and investing huge amounts of
24 effort, emotion, and resources to the growth of their ventures. Passionate entrepreneurs may also

1 envision possibilities for the new venture that others do not see (Chen, Yao, & Kotha, 2009).
2 Confident enactment based on intrinsic motivation may help create a positive reality as resource
3 providers are persuaded by the confidence and as the entrepreneur puts in more effort, feeling
4 more certain it will be rewarded (Gartner et al., 1992). Hard work and the pursuit of success due
5 to intrinsic motivation is also much more enjoyable than slogging away at a job they dislike
6 (Hackman & Oldham, 1976). In sum, intrinsic motivation “concerns active engagement with
7 tasks that people find interesting and that in turn promote growth” (Deci & Ryan, 2000: 233).

8 On the other hand, low levels of or no intrinsic motivation (attributing the force of their
9 behaviors principally to extrinsic outcomes) often in the form of financial (monetary) rewards can
10 have a negative effect (Daniel & Esser, 1980; Sherman & Smith, 1984). Accordingly, a change in
11 the perceived locus of causality such that when extrinsic financial rewards are made contingent
12 on entrepreneurs’ behavior that are perceived by them, the locus of causality shifts from within
13 the individual to the extrinsic reward resulting in reduced intrinsic motivation. Extrinsic rewards
14 can infect intrinsic motivation by negatively affecting feelings of competence or self-
15 determination (Deci, 1976). In sum, for entrepreneurs who rebound from failure to start up
16 another business,

17 **Hypothesis 2: Entrepreneurs’ intrinsic motivation to start up another business after**
18 **entrepreneurial failure will be positively associated with the growth of their**
19 **subsequent ventures.**

20
21

Boundary Conditions

Extent of Failure Experiences

22 What happens when entrepreneurs start accumulating failures? The literature on failure and
23 learning provides mixed results. On the one hand, some studies suggest a positive relationship
24 between the extent of failure experiences and the amount of learning. It is a widely held belief
25 that entrepreneurs may profit from their past failure. Through the process of learning from failure
26

1 (Bull & Willard, 1993; Hagedoorn, 1996; Minniti and Bygrave, 2001; Shepherd, 2003) they are
2 able to augment their initial endowment of entrepreneurial capabilities along the way (Baron,
3 2004; Stam et al., 2006). Failure provides critical learning opportunities that act as a catalyst for
4 further business development (Cardon et al., 2010; Green et al., 2003; McGrath et al., 1996).

5 On the other hand, greater extent of failure experiences (e.g., further increase in the
6 number of failures) may not necessarily be associated with greater learning and subsequent
7 performance. Since each failure takes its toll on the reputation, morale, and sanity of the
8 entrepreneur, the loss of a business can generate a negative emotional response (e.g., grief) that
9 can interfere with individuals' ability to learn from the loss (Shepherd, 2003). Numerous failure
10 experiences are thus less likely to be associated with effective learning from failure. Even a
11 project failure can trigger a strong negative emotional reaction and resistance (Fisher, 2001; Huy,
12 2002). The accumulated sense of grief may further hinder the process of learning from the
13 experience of failure. In addition, some failed entrepreneurs may simply be too arrogant to learn
14 and to move on (Hayward et al., 2006). In sum, the literature on failure and learning seems to
15 suggest a curvilinear (inverted U-shape) relationship between the extent of failure experiences
16 and subsequent venture growth.

17 In this section, we investigate the moderating impact of the extent of failure experiences
18 on the main effects proposed in Hypotheses 1 and 2. Additional insight into the cognitive
19 antecedents warrants an exploration of the interaction effects that establish the boundary
20 conditions for our model. Specifically, what happens when entrepreneurs start accumulating
21 failures, and the blame for the cause of their failure is primarily internal? What happens when
22 entrepreneurs continue to fail in their intrinsically motivated endeavors?

23

24 **Moderating Impact of the Extent of Failure on the Relationship Between Internal**

25 **Attribution of Blame and Subsequent Venture Growth**

1 While internal attribution of blame allows entrepreneurs to learn effectively, the conditions under
2 which they preserve self-esteem are important for future entrepreneurial endeavors. Too many
3 failures and too much internal blame can reduce an entrepreneur's self-efficacy. Self-efficacy
4 refers to individuals' conscious beliefs in their own abilities to accomplish desirable task
5 performance (Bandura, 1997; Baron, 2004). Self-efficacy "impacts our perceived control, how
6 much stress, self-blame, and depressions we experience while we cope with taxing circumstances,
7 and the level of accomplishment we realize" (Markman et al., 2002: 151-152). It also influences
8 our course of action, level of effort, and perseverance (Bandura, 1999). Scholars in
9 entrepreneurship have further specified the scope of self-efficacy by introducing the concept of
10 *entrepreneurial* self-efficacy (Forbes, 2005). Entrepreneurial self-efficacy has been defined in
11 terms of the degree to which individuals believe they are capable of performing the roles and
12 tasks associated with pursuing an entrepreneurial career, starting businesses, and managing and
13 growing new ventures (Baum & Locke, 2004; Boyd & Vozikis, 1994; Chen et al., 1998; Forbes,
14 2005). Greater entrepreneurial self-efficacy is generally associated with better entrepreneurial
15 outcomes (Bandura, 1997; Lee & Klein, 2002; Prussia & Kinicki, 1996; Tierney & Farmer, 2002).

16 What determines one's level of self-efficacy? Self-efficacy levels are based on
17 individuals' causal attribution for past experiences (Bandura, 1997). "Appraisal of personal
18 efficacy is enhanced by selective recall of past successes and diminished by recall of failures"
19 (Bandura, 1997: 111). Development of self-efficacy thus involves the process by which
20 individuals make causal attribution for their experiences and performance outcomes (Martinko et
21 al., 2006). Indeed, how individuals identify the cause of their failure can affect the development
22 of self-efficacy (Gist & Mitchell, 1992). While overcoming a failure can allow entrepreneurs to
23 move on and make new commitments leading to resiliency and a sense of self-efficacy (Benight

1 & Bandura 2003; Fisher, 2001), too many failures attributed internally can be harmful in reducing
2 the same self-efficacy (Gundlach et al., 2003).

3 In addition to eroding self-efficacy, too many failures can lead to the accumulation of
4 internal blame and generate negative responses that may hinder the learning process (Shepherd,
5 2003). Shepherd and Cardon (2009) develop a framework that explains variance in the intensity
6 of the negative emotions and the variance in learning from failures. They argue that failures that
7 more significantly thwart an individual's need for competence, autonomy, and relatedness will
8 generate a stronger negative emotional reaction. Accumulation of internal attribution of failure
9 may further relate to depression and self-recrimination (Martinko et al., 2006). Studies also find a
10 vicious cycle where low self-esteem individuals who blame themselves for their failures
11 perpetuate continued failure (Brockner & Guare, 1983).

12 In sum, while we suggest that internal attribution is associated with effective learning and
13 subsequent growth, we predict that, after a certain threshold, too much failure attributed internally
14 may dampen the effectiveness of learning through decreasing entrepreneurial self-efficacy and
15 leading to the buildup of negative emotions (Shepherd & Cardon, 2009). This leads us to
16 hypothesize that the extent of failures experienced by entrepreneurs—operationalized by the
17 number of failures—will moderate the relationship between their internal attribution of blame for
18 their failures and the growth of their subsequent ventures.

19 **Hypothesis 3: The impact of the extent of failure experiences will moderate the**
20 **relationship between the level of entrepreneurs' internal attribution of blame for the**
21 **cause of failure and their subsequent venture growth, such that:**

22 **(1) Ventures by entrepreneurs who have experienced a low number of failures, will**
23 **achieve higher growth with higher levels of internal attribution.**

24 **(2) Ventures by entrepreneurs who have experienced a high number of failures, will**
25 **achieve lower growth with higher levels of internal attribution.**

26
27 **Moderating Impact of the Extent of Failure on the Relationship Between Intrinsic**

28 **Motivation to Start Up Another Business and Subsequent Venture Growth**

1 The knowledge assets gained through failure interacts with the evolving vision of entrepreneurs
2 to create value (Penrose, 1959). Although entrepreneurs may fail several times, their intrinsic
3 motivation often in the form of passion and persistence for entrepreneurship may keep them
4 going forward (Chen et al., 2009). Perseverance, in the shape of greater commitment, can rise
5 even higher. Individuals highly committed to a cause not only prefer more challenging activities,
6 but also display greater staying power in those pursuits (Bandura, 1997). Winston Churchill, for
7 example, famously said that “Success is the ability to go from failure to failure without losing
8 your enthusiasm” (quoted from Minniti & Bygrave, 2001). Indeed, many serial entrepreneurs
9 repeatedly engage in the founding of unsuccessful ventures, continuing the process until reaching
10 success (Cardon et al., 2010).

11 However, the intrinsically motivated endeavors in the form of persistence can be
12 functional and dysfunctional depending on the context. For example, escalation of commitment
13 can be defined as the tendency to overly commit to a failing course of action (Staw, 1997). This is
14 often associated with an increasing commitment to the same course of action in a sequence of
15 decisions that result in negative outcomes (Karlsson et al., 2005a, 2005b). Prior research has
16 shown that most entrepreneurs are overly optimistic (Busenitz & Barney, 1997; Forbes, 2005).
17 Optimistic overconfidence allows entrepreneurs to start several businesses, believing that their
18 likelihood of experiencing success—“this time”—is much greater (Hayward et al., 2006) while
19 objective data may suggest otherwise (Baron, 2004). It is possible that repeated failures indicate
20 that an entrepreneur is simply not good at the entrepreneurial game.

21 More importantly, it is critical to take into account the psychological importance attached
22 to venturing in order to assess the varying degrees of emotional damage when previous ventures
23 fail. Shepherd and Cardon (2009) argue that not all failures generate an equal amount of grief,
24 and that the strength of negative emotional reaction to failure (that interferes with effective

1 learning) depends on the importance of the project to the individual. There are certain
2 circumstances and individual predispositions under which failure is more (or less) likely to
3 generate a sense of grief. Archer (1999) and Jacobs et al. (2000) find that the more importance
4 attached to the object lost, the greater the level of grief.

5 The continuous failure of intrinsically motivated endeavors is likely to generate a sense of
6 grief that interferes with entrepreneurs' ability to overcome and learn from the failure (Archer,
7 1999). The strength of the negative emotional reaction to failure depends on the extent to which
8 the satisfaction of the psychological needs of competence, autonomy, and relatedness—in the
9 form of intrinsic motivation—are thwarted by failure. Indeed, intrinsic motivation concerns active
10 engagement with tasks that individuals are interested in and that promote psychological growth
11 (Deci & Ryan, 2000). An increasing number of failures of intrinsically motivated endeavors
12 (greater levels of psychological ownership and personal engagement) are likely to result in a
13 stronger negative emotional response that hinders learning, recovering, and starting up another
14 successful business (Shepherd, 2003). In summary, we hypothesize that the extent of failures
15 experienced by entrepreneurs—operationalized by the number of failures—will moderate the
16 relationship between entrepreneurs' intrinsic motivation to start up another business after failure
17 and subsequent venture growth.

18 **Hypothesis 4: The impact of the extent of failure experiences will moderate the**
19 **relationship between the level of entrepreneurs' intrinsic motivation to start up**
20 **another business after failure and their subsequent venture growth, such that:**
21 **(1) Ventures by entrepreneurs who have experienced a low number of failures, will**
22 **achieve higher growth with higher levels of intrinsic motivation.**
23 **(2) Ventures by entrepreneurs who have experienced a high number of failures, will**
24 **achieve lower growth with higher levels of intrinsic motivation.**

25 26 **Methods**

27 **Entrepreneurship in Japan**

1 Entrepreneurs strategically respond to the institutional incentives and disincentives (Baumol,
2 1993; Lee et al., 2007, 2011; Peng et al., 2010). In a country where the institutional environment
3 is hostile for entrepreneurs, it may be difficult for individuals to embark on an entrepreneurial
4 career, let alone a second chance of coming back from a failure.² “Japanese society rarely lets
5 people bounce back from the perceived shame of failure or bankruptcy” (*Economist*, 2008). A
6 societal perception of failure has critical implications for the level of entrepreneurial activity
7 (Baumol, 1993; Peng et al., 2010). Such collective sensemaking also impacts the attributions that
8 entrepreneurs make for failures and their decisions on whether they continue despite hardship
9 (Cardon & McGrath, 1999; Cardon et al., 2010).

10 In Japan, where tolerance of failure is very low and social stigma of failure is very high,
11 many failed entrepreneurs commit suicide (*Time* 1999).³ Since 2001, the number of suicides by
12 business executives and self-employed (many are entrepreneurs) has accounted for as much as
13 10% of the total number of suicides committed every year. According to the Ministry of Health,
14 Labor, and Welfare (2006), the top three causes of death for Japanese are (1) cancer, (2) heart
15 diseases, and (3) cerebral diseases. However, among business executives and entrepreneurs, the
16 second leading cause for death is suicide. Meanwhile even in Japan, serial entrepreneurship does
17 happen (Asaba, 2013). Kawakami (2007) reports that half of the failed entrepreneurs desire to
18 come back, and 9.6% actually do start up another business within two years. The opportunities to
19 revitalize from prior failure for future entrepreneurship thus exist even in this harsh climate for

² The Global Entrepreneurship Monitor (GEM) study (2006) reveals that out of the 42 countries, Japan is ranked 41st in early-stage entrepreneurial activity rates. The result is the stifling of entrepreneurial activities, the slowdown in innovation, and the Lost Decade (the 1990s) (Harada 2005).

³ Studies on U.S. entrepreneurs have also reported the link between entrepreneurship and the stigma associated with the threat of failure. Boyd and Gumpert (1983) find that the majority of entrepreneurs reported numerous physical ailments from which they suffered regularly, an increased use of alcohol and tobacco since starting an entrepreneurial career, and a high percentage (12%) of them were undergoing regular psychiatric counseling.

1 entrepreneurial failure. Overall, we find that this context is particularly suitable for understanding
2 failure recovery.

3 **Data⁴**

4 Data were obtained from the “Survey of Entrepreneurs Starting their Businesses for the Second
5 Time” (*Nidomeno-kaigyounikansuru-anketo*). This was a questionnaire-based survey of new-
6 venture founders who have experienced business failures, conducted in 2001 by the National Life
7 Finance Corporation (NLFC: *Kokumin-seikatsu-kinyuu-kouko*). Every year, NLFC carries out a
8 large-scale survey covering new ventures in Japan. The aggregated result of the survey is
9 published annually in the *White Paper on Business Start-ups (Shinki-kaigyou-hakusho)*. As the
10 largest survey of new ventures in Japan, a number of advantages associated with using the data
11 have been identified (Harada, 2003; Masuda, 2006). In 2001, NLFC conducted a follow-up study
12 of entrepreneurs who have had failure experiences.⁵ Our dataset is based on the aggregated result
13 of this additional survey. Despite missing values, we have a total of 203 new-venture-founder
14 observations. Since the additional questionnaires include the cognitive factors such as attribution
15 of failure and motivation to start another venture, as well as financial data before and after failure,
16 the survey data are ideal to address our research questions. In terms of the timeliness, we find the
17 data still relevant while time has passed since the point of data collection. Despite some profound
18 changes in the socio-economic environment in which entrepreneurs operate, the phenomenon of
19 interest does not vary with the volatility since the constructs and the psychological mechanisms
20 we explore in this study are not time sensitive.

⁴ Data were provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, The University of Tokyo.

⁵ A total of approximately 5,000 surveys were mailed out where only recipients with experience of failure were asked to complete and return the survey. In other words, NLFC did not know how many of the recipients actually had failure experiences prior to administering the survey. Therefore, the response rate is not certain (i.e., how many out of the 5,000 should be accounted for in the total sample size and the corresponding response rate, since only those who have failure experiences were asked to respond to the survey).

1 **Measures**

2 ***New venture growth.***⁶ While many studies use a subjective measure on entrepreneurs' behavioral
3 intentions, we use an objective measure to capture new venture growth as our dependent variable.
4 It is measured by the growth rate of employees—the ratio of the increased number of employees
5 (total number of employees at the time of the survey minus the total number of employees at the
6 time of start-up) to the initial number of employees at the time of start-up. More specifically, we
7 measure the increase in size, and divide it by age (in months) to obtain the average growth rate
8 over the venture's life.

9 ***Attribution of blame.*** Respondents were asked to list up to three major reasons (see Appendix A),
10 as well as to indicate (among the three) the primary reason for their failure. Based on what they
11 identify as the three reasons, we create a percentage variable, "*internal attribution of blame.*"
12 This variable equals to 1 if all three choices are associated with internal attribution of blame (3/3),
13 equals to .66 if two of their three choices are associated with internal attribution of blame (2/3),
14 equals to .33 if one of their three choices is associated with internal attribution of blame (1/3), and
15 0 otherwise (0/3).⁷ We acknowledge that essentially, the true cause of failure is difficult to assess
16 (Cardon et al., 2010). Individuals see different aspects of failures (Shaver, 1985) and are also
17 likely to perceive both internal and external attributes of blame for each and every failure.
18 Therefore, in order to begin our exploration of entrepreneurs' attribution of blame for their failure,
19 we use the percentage variable as a proxy to determine the general tendency whether the blame is
20 internalized for subsequent learning.

21 ***Motivation to start again.*** Respondents were asked to list up to two major reasons (see Appendix
22 B), as well as to indicate (among the two) the primary reason for their starting up another venture

⁶ Other ways of measuring venture performance were available, such as monthly sales, whether the business is making profit or not (binary variable) at the time of the survey, and time to break even (in months) – closely tied with outcome of learning. Results are qualitatively similar to our main findings.

⁷ We also create a dummy variable whereas the variable equals to 1 if the respondents' primary reason for failure was internally attributed and 0 otherwise. Results are qualitatively similar to our main findings.

1 upon previous failure. Similarly to attribution, we create a variable, “*intrinsic motivation*,” based
2 on what respondents identify as the two reasons. This variable equals to 1 if both their choices are
3 associated with intrinsic motivation (2/2), equals to .5 if one of their choices is intrinsic
4 motivation (1/2), and 0 otherwise (0/2).⁸ Brief and Aldag (1977: 498) suggest that, “It is not
5 possible to classify objectively an individual as intrinsically or extrinsically motivated. Rather, it
6 is necessary to assess self-attribution of motivation.” We do just that and capture respondents’
7 self-attribution of their motivation to start up another venture. Just as in coding the attribution of
8 blame, we determine whether or not motivation was primarily intrinsic by weighing what
9 respondents identify as their most critical driver for their entrepreneurial action.

10 ***Extent of failure.*** We use the number of failures respondents have experienced prior to starting
11 their current venture to measure the *extent of failure experiences*. We use this as a more concrete
12 and measurable proxy to operationalize the construct. In addition, to test for a curvilinear
13 (inverted U-shape) interaction effect, we create another variable in square terms.

14 ***Control variables.***⁹ We control for four sets of factors to rule out alternative explanations. First,
15 we control for *industry effects* by creating dummy variables.¹⁰ We also create a dummy variable,
16 *domain abandonment*, to control for the learning impact of failure-related experience (Kawakami,
17 2007; Kim & Miner, 2007). Second, we control for the nature of failure (Shepherd et al., 2009a)
18 by coding for the conditions under which entrepreneurs exited their previously failed
19 businesses—*voluntary liquidation* and *bankruptcy filing* (Lee et al., 2007, 2011; Peng et al.,

⁸ We also create a dummy variable whereas the variable equals to 1 if the respondents’ primary reason for starting up another business was based on intrinsic motivation and 0 otherwise (extrinsic motivation). Results are qualitatively similar to our main findings.

⁹ Considering the limited sample size, we strove for a selective number of control variables. We end up with a long list but all considered critical determinants that impact venture growth. Statistical power calculations for our models range from 0.935 to 0.975, which are well above the accepted norm of 0.80.

¹⁰ The industry categories are: (1) manufacturing, (2) wholesale, (3) retail, (4) restaurant, (5) construction, (6) transportation, (7) consumer service, (8) governmental service, (9) real estate, (10) real estate, and (11) others.

1 2010). Third, we control for organizational characteristics such as *venture age* and *venture size*
2 (Song et al., 2008). Fourth, we control for individual characteristics such as *gender* and *age at*
3 *new start-up* (Fischer et al., 1993), *industry experience* as proxy for entrepreneurs' knowledge,
4 skills, and capabilities (Minniti & Bygrave, 2001), amount of *start-up financial capital* raised for
5 the venture (Forbes, 2005; Tyebjee & Bruno, 1984), and the *length of time* (in months) from
6 when entrepreneurs exited their previous businesses until they founded their current venture.
7 Finally, we control for entrepreneurs' *orientation for growth* (Chandler & Hanks, 1998) by
8 creating a dummy variable based on a survey question regarding their aspiration for growth.

9 **Models**

10 We use robust regression analysis to test our hypotheses (Starbuck, 2005; Zaman et al., 2005).
11 This in turn will allow us to account for the pull effect of outliers (i.e., high-growth gazelles), and
12 will produce more efficient standard errors than OLS regression. Further, hierarchical and
13 moderated regression models will be utilized. By controlling for main effects, hierarchical
14 regression models enable us to examine the added explanatory variance of each independent
15 variable. In sequence, we enter control variables, main variables, and interaction terms. For
16 testing interactions among the variables of interest, the technique of moderation is useful (Dess et
17 al., 1997). Since the interaction term is tested for significance after all first-order effects have
18 been entered into the regression equation, it is considered a relatively conservative method for
19 examining interaction effects (Steensma et al., 2000).

20 For additional robustness checks, we use Tobit regression to complement our analysis
21 (Deephouse, 1996). Past research shows that any censoring problem such as using percentage as a
22 dependent variable would render biased estimates from an OLS-based analysis. While the rate of
23 new venture growth in our sample can take negative terms, having a negative growth rate would
24 suggest a course of failure. Since our data only constitute new ventures that are still alive, we

1 augment our analysis by using the Tobit regression designed to make improved estimates when
2 there are potential censoring issues. Results are qualitatively similar to our main findings.

3
4

Findings

5 Table 1 presents descriptive statistics. In order to capture any possible multicollinearity problems
6 associated with high correlation, we have checked all variance-inflation factors (VIFs) and
7 condition indexes. The maximum VIF is 1.56 and the mean VIF is 1.18, suggesting little problem
8 with multicollinearity (Kleinbaum et al. 1988).

9 **[Insert Table 1 about here]**

10 Table 2 depicts the robust regression estimates (hierarchical regression models) on the
11 changes in the rate of new venture growth. Model 1 is the base model containing only the control
12 variables. Model 2 reports the main effects. Models 3 to 6 provide the results of interaction
13 terms—including the interactions using the extent of failure (number of failures) in squared term
14 to test for the curvilinear relationship. Result shows that among the control variables, domain
15 abandonment is significant in Model 1, age at new start-up is marginally significant in Model 6,
16 and venture size is significant across all models.

17 **[Insert Table 2 about here]**

18 In Hypothesis 1, we predict that entrepreneurs' internal attribution of blame for their
19 failure is positively associated with the growth of their subsequent ventures. The result is
20 significant ($p < .05$) and positive, thus supporting Hypothesis 1. Similarly in Hypothesis 2, we
21 suggest that entrepreneurs' intrinsic motivation to start up another business upon failure is
22 positively associated with the growth of their subsequent ventures. The result is also significant
23 ($p < .01$) and positive, indicating support for Hypothesis 2.

24 Hypotheses 3 and 4 explore the interaction effects: (a) internal attribution of blame and
25 the extent of failure (number of failures), and (b) intrinsic motivation and the extent of failure

1 (number of failures). The significant ($p < .05$) and negative result of the interaction term in Model
2 5 provides support for Hypothesis 3, but Hypothesis 4 is not supported.

3 Overall, the significance of the moderating influence in Model 5 suggests that the main
4 effect of internal attribution of blame is superseded by the interaction effect. In other words, the
5 result shows that entrepreneurs with higher (as opposed to lower) levels of internal attribution of
6 failure will achieve *higher* growth when they have experienced a low number of failures, (extent
7 of failure: low), but when the number of failures is high (extent of failure: high), this relationship
8 is reversed—entrepreneurs with higher (as opposed to lower) levels of internal attribution of
9 failure will achieve *lower* growth. The significant result of the interaction effect is presented in
10 Figure 2.

11 **[Insert Figure 2 about here]**

12 Moreover, the significant result of the interaction term between internal attribution and
13 extent of failure (number of failures) in squared term in Model 6 suggests a non-linear
14 relationship. To account for the possible curvilinear relationship, we have conducted a piecewise
15 analysis. The result illustrates an inverted U-shaped curvilinear relationship involving internal
16 attribution, extent of failure (number of failures), and subsequent organizational growth. The
17 result of the piecewise analysis is presented in Figure 3.

18 **[Insert Figure 3 about here]**

19
20

Discussion

Contributions

22 Theoretical and qualitative research, venture investor sentiment, and common wisdom all posit
23 the potential for a positive impact of prior failures on the entrepreneurs' subsequent ventures. But
24 prior to our research there is very little empirical evidence to support these claims. In fact, this
25 study refutes the simple idea that failure is always beneficial—specifically that every

1 entrepreneur learns from failure and that every second venture benefits from the lessons learned
2 during an entrepreneur's prior failure. In our analysis of over 200 ventures founded by
3 entrepreneurs who have rebounded from at least one prior failure, there is *no* relationship between
4 the number of prior failures and new venture performance. More importantly, however, we find
5 that the relationship between prior failure and future entrepreneurship is much more nuanced and
6 is heavily influenced by the *cognition* of the entrepreneur.

7 Overall, at least three contributions emerge. First, by drawing on insights from the
8 cognitive literature in attribution and motivation we are able to better understand the link between
9 entrepreneurs' reaction to prior failure and the subsequent performance of their next venture. We
10 extend the stream of research related to the cognitive components predictive of responses to
11 failure in an entrepreneurial context. In response to the call for a better understanding of the
12 entrepreneurial process—especially a more nuanced view of failure and its implications (Cardon
13 et al., 2010; Shepherd et al., 2011)—we show that integrating cognitive perspectives in the
14 domain of entrepreneurship can be valuable (Baron, 2007; Grégoire et al., 2010).

15 Entrepreneurship arises ultimately from the actions of particular entrepreneurs, and consequently,
16 understanding why and how these individuals act as they do is critical to understanding the
17 entrepreneurial process (Baron, 2004; Shane et al., 2003). Among possible cognitive-oriented
18 perspectives in framing our research on entrepreneurial failure, our choice of attribution (to
19 explore the implication in terms of learning) and motivation (to explore the implications of
20 persistence) help highlight the importance of cognition as action-oriented, embodied, situated,
21 and distributed (Mitchell et al., 2011), which can offer rich implications for understanding
22 recovery, learning from failure, persistence, and doing better the next round. Our findings on the
23 impact of cognitive characteristics of failed entrepreneurs on the growth of their next venture also
24 provide valuable insights into serial entrepreneurship (Ucbasaran et al., 2006).

1 Second, our study also contributes to both the attribution and motivation literatures. We
2 find that attribution influences the effectiveness of the learning process. Specifically, internal
3 attribution, under certain conditions, benefits learning (by signaling the importance of the cause
4 of an event), thereby enables greater performance in the form of new venture growth. We also
5 find that the function of internal attribution of blame is contingent on the extent of failure
6 experiences operationalized by the number of failures (Figures 2 and 3). In other words, internal
7 attribution of blame can either be positively or negatively associated with subsequent venture
8 growth depending on the extent of failure experiences—in this case, number of previously
9 experienced failures. On the one hand, our findings support the view that internal attribution of
10 blame can lead to greater performance (in the form of new venture growth) when entrepreneurs
11 have experienced low number of failures. On the other hand, it can also lead to negative
12 outcomes when entrepreneurs suffer from a high number of failure experiences. The result of our
13 piecewise analysis also reveals that internal attribution of blame is associated with subsequent
14 organizational growth up until a threshold point. Beyond the threshold point, internal attribution
15 does not guarantee subsequent organizational growth. Overall, we have identified the role that
16 attribution plays behind entrepreneurial activity—and a boundary condition linking attribution
17 and subsequent venture performance.

18 In terms of motivation to start up another business after previous failure, our results reveal
19 that intrinsic motivation indeed leads to greater sustainability and organizational growth.
20 Specifically, entrepreneurs who recover and rebound from failure and are able to start up another
21 venture achieve growth in their subsequent entrepreneurial endeavor when they are driven by
22 intrinsic motivation. While we predicted that there is a threshold beyond which too many failures
23 of intrinsically motivated endeavors dampen the effectiveness of learning (or simply the trap of
24 escalation of commitment to a failing course of action), our findings demonstrate that

1 accumulative intrinsic motivation can result in a strong form of persistence that drives growth.
2 Most importantly, the entire premise of the study has involved the various mechanisms by which
3 entrepreneurs react to failure, and the implications for future growth. We argue that it is critical to
4 combine the effects of the attribution of blame, the motivation to start up again, and the extent of
5 failure experiences in order to better understand the mechanism of recovery from failure that
6 affects the outcome of future entrepreneurship.

7 Third, we empirically substantiate our arguments through a survey-based database of new
8 venture founders with failure experiences—to the best of our knowledge, one of the very first
9 such endeavors in the literature. Rarely do we see empirical research with actual entrepreneurs
10 who have multiple failure experiences. The nature of the survey has allowed us to examine the
11 conditions under which entrepreneurs experience failures, and how their reaction to failure can be
12 applied to predicting their subsequent entrepreneurial endeavors. Our focus on hard outcome (e.g.,
13 new venture growth) as opposed to behavioral intentions (e.g., whether they intend to start
14 another venture after the first failure) also adds to our understanding of successful
15 entrepreneurship. We find support not only for predicting the main effects but also for the
16 interaction effects (Figures 2 and 3) that reveal interesting boundary conditions linking previous
17 entrepreneurial failure and subsequent venture performance.

18 Overall, our study extends theoretically and empirically the literature on entrepreneurial
19 failure. Even within the “greater risk” and “hostile” environment to entrepreneurship in Japan,
20 people start businesses, fail, but some (but not all) recover under certain conditions we uncover in
21 this study. These entrepreneurs then learn from failure, persist, then go on to start another venture,
22 and ultimately attain success and growth. Given the paucity of entrepreneurship research on
23 Japan (Bruton & Lau, 2008), a country where entrepreneurship is desperately needed, our efforts
24 have also expanded the global scope of entrepreneurship research on failure and recovery. The

1 greater we understand about the relationship between failure and subsequent venture success, the
2 better it is to understand entrepreneurship, not just in Japan, but in other parts of the world where
3 tolerance of failure is low.

4 **Practical Implications**

5 On the surface, failure is something to be avoided. We do find that simply a greater amount of
6 failure experiences may not necessarily entail positive influence on subsequent venture
7 performance. In fact, an increasing number of failures can be especially harmful for those who
8 internally attribute their blame, since the larger number of failures will eventually become a
9 burden reducing one's self-efficacy. No matter how entrepreneurs intrinsically motivate
10 themselves to embark upon an entrepreneurial career upon multiple failures, this will not insure
11 greater success in the future.

12 However, our results indicate that revitalizing from failure is indeed possible. In a best-
13 case scenario, our findings offer direct practical implications. Specifically, entrepreneurs should
14 (1) avoid blaming it all on the external environment or luck, and instead find some aspect of the
15 failure to attribute internally to facilitate effective learning from failure; (2) be motivated
16 intrinsically, then pursuing intrinsic outcomes will facilitate the performance of the next start-up;
17 and (3) try not to fail too many times (perhaps reconsider your career option when it happens to
18 be the case). While most entrepreneurs are likely to experience some failure, we find that it is
19 their post-failure attitude that may make or break their subsequent endeavors.

20 **Limitations and Future Research**

21 Among limitations, first, our cross-sectional design limits causal inferences. Despite the
22 diagrammed arrows in Figure 1, the directionality as well as the appropriate time-lag of the
23 effects remains uncertain. Since the growth of a new venture is an outcome of a process that
24 occurs over time, a longitudinal approach will be more desirable for future research. A dynamic

1 view will also allow us to examine the possible shift in one’s attribution and motivation from one
2 failure to another that is not captured in our current study. Exploring the optimal balance (e.g.,
3 ambidexterity) between internal/external attribution and intrinsic/extrinsic motivation as well as
4 examining the shift in their composition and the path from one failure to another seems to
5 promise interesting findings. The concept of socially situated cognition would suggest that
6 context matters. The effects of failure, attribution, and motivation may vary depending on the
7 business environment.

8 Second, our data came from a specific institutional context—Japan. While controlling for
9 the context is strength of our design, it unfortunately limits the generalizability of our results
10 (Asaba, 2013; Nakamura, 2011). One can argue that different cultural norms and inner
11 mechanisms exist that may affect the prospects of entrepreneurs’ subsequent endeavors and their
12 future performance in different ways. There may be issues with social desirability bias in
13 respondents’ stated causes for failure given the conservative context. For example, cultural value
14 in Japan may encourage more external attribution (e.g., “face-saving”) and more continuation
15 despite hardship. Attribution patterns must be evaluated in conjunction with social context
16 because cultural values and norms affect the way individuals make attributions (Hess et al., 1987;
17 Holloway, 1988). Differences in attribution styles may exist between individualist and collectivist
18 cultures where individuals in collectivist cultures (e.g., Asia, Latin America, Africa) tend to be
19 less susceptible to the fundamental attribution error and to the self-serving bias than those in
20 individualist cultures (e.g., North America, Western Europe) (Li, 2012; Mao, Peng, & Wong,
21 2012). These findings suggest that our study may represent a less-error, less-biased effect of
22 cognitive factors. Henrich and colleagues (2010a, 2010b) have also argued that the Japanese
23 context is perhaps more generalizable than others such as the Western context, because Western
24 societies are among the least representative populations concerning fundamental aspects of

1 psychology, motivation, and behaviors. Either way, future research will benefit from embracing a
2 comparative or cross-country study design drawing on different cultural contexts (Li, 2012).

3 Third, in the absence of rich qualitative information, our study has all the usual trapping
4 associated with survey research. Future researchers are certainly encouraged to qualitatively
5 explore the complex issues associated with entrepreneurs' recovery from failure. Our sample
6 relies on self-reported data from entrepreneurs who failed but started and survived in their new
7 ventures. In other words, our sample only included previously failed entrepreneurs who managed
8 to come back, and whose new businesses were still surviving at the time of our study. As a result
9 our arguments may not be generalizable to those who exited and never came back to the
10 entrepreneurial game, or those who re-entered but failed and disappeared prior to the
11 administration of the survey. No comparison is thus made between previously failed
12 entrepreneurs who chose not to start another firm with those who did. We understand how
13 invaluable it must be if we could test our arguments on "all" entrepreneurs who failed. Our
14 current sample may pose such potential problems as selection (success) bias, common method
15 bias, and recall-bias (attribution-bias) by respondents. We also recognize the weakness of our
16 measurement (e.g., attribution, motivation)—constrained as a single-item measure. Future
17 research would benefit from utilizing a more robust scale measure of variables derived from the
18 psychology literature, experimental designs, and factor analytical techniques. Furthermore, in
19 terms of the "extent of failure" construct, a measurement of the magnitude of failure instead of a
20 simple number of failures may have captured additional insights to our arguments. Again, a
21 qualitative analysis as an additional element of study such as interviewing Japanese entrepreneurs
22 could have uncovered invaluable insights and provided robustness to both design and findings of
23 our study.

1 We also recognize that entrepreneurial success or failure may not entirely depend on the
2 founders/owners, and that other members of the top management team as well as the larger
3 institutional environment may have played a role (Zhu, Wittman, & Peng, 2012). This is
4 something that our data do not allow us to explore, but remains an interesting future direction to
5 probe into. Finally, it could be fascinating to study the relationship between causal attributions
6 and “actual” causes and their impact on outcomes. It is not easy to find studies of this nature
7 (Cardon et al., 2010). Perhaps the challenge is that it is hard to assess what actual causes of a
8 failure are since every description or explanation for a failure is a perception or attribution that
9 someone makes, and “truth” is often in the eye of the perceiver (Weick, 1995)—exactly what we
10 have explored in this study.

11
12

Conclusion

13 As a first step toward a better understanding of how entrepreneurs’ failure experiences play a key
14 role in determining the growth of their subsequent entrepreneurial endeavors, this study has
15 barely scratched the surface of this entrepreneurial mechanism. Our findings support the view
16 that under certain conditions, previous failures indeed stimulate future entrepreneurial growth.
17 Given the pervasiveness of business failures and the paucity of scholarly research on the link
18 between earlier failure and subsequent entrepreneurship, it seems imperative that our attention be
19 devoted to this important, relevant, and challenging research agenda of how entrepreneurs rise
20 from the ashes to attain future entrepreneurial success.

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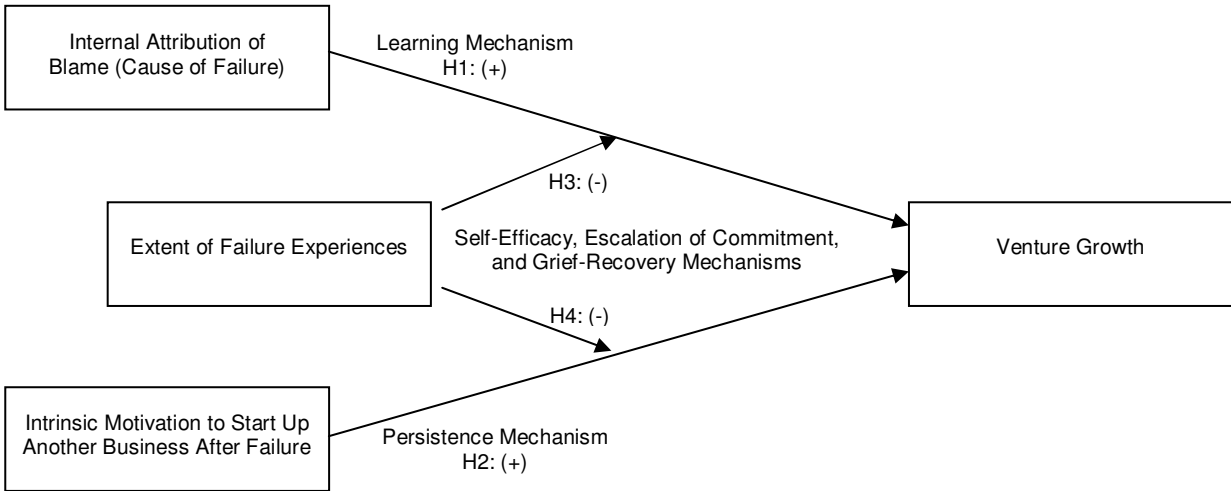
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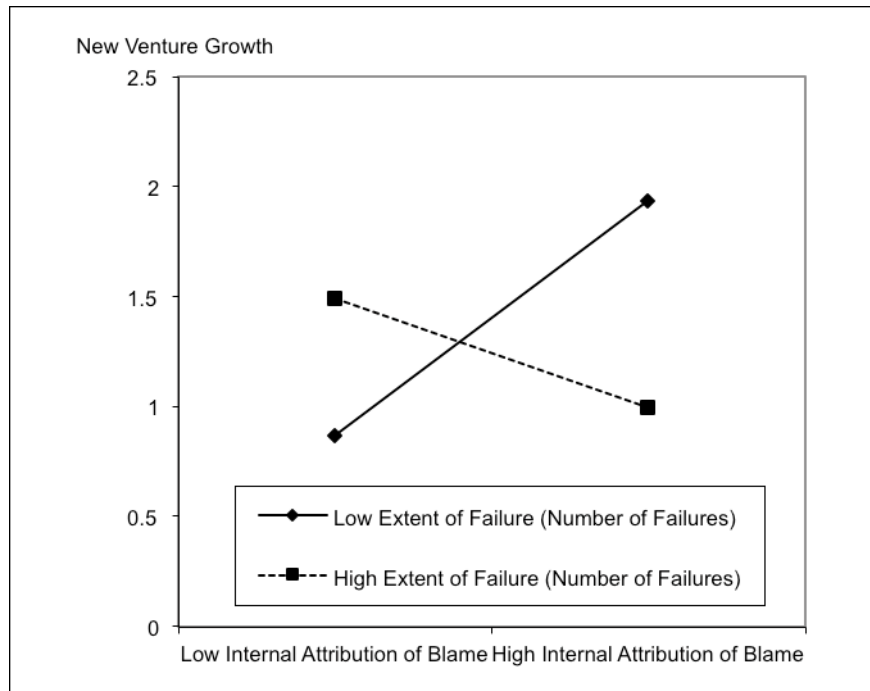
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Figure 1
Theoretical Model



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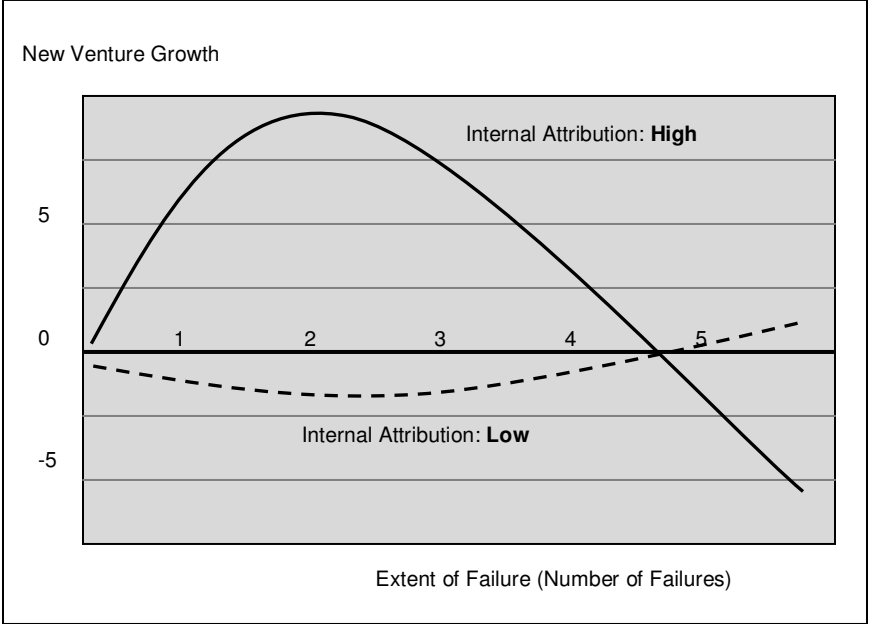
Figure 2
Interaction Effect: Internal Attribution of Blame and Extent of Failure



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Figure 3
Piecewise Analysis: Internal Attribution of Blame and Extent of Failure



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Table 1
Descriptive Statistics and Pearson Correlation Coefficients

Variable	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1. New Venture Growth	.92	3.04	-.90	33															
2. Domain Abandonment	.51	.50	0	1	.19***														
3. Voluntary Liquidation	.81	.39	0	1	-.09	-.05													
4. Bankruptcy Filing	.01	.11	0	1	-.02	.11*	.23***												
5. Venture Age	29.81	18.64	0	60	.06	-.01	.02	-.02											
6. Venture Size	6.47	11.74	0	113	.36***	.15**	-.03	-.02	-.02										
7. Gender	.86	.34	0	1	.08	.11*	.03	.05	.06	.13*									
8. Age at New Start-up	48.72	8.77	24	75	-.15**	.07	-.03	.06	-.07	-.13*	-.05								
9. Industry Experience	102.63	91.25	4	419	-.03	.03	.10	-.04	.03	-.03	.08	.44***							
10. Start-up Financial Capital	141.16	177.32	5	1410	-.05	-.10	.18***	.25***	-.05	.00	-.02	-.08	-.11*						
11. Time to Re-entry	96.50	81.59	0	398	-.08	.09	.00	.00	.02	-.06	-.02	.26***	-.12*	-.10					
12. Growth Orientation	.61	.49	0	1	.02	.00	.01	.01	.01	-.00	-.01	-.02	.06	-.03	-.06				
13. Extent of Failure	1.21	.57	1	5	.06	.02	.03	-.04	-.02	.05	-.05	.06	-.06	.05	-.02	.03			
14. Internal Attribution of Blame	.13	.28	0	1	.26***	.18***	-.11*	.04	.00	.09	.02	-.06	-.13*	-.03	-.01	.03	-.01		
15. Intrinsic Motivation to Start Up Again	.18	.29	0	1	.21***	.01	-.16**	-.07	.08	.03	-.12**	-.02	-.12*	.01	-.04	.09	.26***	.01	

Note. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

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Table 2
Robust Regression Hierarchical Estimates of New Venture Growth

Variable	Model1	Model2	Model3	Model4	Model5	Model6	Hypothesis Testing
Control Variables							
Domain Abandonment	.87** (.42)	.65 (.41)	.73 (.41)	.64 (.42)	.74 (.42)	.51 (.40)	
Voluntary Liquidation	-.77 (.53)	-.37 (.52)	-.31 (.51)	-.38 (.52)	-.30 (.52)	-.44 (.50)	
Bankruptcy Filing	-.50 (1.80)	.01 (1.75)	-.15 (1.73)	.02 (1.75)	-.15 (1.74)	.15 (1.67)	
Venture Age	.01 (.01)	.004 (.01)	.01 (.01)	.004 (.01)	.01 (.01)	.003 (.01)	
Venture Size	.09*** (.02)	.08*** (.02)	.08*** (.02)	.08*** (.02)	.08*** (.02)	.08*** (.02)	
Gender	.22 (.61)	.39 (.59)	.36 (.59)	.41 (.60)	.36 (.59)	.45 (.57)	
Age at New Start-up	-.03 (.03)	-.04 (.03)	-.04 (.03)	-.04 (.03)	-.04 (.03)	-.05* (.03)	
Industry Experience	-.0003 (.003)	.002 (.003)	.002 (.003)	.002 (.003)	.002 (.003)	.002 (.003)	
Start-up Financial Capital	-.0001 (.0001)	-.0001 (.0001)	-.0001 (.0001)	-.0001 (.0001)	-.0001 (.0001)	-.0001 (.0001)	
Time to Re-entry	-.002 (.003)	-.001 (.003)	-.001 (.003)	-.001 (.003)	-.001 (.003)	-.001 (.003)	
Growth Orientation	.11 (.42)	-.08 (.40)	-.06 (.40)	-.08 (.41)	-.06 (.40)	-.10 (.39)	
Main Variables							
Internal Attribution of Blame		2.33*** (.72)	3.49*** (.73)	2.34*** (.72)	3.49** (.74)	1.68** (.78)	H1: Supported
Intrinsic Motivation to Start Up Again		2.09*** (.73)	2.14*** (.73)	2.37*** (.73)	2.04** (.73)	2.31*** (.87)	H2: Supported
Extent of Failure		.02 (.34)	.21 (.35)	.09 (.52)	.18 (.52)	.38 (2.69)	
Extent of Failure ²						-.34 (4.83)	
Interaction Variables							
Internal Attribution x Extent of Failure			-2.45** (1.22)		-2.46** (1.23)		H3: Supported
Intrinsic Motivation x Extent of Failure				-.18 (1.02)	-.06 (1.02)		H4: Not Supported
Internal Attribution x Extent of Failure ²						3.96** (1.97)	H3: Supported
Intrinsic Motivation x Extent of Failure ²						-1.37 (1.87)	H4: Not Supported
Constant	2.14	1.48	1.00	1.39	1.03	1.35	
R-squared	.19	.27	.28	.27	.28	.29	
N	203	203	203	203	203	203	

Note. Industry dummies are included in the model but not listed here. Robust standard errors are in parentheses.
* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

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Appendix A Coding for Internal Attribution

Category	Answer Choices
<u>Internal attribution</u> of blame (for the cause of failure)	Lack of product development/marketing skills Lack of strategy, strategic inferiority Financial constraints due to lack of planning Lack of management know-how Lack of entrepreneurial skills
<u>External attribution</u> of blame (for the cause of failure)	Due to intense competition, reduction in market size Change in consumer needs, due to customers Shift in business customs Lack of talent, human resources Environmental uncertainty
<u>Other</u>	Due to personal health conditions Family circumstances/constraints Other

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Appendix B Coding for Intrinsic Motivation

Category	Answer Choices
<u>Intrinsic motivation</u> to start up another business upon previous failure	For autonomy/control Passion for entrepreneurship To obtain more freedom, independence Dream of becoming an entrepreneur
<u>Extrinsic motivation</u> to start up another business upon previous failure	For better allocation of profit For greater financial reward, higher income To commercialize an idea for social recognition Pursuit of higher status/fame
<u>Other</u>	No other alternatives Unfairness of other jobs Other

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