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Perceived Progress Variability and Entrepreneurial Effort Intensity: The Moderating Role of Venture Goal Commitment

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Abstract

Drawing on entrepreneurial motivation and goal striving literatures, we examined the dynamic relationship between momentary perceived progress, or an ongoing sense of how one is doing in the pursuit of one's venture goal, and entrepreneurial effort intensity among early-stage entrepreneurs who are based in business incubators. We also examined how perceived progress variability over time predicted entrepreneurial effort intensity, and whether venture goal commitment moderated this link. Experience-sampling data collected from over one hundred early-stage entrepreneurs indicated that perceived progress predicted greater effort intensity. Moreover, perceived progress variability over time negatively predicted entrepreneurial effort intensity, and venture goal commitment attenuated this negative relationship. Theoretical and practical implications of our study to entrepreneurial motivation and goal striving research are discussed.

Keywords: perceived progress; progress variability; venture goal commitment; entrepreneurial effort intensity; experience sampling methodology

JEL classification: L26 Entrepreneurship

1. Executive Summary

Entrepreneurs need to exert considerable effort to increase the success chances of their startup ventures. Surprisingly, we know very little about how entrepreneurs sustain their effort while implementing business opportunities. In this paper, we use a process approach to study the predictors of sustaining effort among early-stage entrepreneurs, particularly how perceptions of venture goal progress relate to entrepreneurial effort intensity, and how perceived progress variability over time, predicts entrepreneurial effort intensity. We focus on perceived progress because it has been argued that experiencing progress on a particular goal fuels people's subsequent effort.

Our study advances the entrepreneurial motivation research by examining what sustains entrepreneurial effort on the day-to-day as well as the week-to-week venture goal striving process. We build on and extend knowledge of the entrepreneurial motivation process by investigating how the entrepreneur's momentary progress perceptions impact effort intensity. We also offer insights into what sustains entrepreneurial effort by highlighting the role of experiencing consistent, steady progress in motivating the entrepreneur to continue working on the business venture. This variability has seldom, if at all, been studied. Moreover, we proposed and found that venture goal commitment moderated the progress variability and effort relationship. We reasoned that entrepreneurs who are highly committed to their venture goals tend to be less discouraged by the irregularities in progress they experience while working on their startup ventures. From a practical standpoint, our study findings can be useful not only for aspiring and incumbent entrepreneurs, but also for entrepreneurship educators and directors of business incubators. Entrepreneurs can increase perceptions of progress by establishing multiple milestones along their lengthy entrepreneurial goal pursuit, and reducing ambitious goals into

bite-sized progress markers. Entrepreneurs can also develop and implement interim milestones as a tangible step towards making a long-term pursuit look and feel more manageable. Periodic evaluation of progress by obtaining a better understanding of where one stands in goal attainment and what needs to be done would also be helpful. Our findings also have implications for training and supporting prospective entrepreneurs, particularly in strengthening their venture goal commitment. Goal commitment is most vital in situations involving difficult goals, such as business venture goals. To enhance venture goal commitment, one could explicitly write down and clarifying the steps in one's goal pursuit, and obtain social support and encouragement from trusted mentors and like-minded entrepreneurs in the community.

2. Introduction

Early-stage entrepreneurs tread a lengthy path towards attaining their venture goals, as venture implementation is a long and complex process involving several activities (Carter et al., 1996; Gartner, 1985; Reynolds and White, 1997). In the early phase of new venture implementation where uncertainties abound and mortality rate is high (Shepherd et al., 2000), entrepreneurs need to exert considerable amount of effort to give their startup ventures a fighting chance to succeed (Carter et al., 1996; Foo et al., 2006; Gatewood et al., 1995). Early-stage business ventures have a gestation period, or the time between starting a business and when the business starts to attain positive cash flows and substantial revenues (Delmar and Shane, 2003). This gestation period roughly takes three years or sometimes even more, largely because of the initial startup costs and the steep learning curve in the implementation process (Carter et al., 1996; Reynolds and Miller, 1992). Carter and colleagues (1996) found that “individuals who started firms and put themselves into the day-to-day process of running an ongoing business...resulted in starting firms that generated sales and positive cash flow” (pp. 151-152),

and concluded that nascent entrepreneurs must devote the time and effort to the day-to-day business venture activities.

What makes entrepreneurs persevere or what keeps them engaged in their startup ventures is a critical yet surprisingly understudied phenomenon (Hoang and Gimeno, 2010). We know very little about how entrepreneurs sustain their effort while implementing business opportunities (Shook et al., 2003). Even in the broader literature of work motivation, scholars observed that “the motivational psychology behind long-term pursuits is markedly understudied” (Bateman and Barry, 2012, p. 985), and have called for more studies to unravel this black box of regulating one’s effort in the process of striving for long-term goals. Duckworth and colleagues (2012) asserted that individual differences in grit, or perseverance and passion for long-term goals, predicted long-term successful outcomes and achievements. Such disposition is manifested in the intensity of effort a person puts into a specific long-term undertaking. Thus, understanding the process of sustaining entrepreneurial effort is important because it can lead to the development of models that shed light on the critical phenomenon of what happens after long-term venture goals have been set and before they are eventually achieved (Bateman and Barry, 2012).

In this paper, we use a process approach to study the predictors of sustaining effort among early-stage entrepreneurs, particularly how perceptions of venture goal progress relate to entrepreneurial effort intensity, and how perceived progress variability over time, predicts entrepreneurial effort intensity. We focus on perceived progress because experiencing progress on a particular goal is a strong predictor of people’s motivation to remain engaged in the goal (Mitchell and Daniels, 2003; Locke and Latham, 1990). Moreover, to understand whether people persist in long-term endeavors, “the quality of subjective experience while engaged in the task

over time” (Bateman and Barry, 2012, p. 999) must be considered. In the new venture implementation, rewards are few and far between and entrepreneurs lack direct supervisors to provide guidance or give periodic feedback. In such a highly autonomous environment, we reason that entrepreneurs rely on perceptions of progress to regulate venture effort.

Our study contributes in three ways. First, we advance the entrepreneurial motivation research by examining what sustains entrepreneurial effort on the day-to-day as well as the week-to-week venture goal striving process. Past studies on entrepreneurial motivation have looked at static reasons such as autonomy, rewards, family security (Kuratko et al., 1997), gender differences in entrepreneurial career motivation (DeMartino and Barbato, 2003), and a person’s utility function reflected in anticipated income, risk attitudes, desire for independence, and the like (Douglas and Shepherd, 2000). While these static motivational constructs are important, there is a glaring lack of studies addressing the dynamic motivational factors of what happens during venture goal pursuit (Bird, 1988; Shane et al., 2003; Shook et al., 2003).

The only exception we found was that of Foo et al. (2009). While they also examined what motivates entrepreneurs, our paper extends their work in three ways. First, instead of affect, we investigated the motivating impact of goal striving, specifically goal progress, variability of such progress over time, and commitment. Second, our operationalization of effort differed from Foo et al. (2009). They examined future and present related effort, while we measured effort intensity on creative tasks and administrative tasks. Scholars have reasoned that these creative and administrative tasks are crucial for entrepreneurial success (e.g., Morris et al., 2009; Reynolds and White, 1997). Third, although we used a similar cellular phone based ESM protocol, one of the main contributions of our study is the impact of perceived progress variability on entrepreneurial motivation. Such variability constructs are best generated using

repeated measure designs. In contrast, Foo et al. (2009) ignored such variability constructs. Taken together although Foo et al. (2009) and this paper focused on different mechanisms— affect vs. goal striving—these studies are complementary as they lead to a better understanding of what motivates entrepreneurs.

Second, our study provides insights into what sustains entrepreneurial effort by highlighting the role of experiencing consistent, steady progress in motivating the entrepreneur to continue working on the business venture. Motivation consists of goal setting and goal striving (Lewin, 1943). Extant literature has focused more on goal setting (Locke and Latham, 2002) which typically looks at the start of a goal and final outcomes, while goal striving (Heckhausen and Gollwitzer, 1987) which transpires in the day-to-day goal pursuit has not been examined anywhere in the same depth as goal setting (Bateman and Barry, 2012; Mitchell and Daniels, 2003). We address the paucity of research in this area and provide evidence that perceptions of progress impact persistence in long-term pursuits. Perceived progress, just like any type of human perception, fluctuates even over short periods of time (Jones, 1976; Swann, 1984). On some days, the entrepreneur may perceive good progress, while on other days, s/he may perceive inadequate progress. To our knowledge, this variability has seldom, if at all, been studied. By taking into account progress variability, we provide additional insights beyond what average score parameters could offer.

Third, we provide venture goal commitment as a moderator of the progress perception and effort relationship. Underscoring the need to study goal commitment, Locke and Latham (1990) quipped, “it is virtually axiomatic that a goal that a person is not really trying for is not really a goal and therefore cannot have much effect on subsequent action” (p. 124). We theorized that venture goal commitment attenuates the detrimental impact of perceived progress variability

or the experiences of erratic, unsteady progress over time, on entrepreneurial effort intensity. As commitment signifies the extent of determination an entrepreneur has to attain his/her venture goal (Locke and Latham, 2002), we reasoned that entrepreneurs who are highly committed to their venture goals tend to be less discouraged by the irregularities in progress they experience while working on their startup ventures.

In the next section, we develop hypotheses on the dynamic linkages among progress perceptions and entrepreneurial effort intensity, and how venture goal commitment moderates the perceived progress variability to entrepreneurial effort intensity linkage. Next, we explain our empirical study which involved 111 early-stage entrepreneurs who provided six weeks of experience sampling data spread over three months. Finally, we highlight the theoretical and practical implications of our study.

3. Theoretical Background and Hypotheses Development

3.1. Perceived progress and entrepreneurial effort intensity

In this section, we hypothesize the impact of perceived progress on entrepreneurial effort intensity. Little is known about this relationship because there are only limited studies from a dynamic perspective of goal striving in general as well as in the entrepreneurial motivation process research in particular. Before presenting the arguments for our hypothesis, we first define our key constructs of interest. Perceived progress refers to the self-evaluation or appraisal of an individual's success in pursuing a particular goal (Brunstein et al., 1998; Karoly, 1993). Individuals experience making progress when they perceive that they are moving toward a particular desirable outcome or end state (Fishbach and Dhar, 2005). Past studies indicated that perceptions of progress or the subjective experience of making progress could even outweigh the impact of actual progress in determining subsequent behaviors (e.g., Kivetz et al., 2006; Soman

and Shi, 2003). As perceptions are dynamic (Swann, 1984), we captured multiple episodes of progress perceptions and also accounted for variability in experienced progress over time, as we will explain later. In the absence of standardized regular feedback from superiors, entrepreneurs would typically depend on their own perceptions on how much they are progressing in their entrepreneurial journey. Experiencing a sense of progress is fundamental to human experience, yet surprisingly little is known about its dynamic motivational role while people are striving for long term goals that typically involve uncertainty and complexity (Bateman and Barry, 2012). Understanding the “in-the-moment” progress perceptions entails a careful examination of people’s momentary experiences of making progress at work.

Effort is regarded as “a limited-capacity resource that can be allocated to a range of different activities” (Yeo and Neal, 2004, p. 231), with such allocation varying in intensity (Brown and Leigh 1996; Kanfer and Ackerman 1989; Yeo and Neal, 2004). Specifically, we examined entrepreneurial effort intensity or how hard an entrepreneur works towards establishing a viable business venture. Entrepreneurial effort intensity includes the degree of hard work on both creative and administrative tasks since entrepreneurs need to do both task types (Morris et al., 2009; Reynolds and White, 1997). For instance, early-stage entrepreneurs may need to generate business ideas, develop plans, and strategize to obtain resources (Ardichvili et al., 2003). In addition to these tasks related to product and process creativity, early-stage entrepreneurs have to attend to administrative tasks such as applying for licenses, procuring and maintaining supplies and equipment, generating reports, and running day-to-day operations (Gartner et al., 1998), among others.

Experiencing a sense of progress can play an important role in motivation *during work*. Amabile and Kramer (2011) argued that momentary experiences of making headway, even just

small, ordinary, incremental experiences that often go unnoticed, can make a significant impact on one's day-to-day motivation. These episodes of making progress are regarded as "small wins" which according to Weick (1984) are brief, localized, and plausible experiences that could spawn moderate levels of arousal from which people can obtain confidence and empowerment to persist and move forward. While "big wins", or ultimate breakthroughs and long-term goal attainment are important, these major events by their very nature do not happen often. Amabile and Kramer (2011) argued that even minor steps of experiencing day-to-day incremental progress could have a powerful impact on one's motivation, as these ordinary progress experiences accumulate into critical steps that can sustain performance over time. In analyzing qualitative diary entries kept by knowledge workers, Amabile and Kramer (2011) observed that participants were more likely to report "good days" when they experienced progress in working towards their goal. They concluded that the experience of making progress at work increased workers' motivation during that specific workday.

While Amabile and Kramer did not study the impact of "good days" on work effort, we believe that perceived progress should also predict greater effort intensity. This reasoning is consistent with expectancy models (Klein, 1991; Lewin, 1935) that indicate perceptions of moving towards reaching one's goal could increase persistence towards one's goals (Atkinson and Birch, 1974). People tend to persist and put in more effort on goals which they expect to succeed (Olson et al., 1996). Importantly, regulatory focus studies suggest that people who are high in promotion pride tend to increase their effort following wins and decrease their effort following losses, while people high in prevention pride tend to decrease their effort following wins and increase their effort following losses (Higgins et al., 2001). Because entrepreneurs on average tend to regulate their behavior through a promotion focus rather than a prevention focus

(Corbett and Hmieleski, 2007; McMullen and Shepherd, 2002), we predict that the experience of favorable perceived progress which represents a small win would encourage more effort intensity.

Examining progress as it is experienced by the individual over time while engaged in goal-relevant tasks contributes to illuminating the underlying mechanisms that influence subsequent effort intensity. The single field study we found that examined goal progress and effort (Wanberg et al., 2010) revealed that among the unemployed, progress towards getting a job predicted less job search effort. What Wanberg and colleagues found would seem to contradict our assertion and those of Amabile and Kramer (2011) that progress would positively predict effort intensity. We note two unique characteristics of Wanberg et al.'s (2010) study that can explain their findings. First, unlike Amabile and Kramer's (2011) participants who were working on creative tasks, finding a job is about correcting an unpleasant situation (i.e., job loss). The stress experienced due to unemployment and pressure related to finding work may impact job seekers differently than entrepreneurs who are trying to start businesses. Entrepreneurs have a job and a business, but they are trying to make it financially viable, which is different from the context of trying to find employment. The unemployed individuals may reward themselves with a break, hence less effort, when they perceive that they have made considerable progress. Second, finding a job has a clear goal marker—getting an offer. The goal of gaining employment is a short-term goal that has a clear end such that when one finds his/her preferred job and gets it, job search effort is no longer necessary. It can be considered a static goal such as owning a new house or getting a promotion at work. In contrast, the goal of working towards a financially viable business venture involves continuous effort to manage and grow the business. Unlike finding employment, the journey to attaining a viable business venture is not so straightforward,

and markers of progress are uncertain and relatively few and far between. The nature of an entrepreneurial venture goal is dynamic and can be likened to work goals such as continuous improvement in productivity among knowledge workers (as in Amabile and Kramer's 2011 investigation).

Interestingly, Huang and colleagues (2012) found in a series of laboratory studies that people's mental representations of their goal progress sustained their efforts and kept them engaged in their goal striving. In particular, they found that when people have just started to pursue a goal, their main concern to remain engaged is the eventual attainability of the goal. People's mental representation of goal progress may be taken as signal that the goal is attainable and as such they could remain motivated to carry on. Theories on goal striving suggest that people are motivated to work on a particular goal as they sense or perceive that they are moving closer to that goal (Lieberman and Forster, 2008). This mental representation of goal progress is argued to be an instrumental mechanism that will increase effort in the midst of long term goal pursuits in the presence of two conditions: (1) if the person's effort is necessary for the eventual goal attainment and (2) obtaining accurate progress is difficult to gauge (Huang et al., 2012). In the early stages of the business venture, effort is critical to the success of new venture implementation, and it is relatively difficult to obtain moment-to-moment objective and precise assessments of progress while working on one's startup venture. Building on these arguments, we hypothesize that favorable progress perceptions would increase entrepreneurial effort intensity.

Hypothesis 1: Within entrepreneurs, momentary perceived progress positively predicts entrepreneurial effort intensity across time.

3.2. Perceived progress variability and entrepreneurial effort intensity

Kanfer (2009) noted that examining patterns of experiences can offer a deeper understanding of motivational processes. Although researchers have argued that goal progress matters in motivation, less attention has been given to progress variability on motivation. We examined how *variability over time in perceived goal progress* shapes entrepreneurial effort intensity. We expect that when entrepreneurs experience steady or consistent favorable progress over time, they should be motivated to exert more effort. The motivational principle of progressive mastery (Bandura and Jourdan, 1991) or mastery modeling (Bandura, 1997) posits that individuals must experience successes progressively in order to achieve high levels of performance outcomes. In that study, they found that consistent performance levels (either similar or superior performance levels as compared to peers) had different motivational effects as when there were changes in performance levels (either progressively improving or progressively worsening performance levels as compared to peers). These findings suggest that not only the average level of perceived progress but also the extent of perceived progress variability over time will be associated with effort intensity.

If the entrepreneur experiences steady progress over time (or low levels of perceived progress variability), s/he would be able to establish stronger links between present effort and the likelihood of attaining desired outcomes. According to Weiner (1985), people's causal attribution for achievement shapes subsequent goal striving, and the stability element determines individual's expectancies for success (Eccles and Wigfield, 2002). Experiencing consistent progress levels over time would prompt the entrepreneur to make direct connections and attributions to his/her own effort (Weiner, 1985). Such internal attributions improve one's self-esteem which tends to subsequently facilitate more effort in the goal striving process (Baumeister et al., 2003; Graham and Weiner, 1996). A high level of progress variability over

time (i.e., an entrepreneur experiences very high progress levels today, low progress levels tomorrow, high progress levels the following day, etc.) would be detrimental to entrepreneurial effort intensity because it would tend to undermine the entrepreneur's self-confidence in his/her ability to sustain progress. In addition, a high degree of variability in perceived progress would most likely make the entrepreneur doubt that progress is directly linked to one's effort, and could therefore undermine one's motivation to exert further effort.

From a cognitive lens, it has also been argued that experiencing favorable progress over time could free up one's cognitive resources which could then facilitate more effective strategies that could increase one's attention toward a particular goal (Sweller, 1988), as making progress implies a person does not have to think too much about the most recent goal-relevant tasks and would thus be able to move on to the next goal-relevant tasks. Since past studies indicate that attention directs effort (Locke and Latham, 1990, 2002), we expect that consistent experience of favourable progress as indicated by low progress variability would encourage more effort.

Hence, we hypothesize the following:

Hypothesis 2: Within entrepreneurs, weekly perceived progress variability negatively predicts entrepreneurial effort intensity across time.

3.3. Venture goal commitment as moderator of the link between perceived progress variability and entrepreneurial effort intensity

Our hypothesis above is motivated by Bandura and Jourdan's (1991) findings that patterns of performance impact motivation. In this section, we reason that such impact is weaker for entrepreneurs who are highly committed to their ventures as compared to less committed entrepreneurs. Commitment is defined as "how long an individual is willing to strive for a specific goal" (Austin and Vancouver, 1996, p. 6) and is one of the most important factors to

consider as people persist and strive towards their goals (e.g., Brunstein, 1993; Hollenbeck and Klein, 1987; Locke et al., 1988). An extensive study by Klein, et al. (1999) found that such commitment predicts higher performance and that this relationship is strongest in situations where the goal is difficult to achieve.

Strongly committed individuals know what they want to achieve (Locke et al., 1988), are willing to put time and effort toward goal attainment, and are more likely to reach their goals (Fishbach and Dhar, 2005; Oettingen et al., 2009). For instance, people with high commitment to regain employment engage in more job-search effort (Lyn-Stevenson, 1999; Wanberg et al., 1999). Highly committed individuals are also less discouraged when they face obstacles (Gollwitzer, 1990; Heckhausen, 1991) and are strikingly different from less committed ones in the way they respond to these obstacles (Brunstein and Gollwitzer, 1996; Gollwitzer, 1990; Wicklund and Gollwitzer, 1982). Moreover, Renn (2003) found that feedback led to higher performance for committed employees but lower performance for less committed employees. Committed employees used feedback to improve task strategies, while low commitment employees can be discouraged by the feedback. The characteristics of highly committed individuals, as reviewed above, strongly suggest that these individuals are willing to put time and energy towards goal attainment, are less easily discouraged when facing obstacles, and improve task strategies when encountering impediments. This ability to persevere even when encountering hurdles explains why goal commitment moderates the relationship between goal difficulty and performance (Seijts and Latham, 2011).

We expect venture goal commitment to moderate the perceived progress variability to effort intensity relationship over time such that the negative relationship will be weaker for entrepreneurs who have high rather than low venture goal commitment. High progress variability

signals that over time the entrepreneur is experiencing alternate small wins as well as some hiccups along the way. Such variability also suggests that links between what the entrepreneur is doing and desired outcomes are unclear (Weiner, 1985). This combination of facing hiccups and the possibility that their actions can have limited impact on outcomes can be more discouraging for the less committed entrepreneurs. Highly committed entrepreneurs are more psychologically invested to their business ventures, identify strongly with their ventures, and are emotionally attached to them (Cardon et al., 2005). Drawing from previous research that highly committed individuals persevere in the face of obstacles (e.g., Gollwitzer, 1990), we expect highly committed entrepreneurs to be less discouraged by the variability in progress they experience over time. That is, while entrepreneurs who are less committed to their venture goals could be discouraged by the ebbs and flows of progress experiences, highly committed entrepreneurs work hard irrespective of progress variability over time. Hence, we hypothesize the following:

Hypothesis 3: Venture goal commitment moderates the negative relationship between perceived progress variability and entrepreneurial effort intensity, such that the relationship between perceived progress variability and entrepreneurial effort intensity will become less negative as venture goal commitment increases.

4. Methodology

4.1. Sample and procedures

To ensure that participants are early-stage entrepreneurs, we recruited from three business incubators in Manila, Philippines. Among the 145 entrepreneurs who were in the incubators at the time of the study, 117 agreed to participate. Six entrepreneurs dropped out a week after the study commenced, leaving 111 entrepreneurs in the final sample. Participants were 53 women and 58 men, and all had a bachelor's degree. The industry categories represented

were manufacturing (48%), food services (25%), wholesale and retail (16%), professional and technical services (8%), and others (3%). The majority (59%) of participants were of Malay ancestry, while the rest were Chinese (39%) and Hispanics (2%). At the start of this study, participants had been in the incubator for approximately eight months. Thirty-nine entrepreneurs (or 35% of the total participants) had prior entrepreneurial experience, while 26 entrepreneurs (23%) had relevant industry experience (i.e., work experience related to their current startup's industry category), and 24 (about 22%) of them had prior (general) work experience. More than half of them (53%) had experienced working in their family business (different from their current business ventures). During the orientation, participants completed a paper-and-pencil survey on background information about their ventures, including baseline perceived progress assessments and venture goal commitment. All surveys were in English. English is one of the two official languages in the Philippines (the other one being Filipino, the national language), and is used as the medium of instruction. It is also the language used in broadcast media, business, government, and the legal system of the country.

We used the cellular phone based experience sampling methodology or ESM which required participants to provide multiple ratings of perceived progress and entrepreneurial effort intensity in their natural environment (Beal and Weiss, 2003; Uy et al., 2010). This method enabled us to examine what sustains entrepreneurial effort on the day-to-day as well as the week-to-week venture goal striving process. During the recruitment and orientation session, individualized coaching was conducted to assist participants in installing the ESM survey programmed in Java language into their respective cellular phones and not to delete the survey until the end of the study. They were also taught how to complete the ESM survey using their cellular phones upon receipt of the short message service (SMS). Participants were instructed to

focus on their entrepreneurial venture goal of having a financially viable business venture after leaving the business incubator when answering the ESM surveys. Based on our initial interview, such goal was applicable to the entrepreneurs in the incubator. They all hoped their ventures will become independent businesses that can sustain business operations profitably in the absence of assistance from the business incubator.

Based on interviews with participants on their typical waking and sleeping hours, the schedule of the SMS prompts was randomized between 10AM to 10PM. Participants were surveyed two times per day, i.e., each participant received the first SMS prompt between 10:00AM to 4:00PM and the second SMS prompt between 4:00PM to 10:00PM. Because we wanted to gather data across a broad variety of situations without overburdening our participants, our ESM protocol had periods of intense data collection alternating with periods without reporting requirements (cf. Gunthert and Wenzel, 2011). Specifically, we administered six rounds of ESM every other week, with each round consisting of four consecutive days and each study day comprising two ESM surveys. For the three-month duration of the study, each participant was sent 48 SMS prompts in total (6 weeks x 4 study days per week x 2 ESM surveys per day). To have an even spread of the days of the week, odd numbered weeks were administered from Monday to Thursday, while even numbered weeks were administered from Tuesday to Friday.

A total of 5,328 SMS prompts were sent and 4,575 responses were received, yielding a response rate of 85.87%. Based on previous ESM studies (e.g., Judge and Ilies, 2004; Bono et al., in press), responses received within two hours after the SMS reminder was sent were considered valid. We obtained 4,307 valid responses (80.84%) in total. Consistent with ESM experts' recommendations (e.g., Hektner et al., 2007), participants with valid reports of at least one-third of the total ESM surveys were included in the analysis. All participants in the final

sample have valid reports greater than 33% (highest=100%, lowest=37.5%). Participants were compensated for their participation (in Philippine Pesos equivalent to 45 US dollars).

4.2. ESM measures

Given the intensive nature of ESM, shortened versions are normally used to ease participant burden and minimize participant fatigue over multiple repeated assessments (cf. Csikszentmihalyi and Larson, 1987; Fisher and To, 2012; Song et al., 2008; Williams and Alliger, 1994). As entrepreneurs are extremely busy people, we worked carefully to gather adequate reports without unduly burdening our participants.

4.2.1. Perceived progress

Perceived progress was measured using two items taken from a four-item measure of personal goal progress (Brunstein, 1993). Brunstein had two dimensions for progress: advancement and outcome, and each dimension had two items. We selected the item with the higher factor loading in the advancement dimension, and we did the same for the outcome dimension. The full measure was used during the orientation, and we checked for short-form validity, as we will explain later. Participants were asked to rate the extent to which they agree with the items on a scale of 1 (strongly disagree) to 5 (strongly agree) with respect to their venture goal of achieving a viable business venture after leaving the incubator. Participants were instructed to anchor their progress assessments on the most recent period they completed the ESM survey. The items are “At this moment, I have made a great deal of progress concerning my venture goal” and “At this moment, I have had quite a lot of success in pursuing my venture goal” ($\alpha=.84$).

According to Smith, McCarthy, and Anderson (2000), demonstrating validity of the short form entails showing adequate overlapping variance between the shortened scale and the full

form. Using Nunnally and Bernstein's (1994) formula, we first obtained the r values separately for the full form (ff) and short form (ss) using $r(kk) = n \times r(ij) / [1 + (n-1) \times r(ij)]$ where n refers to number of items, $r(ij)$ refers to average inter-item correlation and $r(kk)$ refers to the reliability. We then multiplied $r(ss)$ and $r(ff)$ to obtain the correlation between short and full forms. For perceived progress, the correlation between the short form and full-length form (administered during the orientation, as we will explain later) is $r = .74$ —this value indicates short-form validity is achieved.

We operationalized perceived progress variability using the standard deviation of perceived progress scores for each participant. We first obtained the average of the two progress assessments per day to generate daily perceived progress scores. We then computed the standard deviations across the total study days for each participant per study week. Such operationalization is consistent with past studies that examined other forms of variability (e.g., Ilies and Judge, 2002 on mood and job satisfaction variability; Oosterwegel et al., 2001 on self-esteem variability; and Scott et al., 2012 on emotional labor variability).

4.2.2. Entrepreneurial effort intensity

Entrepreneurial effort intensity items were generated using the entrepreneurial effort conceptualization by Morris et al. (2009) and Stevenson (1999). Participants assessed their effort intensity on administrative (“How much effort did you put into venture tasks that are administrative in nature?”) and creative (“How much effort did you put into venture tasks that require product or process creativity?”) tasks using a five-point scale (1=very little to 5=lot; $\alpha = .71$), as these are the two major types of venture tasks entrepreneurs typically carry out.

4.3. Time 1 measures

We administered the time 1 survey during the participant orientation period before the start of the ESM study. Participants answered questions about their venture goal commitment, time 1 (or baseline) perceived progress, and other background information.

4.3.1. Venture goal commitment

Participants were instructed to focus on the venture goal they have been striving for, to achieve a viable business venture after leaving the incubator, and to assess their commitment toward this venture goal using a six-item personal goal commitment scale (Brunstein, 1993) on a scale of 1 (strongly disagree) to 5 (strongly agree). Examples of these items include “No matter what happens, I will not give up this venture goal”, and “If this venture goal implies lots of difficulties, I am willing to postpone it for a while.” (reverse-coded) ($\alpha=.70$).

4.3.2. Perceived progress (baseline)

Baseline perceived progress ($\alpha=.74$) was measured using the full four-item measure of personal goal progress (Brunstein, 1993). Focusing on their venture goal of achieving a viable business venture after leaving the incubator, participants rated the extent to which they agreed with the items on a scale of 1 (strongly disagree) to 5 (strongly agree).

4.3.3. Other control variables

We controlled for potential effects of relevant variables on entrepreneurial effort intensity in our analyses. These variables were collected during the orientation session before the start of the ESM study. We controlled for self-efficacy ($\alpha=.89$) because it impacts effort outcomes (Bandura, 1982; Silver et al., 1995) and has been shown as a potent variable in individual-level entrepreneurship research (e.g., Hmieleski and Baron, 2008; Hmieleski and Corbett, 2008). We used Chen et al.’s (2001) 8-item self-efficacy scale ranging from 1 (strongly disagree) to 5 (strongly agree) because venture creation requires capabilities in various fields (Markman et al.,

2002). To reduce response bias that could potentially confound self-reported data (Richman et al., 1999; Thomas and Killman, 1975), we controlled for social desirability ($\alpha=.72$) using the 13-item shortened version of the Marlowe-Crowne social desirability scale (Reynolds 1982), ranging from 1 (not true) to 7 (very true). We also controlled for gender because past studies have shown gender differences in performance outcomes in achievement situations (Covington, 2000). To account for environmental factors that may impact the entrepreneurs' perceived progress and variability of experienced progress, we also controlled for industry effects by including industry dummies in the analyses.

5. Results

Table 1 shows the means, standard deviations and intercorrelations of the study variables. Before testing the hypotheses, we examined the within-person variance among the variables measured via ESM. The percentage scores of within-person variance are as follows: 47% for momentary entrepreneurial effort intensity, 48% for momentary perceived progress, 74% for weekly perceived progress variability, and 42% for weekly average entrepreneurial effort intensity. These values suggest significant within-person variance and confirm the use of multilevel or mixed models. Mixed models are appropriate for data with multiple reports over time and account for the multilevel structure of the data (cf. Hofmann and Gavin, 1998), such that reports on the ESM variables are nested within individual entrepreneurs. The `xtmixed` command in Stata version 10 was used to run mixed regression models (cf. Rabe-Hesketh and Skrondal, 2005).

We performed additional analysis to test goodness of fit among the items of the ESM variables. A one-factor model generated poor fit (RMSEA=.34, RMSR=.16, TLI=.36, CFI=.79). We then performed principal components analysis which resulted in two distinct components,

with the items of perceived progress loading on one factor, and the items of effort intensity loading on the other factor. In addition, we initially examined the particular effects of incubators and firms using a set of dummy codes. Because their inclusion did not alter the direction nor change the level of significance of the hypothesized effects, we excluded them from the analyses reported to achieve parsimony.

In Hypothesis 1, we predicted that progress perceptions will relate positively to entrepreneurial effort intensity within entrepreneurs. We regressed the time-sampled entrepreneurial effort intensity on time-sampled perceived progress to examine the extent to which progress perception predicts effort intensity for each individual entrepreneur. Perceived progress ESM ratings were person-mean centered, i.e., for each participant, we computed for the average perceived progress scores, and subtracted this average score from each ESM report, to partial out person-level effects from the momentary assessment (Hofmann and Gavin 1998). Thus, between-person variances due to entrepreneur-characteristics were removed when estimating within-person parameters. We also included the cluster or group mean of perceived progress (i.e., the between-person perceived progress), which is the instrumental variable that is correlated with person-mean centered progress but not correlated with the random intercept (cf. Rabe-Hesketh and Skrondal, 2005). Stata's `xtmixed` command allows us to analyze both between- and within-person effects of perceived progress on effort intensity.

In testing Hypothesis 1, we examined both concurrent and lagged relationships to determine relationship stability. On each study day, each participant provided two response sets of perceived progress and entrepreneurial effort intensity (response 1 and response 2). Concurrent analysis was done by pairing the predictor and criterion variables captured in the same ESM response set, while lagged analysis was performed by pairing the predictor variable

(perceived progress) in response 1 with the criterion variable (entrepreneurial effort intensity) in response 2 of the same day, while controlling for the effect of the criterion variable (entrepreneurial effort intensity) in response 1.

Following the recommendations of Aguinis and colleagues (in press), we provided information on the size of each variance component in all our result tables. Table 2 indicated the results of testing Hypothesis 1. For the analysis on progress perceptions and entrepreneurial effort intensity assessed concurrently (i.e., same response set), results in Model 1 indicated within-person progress positively predicted entrepreneurial effort intensity ($b = .27, p < 0.01$). The between-person perceived progress coefficient was also positive and significant ($b = .64, p < .01$). Using the postestimation command “lincom” (or linear combination, cf. Rabe-Hesketh and Skrondal, 2005), we found that the estimated between-entrepreneur or between-person effect of perceived progress on entrepreneurial effort intensity was significantly different from the estimated within-entrepreneur or within-person effect ($z = 3.65, p < 0.01$), further justifying the need to model between- and within-person effects separately. As explained earlier, we also performed lagged analysis to verify the stability of the within-person progress to effort relationship. Results in Model 2 indicated significant effects of perceived progress on effort intensity ($b = .11, p < 0.01$). Thus, Hypothesis 1 was fully supported.

In Hypothesis 2, we predicted a negative relationship between perceived progress variability and entrepreneurial effort intensity. As mentioned earlier, we operationalized perceived progress variability using the weekly standard deviations of perceived progress for each participant. We then regressed the average entrepreneurial effort intensity for week $t+1$ on the standard deviation of perceived progress for week t for each participant, while controlling for

the average entrepreneurial effort intensity for week t and the average perceived progress for week t .

In analyzing Hypothesis 2, we used the full model in Table 3 because scholars (e.g., Echambadi et al., 2006; Finney et al., 1984) consider the full model as the valid model to use when interpreting both main effects and interaction effects, especially given our a priori hypothesis development expecting moderating effects of venture goal commitment (Hypothesis 3, as we will discuss later) on the link between progress variability and entrepreneurial effort intensity. Based on Model 2 which contains the full model, results indicated that the coefficient for perceived progress variability was negative and significant ($b=-1.24, p<0.01$). Hence, Hypothesis 2 was supported.

Finally, to test the moderating effect of venture goal commitment on perceived progress variability and entrepreneurial effort intensity (Hypothesis 3), we performed appropriate centering procedures as recommended by Hofmann et al. (2000; see also Preacher et al., 2006). Results in Model 2 of Table 3 show that the cross-level interaction term between perceived progress variability and venture goal commitment is significant ($b = .39, p<0.01$). Figure 1 presents the interaction plot which shows the slope of the high venture goal commitment line is less steep than that of the low venture goal commitment line, suggesting that venture goal commitment attenuated the negative relationship between progress variability and entrepreneurial effort intensity. Simple slopes analyses reveal that the relationship between progress variability and entrepreneurial effort intensity was significant for low venture goal commitment ($t=-2.32, p<.05$), but not for high venture goal commitment ($t=-1.85, ns$). Hence, Hypothesis 3 was supported.

6. Discussion

Business implementation/gestation occurs over a period of time, up to three years by one estimate (Carter et al., 1996); hence, a process-oriented approach is needed to capture the motivational variables that change over time. We advance entrepreneurial motivation research by using a process, within-person investigation of the entrepreneur's perceptions of progress and entrepreneurial effort intensity, as well as the impact of the entrepreneur's perceived progress variability over time on entrepreneurial effort intensity. Studying within-person variability is important in the field of entrepreneurship where various processes and other dynamic constructs of interest such as how entrepreneurs regulate effort exhibit varying patterns over time. Unfortunately, there is a paucity of such studies. As indicated by our finding, almost half of the total variation in perceived progress was due to within-person variation across time. We thus contribute to the entrepreneurship motivation literature by testing motivation processes that are inherently operating and manifesting at the within-person level.

Motivation consists of two processes: goal setting and goal striving. While many studies confirm that goals matter (Locke and Latham, 1990), much less is known about the actual process of day-to-day goal striving. The results of our study supported our prediction that perceptions of progress fuel entrepreneurial effort intensity. Our empirical study can be regarded as a direct test of Weick's (1984) small wins theory in the context of early stage entrepreneurs striving for their venture goals. Most recently, the small wins theory has also been used by Grant and Patil (in press) in their conceptual paper to argue that a person's effort in challenging self-interested norms will be sustained if the challenger achieves small wins in the form of reciprocity and acknowledgment; without these one may disengage.

Our study shows that variations of progress perceptions matter in the goal striving process. This insight into what makes some people exert more intense effort than others by

considering variability in progress perceptions over time that can only be studied with repeated-measures designs. To our knowledge, no study has examined variability in perceived progress over time and entrepreneurial effort intensity. Apart from our finding that weekly perceived progress variability negatively predicts entrepreneurial effort intensity across time, we performed additional analyses to examine whether changes in progress perceptions during the day in terms of within-day perceived progress “shifts” as operationalized by Bledow et al. (2013) would predict effort intensity. We analyzed our data using both the raw score change and the residual change in progress. We obtained the raw score progress change by subtracting progress scores in response 2 from progress scores in response 1 of the same day. We found that the raw score change in perceived progress positively predicted entrepreneurial effort intensity in response 2 ($b=.09, p<0.01$). The correlation between response 1 perceived progress and raw score perceived progress change was $r=-.60, p<0.01$, suggesting that the perceived progress levels in response 1 were generally lower than response 2. Hence, following Bledow et al. (2013) we performed the residual change method by regarding all response 1 values as the same. Residual change values pertain to the deviation of actual values in response 2 from the values that will be expected based on response 1 values. We found that the residual change scores positively predicted entrepreneurial effort intensity in response 2 ($b=.31, p<0.01$). With these results from both analyses, we conclude that within-day upward shifts in perceived progress are motivating and encouraging because they positively relate to entrepreneurial effort intensity. Taken together, an implication of our study is that to understand persistence in long term pursuits, entrepreneurship researchers should use a process approach to explore the extent to which one is experiencing progress over time and the extent to which such progress varies.

A third finding of our study is that venture goal commitment attenuates the negative relationship between perceived progress variability and entrepreneurial effort intensity. As we reasoned, when experiencing progress variability over time, less committed entrepreneurs can be disheartened during periods when they face obstacles, or be discouraged by the weak link between what they can do to influence outcomes (Weiner, 1985)¹. In contrast, highly committed entrepreneurs are persistent (Cardon, et al., 2005) and may work on improving their strategies (cf. Renn, 2003) when they encounter impediments to goal attainment. Venture goal commitment is a critical factor to study in goal pursuits and as Seijts and Latham (2011) asserted, without commitment, goals do not motivate.

To the best of our knowledge, only one other study, that of Foo et al. (2009) has studied entrepreneurial motivation using a process approach. Foo et al.'s (2009) overall research question focused on how affect impacts current and future oriented effort; they highlighted affect's important role in determining whether entrepreneurs focus effort on immediate tasks or tasks of a future oriented nature. Instead of affect, we take explicit elements in the goal striving theory such as perceived goal progress, variability in such progress, and commitment to illuminate how these motivational factors predict entrepreneurial effort intensity². We operationalized and measured effort differently from Foo et al. (2009) because the focus of our current manuscript is on the intensity of effort on entrepreneurial task which according to entrepreneurship scholars (e.g., Morris et al., 2009; Reynolds and White, 1997) primarily consist

¹ To do a robustness check, we conducted additional analyses to test whether the level of progress interacted with progress variability in predicting effort intensity. While the interaction term did not reach statistical significance ($b=0.02$, *ns*), the graphs suggest that those who perceive high progress levels on a steady basis (low progress variability) have higher effort intensity compared to those who have high progress levels but experience high variability in progress.

² Incidentally, we have measures of positive affect and performed additional analyses of our hypotheses with positive affect in the model. The inclusion of positive affect did not significantly change our findings. Because we aim to show that our study extends and contributes beyond what has already been done, we did not include positive affect in our theorizing and analyses.

of creative tasks and administrative tasks. While we used similar cellular phone based ESM protocol as that of Foo et al. (2009), we took a step further to model and analyze the role of perceived progress variability in entrepreneurial motivation. Variability constructs can only be generated using ESM or repeated measure designs. Our findings imply that it is not just the experienced progress levels that matter but also perceived progress variability over time that impacts entrepreneurial motivation, especially in the early stages of the business venture. This study hence complements Foo et al. (2009) to provide a better understanding of the period from when entrepreneurs set goals to the time the ventures are successfully established, a journey that can be long and arduous (Carter, et al., 1996).

6.1. Other theoretical implications

In our study, progress perceptions can be regarded as experiences of small victories which could increase motivation in the form of greater effort intensity. Our study is important to both entrepreneurship and motivation researchers, as it enriches work motivation literature which typically focuses more on the start of an endeavor and final outcomes, and less on what happens “in between”, or the processes involved in the day-to-day pursuit of goals. As the business gestation period can last a few years and requires numerous activities to establish a venture (Carter et al. 1996), we theorize and show the importance of progress perceptions in sustaining motivation.

Moreover, our study answers the call for more research in clarifying the role of an entrepreneur’s commitment particularly during the early stages of the business venture (Tang, 2008). Khan and colleagues (in press) found that among nascent entrepreneurs, goal commitment was negatively related to disengagement from the start-up process, but such relationship diminishes when perceived competition intensity is high. Our study extends their work, as high

perceived progress variability experienced by the entrepreneur could be an effect of high perceived competition. Our study provides a direct empirical test of what scholars such as Gollwitzer (1990) and Heckhausen (1991) asserted that strongly committed individuals are less easily discouraged from working towards their goals.

In our study, venture goal commitment was measured only at time 1 during the orientation prior to the ESM study. While we recognize that goal commitment can vary over time, we did not include it as part of the ESM survey because studies that have measured goal commitment more than once have shown that commitment remains relatively stable in the short term (3 months in our study). For example, Brunstein (1993) measured personal goal commitment twice (10 weeks apart) and found that the 10-week test-retest value was high ($r=.79, p<0.001$). Similarly, Hollenbeck et al. (1989) measured goal commitment at four different times and obtained an average correlation across time periods of $r=.65 (p<0.01)$. Although goal commitment is not conceptualized as a constant trait/personality variable, and could therefore change over time, in the short term, past studies suggest that goal commitment has temporal stability. Future studies involving longer periods of time (such as tracking the firms to growth and maturity stages), could examine how changes in venture goal commitment impact entrepreneurial effort intensity.

Future studies can also examine determinants of venture commitment and how such commitment matters in motivating the entrepreneur in difficult times. Identity, an area that has gained traction in entrepreneurship research, is one stream that can benefit from our study. Identity influences the meaning of the venture for the entrepreneur and subsequently influences his or her decisions for the venture (Fauchart and Gruber, 2011). Future research can examine how such identities, through commitment, can drive entrepreneurial persistence. For example,

entrepreneurs with a missionary zeal can remain committed despite facing high uncertainties (such as high variability in progress outcomes) while more profit oriented entrepreneurs may abandon their entrepreneurial endeavors.

6.2. Limitations and Future Directions

First, our study considered only the individual entrepreneur's perspective. Future research can go beyond the individual and take a work team perspective, especially since our study indicated that perceived progress plays an important role in motivation. Future research can also go beyond venture goal commitment and include other concepts relevant to entrepreneurial motivation, such as entrepreneurial passion (Cardon et al., 2009; Murnieks et al., in press), regulatory focus (Brockner and Higgins, 2001), and entrepreneurial optimism (Hmieleski and Baron, 2009). These constructs can be examined not only from an individual level, but also from a team level, such as what Drnovsek, Cardon, and Murnieks (2009) proposed about collective passion in entrepreneurial teams. Incorporating the immediate- and long-term effects of these motivational constructs as well as their impact on the effort regulation process could potentially uncover how one's passion for work, regulatory focus strategies, and optimism levels predict and sustain effort outcomes over time.

Second, our study was conducted over a period of three months. Within this time period, the relationships we hypothesized were supported; however, beyond this time frame, whether these effects generalize is less clear. Future research can use longer time periods (e.g., years) to ascertain motivational phenomena such as those studied herein, and can also explore more complex growth models and linkages such as spiral effects of progress perceptions on effort intensity over longer time periods. Extending the period of study into years may enable capturing other elements that could change in the entrepreneur's striving process such as strategies, plans

and other contingencies, as featured in effectuation studies (Chandler et al., 2011; Sarasvathy, 2001). Curran and Bauer (2011) suggested that in yearly assessments, time varying constructs are expected to disclose a more systematic growth pattern. Nonetheless, our study which adopted a three-month time frame goes well beyond the majority of motivational studies to provide a better understanding of the mechanisms that explain the relationships among perceived progress and entrepreneurial effort intensity.

Lastly, future studies may want to extend our theorizing and empirical examination beyond entrepreneurs in the business incubators who are in the early stages of venture implementation, a stage where financial performance is less relevant (Foo et al., 2006). Shane et al. (2003) argued that motivational elements may impact entrepreneurial outcomes differently when in different phases of the business venture. Some motivational elements might be more salient in the nascent stage than in later stages of growth and maturity (Shane et al., 2003; Stanworth and Curran, 1973). Examining the dynamics of perceived progress and effort intensity beyond the early stages of the business venture could expand our knowledge and understanding of the entrepreneurial motivation research. Future research can extend our theorizing to later stages of venture development, such as growth and perhaps even maturity stages, where examining the impact of perceived progress on entrepreneurial effort intensity alongside financial performance indicators would be appropriate. Analyzing financial performance indicators are more meaningful for established and mature business ventures than those in the early phase who have markedly limited financial performance histories (Beatty and Ritter, 1986; Stuart et al., 1999).

In the later stages of the business venture beyond the gestation period, the degree to which high levels of entrepreneurial effort intensity is necessarily a good thing is unclear. While

effort is important and beneficial during the early stage, it may not always be a good thing especially in later stages, because over a very long period of time, if effort intensity is extremely high, the entrepreneur might experience burnout. Entrepreneurship can be a stressful activity, and so entrepreneurs need to build their psychological capital which can be used to manage venture-related stress (Baron et al., in press), and utilize coping strategies effectively, such as approaching problems head on to eliminate the source of stress, while also taking occasional short breaks to improve psychological well-being (Uy et al., 2013). Moreover, it will be interesting to extend our research model to other types of entrepreneurs, such as lifestyle and necessity-based entrepreneurs, who are less predisposed to growth than entrepreneurs in business incubators (Douglas, 2013).

6.3. Practical Implications

Because entrepreneurship depends on the role of human agency (Shane et al., 2003; McMullen and Shepherd, 2006), examining the dynamic motivational elements is crucial to understanding and appreciating the venture creation process, especially the early stage of business implementation. Our findings shed some light on the mechanisms behind the entrepreneur's motivation. This knowledge can be valuable not only for aspiring and incumbent entrepreneurs, but also for entrepreneurship educators and directors of business incubators. For example, our findings suggest that perceived progress drives entrepreneurial effort intensity. Entrepreneurs can increase perceptions of progress by establishing multiple milestones along their lengthy entrepreneurial goal pursuit. Reducing ambitious goals into bite-sized, self-generated progress markers (Amir and Ariely, 2008; Heath et al., 1999) can increase one's motivation and willingness to remain engaged in long-term pursuits. Having multiple milestones also benefit effort intensity as suggested by the findings of Gersick (1988, 1989) that teams tend

to increase activity levels at predictable junctures, at the mid-point and nearing the end point of deadlines. Our study demonstrates the importance of developing and implementing interim milestones as a tangible step towards making a long-term pursuit look and feel more manageable. Periodic evaluation of progress by obtaining a better understanding of where one stands in goal attainment and what needs to be done would also be helpful.

Finally, our finding that venture goal commitment reduced the detrimental impact of perceived progress variability on entrepreneurial effort intensity also has implications for those interested in training and supporting prospective entrepreneurs. This is because venture goals are regarded as difficult and challenging, and motivation scholars suggest that commitment is most vital in situations involving difficult goals (Klein et al., 1999; Locke and Latham, 2002). Some ways to enhance one's venture goal commitment could include explicitly writing down one's goal and clarifying the steps in one's goal pursuit, and obtaining social support and encouragement from trusted mentors and like-minded entrepreneurs in the community. From a broader policy perspective, given the high failure rate among new ventures (Bantel, 1998), structural and environmental support systems can serve as encouraging forces that can strengthen one's venture goal commitment.

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Table 1.

Means, SDs, and correlations of the study variables

	Mean	SD	1	2	3	4	5	6
1 Gender	0.47	0.50						
2 Venture goal commitment	3.56	0.59	-0.04					
3 Perceived progress (time 1)	3.47	0.72	0.13	0.39				
4 Self-efficacy	4.10	0.55	-0.06	0.43	0.32			
5 Social desirability	3.89	0.89	0.07	0.38	0.24	0.19		
6 Perceived progress	3.33	0.67	0.05	0.36	0.36	0.38	0.05	
7 Entrepreneurial effort intensity	3.40	0.93	0.00	0.40	0.30	0.35	0.21	0.31

Notes. $|r_s| \geq .19$ are significant at $p < 0.05$ level (2-tailed test); $|r_s| \geq 0.24$ are significant at $p < 0.01$ level (2-tailed test).

Gender: "1"=female; "0"=male; means, SDs, and correlations are based on between-person scores.

Variables 6 and 7 are ESM variables aggregated to the between-person level ($N = 111$ participants).

Table 2.
Perceived progress and entrepreneurial effort intensity

	Model 0		Model 1		Model 2	
	Entrepreneurial effort intensity (Null Model)		Entrepreneurial effort intensity (Concurrent)		Entrepreneurial effort intensity (Lagged)	
	b	SE	b	SE	b	SE
Intercept	3.13**	0.07	1.42	0.85	1.47	0.91
Industry_1			-0.33	0.64	-0.43	0.68
Industry_2			-0.08	0.64	-0.17	0.69
Industry_3			-0.19	0.67	-0.22	0.71
Industry_4			-0.15	0.65	-0.25	0.70
Gender			-0.12	0.12	-0.11	0.13
Social desirability			-0.08	0.07	-0.10	0.07
Self-efficacy			0.04	0.12	0.11	0.13
Perceived progress (between-person)			0.64**	0.10	0.59**	0.10
Perceived progress (within-person)			0.27**	0.03	0.11**	0.03
Entrepreneurial effort intensity ($t-1$)					0.40**	0.02
<i>Variance components</i>						
Within-person variance	0.53		0.46		0.42	
Intercept variance	0.59		0.36		0.41	
Slope variance			0.08		0.03	
Intercept-slope covariance			-0.001		-0.02	
Pseudo- R^2			0.28		0.26	
Log likelihood	-4937.50		-4690.26		-1859.92	
<i>Notes.</i> Regression coefficients (b) are unstandardized; SE=standard errors.						
Entrepreneurial effort intensity ($t-1$) = previous period effort intensity						
Industry dummies were generated based on $n-1$, where $n=5$ industry types for this study.						
Pseudo- R^2 were computed by comparing the model of interest with the null model.						
For Model 0 and 1, $N=4307$ ESM reports from 111 participants;						
for Model 2, $N=1715$ ESM reports from 111 participants; ** $p<.01$; * $p<.05$.						

Table 3.
Perceived progress variability and venture goal commitment

	Model 0		Model 1		Model 2	
	Entrepreneurial effort intensity (Null Model)		Entrepreneurial effort intensity		Entrepreneurial effort intensity	
	b	SE	b	SE	b	SE
Intercept	3.26 **	0.07	1.09 **	0.42	1.04 *	0.42
Industry_1			-0.34	0.28	-0.35	0.29
Industry_2			-0.30	0.29	-0.30	0.29
Industry_3			-0.30	0.30	-0.32	0.30
Industry_4			0.23	0.29	-0.25	0.29
Gender			-0.04	0.06	-0.04	0.06
Social desirability			-0.04	0.03	-0.03	0.03
Self-efficacy			0.02	0.06	0.03	0.06
Average perceived progress (week t)			0.15 **	0.05	0.15 **	0.05
Average entrepreneurial effort intensity (week t)			0.63 **	0.04	0.63 **	0.04
Venture goal commitment			0.17 **	0.06	0.13 *	0.06
Perceived progress variability			-0.07	0.10	-1.24 **	0.44
Venture goal commitment X Perceived progress variability					0.39 **	0.14
<i>Variance components</i>						
Within-person variance	0.33		0.36		0.36	
Intercept variance	0.49		0.001		0.002	
Slope variance			0.17		0.12	
Intercept-slope covariance			-0.01		-0.02	
Pseudo- R^2			0.56		0.56	
Log likelihood	-563.17		-486.09		-482.53	
<i>Notes.</i> Regression coefficients (b) are unstandardized; SE=standard errors.						
The dependent variable for all models is the average entrepreneurial effort intensity in week $t+1$.						
Industry dummies were generated based on $n-1$, where $n=5$ industry types for this study.						
Pseudo- R^2 were computed by comparing the model of interest with the null model.						
$N= 521$ aggregate weekly reports from 111 participants; ** $p<.01$; * $p<.05$.						

Figure 1.
Moderating effect of venture goal commitment on perceived progress variability and entrepreneurial effort intensity

