Entrepreneurs' Failure Times and Their Well-Being, Moderated by Entrepreneurial Environment

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Abstract--In this paper, we explore the effect that failure experiences have on entrepreneurs' well-being, and also observe the changes of such effect in different entrepreneurial environment. By doing hierarchy regression, we found that entrepreneurs' prior failure times have a negative relationship to entrepreneurs' well-being, and such relationship is strengthened when entrepreneurs are embedded in a entrepreneurial friendly environment. Our marginal effect analysis also confirms our hypothesis that entrepreneurs' overall well-being, as well as their job satisfaction, life satisfaction and psychology well-being, decreases with failure times increasing.

I. INTRODUCTION

More recently, studies of failure entrepreneurship explore the consequences of entrepreneurial failure, highlighting the negative implications it may have for entrepreneurs. However, there has been no systematic investigation of those factors that influencing how entrepreneurs respond to entrepreneurial failure, specifically of emotional responses.

In this paper, we explore the effect that failure experiences have on entrepreneurs' well-being, and also observe the changes of such effect in different entrepreneurial environment. By doing hierarchy regression, we found that entrepreneurs' prior failure times have a negative relationship to entrepreneurs' well-being, and such relationship is strengthened when entrepreneurs are embedded in a entrepreneurial friendly environment. Our marginal effect analysis also confirms our hypothesis that entrepreneurs' overall well-being, as well as their job satisfaction, life satisfaction and psychology well-being, decreases with failure times increasing.

This paper makes the following contributions. First, we further clarify the mechanism between failure experiences and entrepreneurs' well-being. We use marginal effect analysis to find out that every time of failure makes the entrepreneur suffer from psychological attack. Second, we break down well-being into job satisfaction, life satisfaction, and psychology well-being to test the different effects of failure times on these detailed aspects of well-being. As we can see, few researchers have tested the relationship between failure times and entrepreneurs' job satisfaction, life satisfaction, and psychology well-being all together. Third, we further discriminate the effects of different entrepreneurial environment on entrepreneurs' well-being. Entrepreneurial environment work differently on entrepreneurs' iob satisfaction, life satisfaction, psychology well-being and the overall well-being. When researchers further study this issue, they should pay attention to the different psychological factors.

The paper proceeds as follows. In the next section, we review literature on failure experiences, entrepreneurs' well-being and entrepreneurial environment, and then propose our hypothesis thereafter. This is followed by the empirical study including a description of the data, variables and empirical methods used in the study. Finally, results are presented and their implications are discussed as well as the limitations we need to keep in mind in interpreting those results and possibilities for future research.

II. FAILURE TIMES AND ENTREPRENEURS' WELL-BEING

Entrepreneurship by definition is referred to the commercializing of one's new ideas by creating and developing an organization [3]. During this process, entrepreneurs are facing pressures psychologically and physically, including job stress, unpredictability, and ambiguity [5]. Such high stress, unpredictability and high uncertainty of outcomes are accompanied with entrepreneurial process [10]. Thus the person who initiate and lead this process must be with high self-esteem, confidence, success ambition, and the need for achievement to make it happen [4]. Therefore, the disclosure or discontinuous of their ventures may be devastating to entrepreneurs' life, job, and psychology well being. Reference [8] provides evidence between failure experiences and entrepreneurs' well-being. Their results show that previous failure entrepreneurial experiences not only make the entrepreneur lose money, but also generate grief to devastate the entrepreneur's self-esteem. It has been suggested that failure is likely to be associated with financial loss as well as emotional distress [14].

Besides psychological well-being, failure in entrepreneurship can also negatively influence entrepreneurs' job satisfaction. Failure makes entrepreneurs be realistic about their own skills and their expectations, not as overoptimistic about their ability and self-efficacy as before. People that have experienced a failure event may subsequently report subjective opinions that are more aligned with objective facts [16]. Failures, rather than successes, will increase the likelihood of entrepreneurs to repeat initiative taking, not taking a radical stance [1]. The pain and fear associated with failure prevent entrepreneurs from being true to their potential and hinder adequate and necessary action [10].

Life satisfaction is another factor that may be influenced by entrepreneurial failure. The disclosure or discontinuous of their ventures causes entrepreneurs take financial risks, like getting personal debts and losing credit, and causing trouble to them for future financing. Failure causes entrepreneurs loose their connection to their work partners and any other friends, which thwarting their need for relatedness, loosing their self-identify and changing their life value, thus crack down their well-being [13].

Hypothesis 1a. Prior failure times will be negatively related to entrepreneur's overall well-being.

- *Hypothesis 1b. Prior failure times will be negatively related to entrepreneur's job satisfaction.*
- *Hypothesis 1c. Prior failure times will be negatively related to entrepreneur's life satisfaction.*
- *Hypothesis 1d. Prior failure times will be negatively related to entrepreneur's psychology well-being.*

III. THE MODERATING ROLE OF ENTREPRENEURIAL ENVIRONMENT

Individuals use attribution mechanisms to explain their own behavior, the actions of others, and events in the world [17]. Reference [17] finds that the relationship between prior failures and future entrepreneurship is complicated and is heavily influenced by the cognition of the entrepreneur. It is hard for an entrepreneur to admit his/her own inadequate. Entrepreneurs are reluctant to change internal, manager-specific aspects of strategy, management, or planning style [2].

The way that entrepreneur attributes their venture failure is closely related to entrepreneur's well-being. Attribution research suggests that individuals are likely to blame their failures to those factors that are beyond their control, and credit their own actions for successes [2]. As in [15], entrepreneurs are likely to believe that they are less responsible for a firm's failure (1) when the firm is more vulnerable to negative external environmental shocks and (2) when, by the very nature of the firm, it is more vulnerable to failure. It is this vulnerability that allows the entrepreneur to separate (at least partly) his or her identity from the failure event. However, in an entrepreneurship supportive context, which offers supportive policy, large funding pool, talents and experts, good infrastructure, and free market environment, external attribution may not work. In such environment, entrepreneurs are encouraged to give a meaningful rationale for a request, and maximizing people's sense of self-initiation and choice [9]. Thus, entrepreneurs cannot attribute their firm failure to external reasons. It is their own fault that leading to the disclosure of their firm. Internal attribution of failure by entrepreneurs may lead them to conclude that they are not smart enough or good enough to do it [17]. This cruel truth strikes entrepreneur's well being. Therefore, comes to our hypothesis 2.

Hypothesis 2. Entrepreneurial environment positively moderate the relationship between prior failure times and entrepreneurs' overall well-being, job satisfaction, life satisfaction, psychological well-being.

IV. DATA AND MEASURES

A. Sample and data

In order to have a thorough understanding of the local entrepreneurial environment and entrepreneurs' well-being, we rely on National Entrepreneurship Research Center (NERC) in Tsinghua to mail our questionnaires to those entrepreneurs included in NERC's database. All together we delivered 10,832 questionnaires and collected 3214 back in 2011. The survey we conduct contains rich information of entrepreneurs themselves and the local environment. After deleting missing data and outliers, we finally got 2107 samples useful for our research.

B. Measures

Overall well-being. We developed a measure scale of well-being. This scale contains three aspects related to entrepreneurial well-being, including: the satisfaction towards their job satisfaction, life satisfaction, and psychology well-being, with all together 12 items. Job satisfaction measures an entrepreneur's satisfaction towards their entrepreneurial process; *life satisfaction* is of the relationship and life quality between entrepreneurs and their family and friends; *psychology well-being* measures an entrepreneur's psychology condition, including pressure, setbacks and expectation. We use cluster analysis to find out that those three aspects fall into the same factor, that is the entrepreneurial well-being we use. Its Cronbach is 0.84, much higher than the baseline.

Failure times. We ask those entrepreneurs how many times they have ever failed. We counted the failure times they have the failed before starting this new one to measure this variable.

Entrepreneurial environment. We refer to GEM's frame to operationalize entrepreneurial environment scale. The entrepreneurial environment scale including six parts, they are: financial environment (four items, α =0.85), regulation and policy (four items, α =0.83), education and training (three items, α =0.85), service environment (four items, α =0.83), market environment (three items, α =0.69), and talents and infrastructure (three items, α =0.71). The entrepreneurial environment scale is formed in Likert style, with very agree coded as 5, and very disagree as 1. We use cluster analysis to find out that those six aspects fall into the same factor, which is the entrepreneurial environment. Its Cronbach is 0.93, much higher than 0.7.

Control variables. Besides the most common variables of personal variables like *age*, *education*, and *gender*, which may change in preferences and capabilities over entrepreneurs' life spans, we also control firm level variables like *firm age*. Firm age is the number of years since the firm was founded. And we use the *sales in 2010* to measure firm size. Due to firms can only be classified into one of the three industries (processing industry, service industry and agriculture), we only take two of the industries (processing industry) as control variables to control

the industry level variance. Both *processing industry* and *service industry* are dummy variables, with yes as 1 and no as 0.

V. ANALYSIS AND RESULTS

We provide information on our variables' descriptive statistics in Tables 1. The empirical data were analyzed through hierarchical regression analysis in STATA. Before introducing the variables in the regression models we carefully examined the data to detect problems of multicollinearity. Most of correlations between independent variables were below 0.70. Moreover, VIF factors were also below the threshold levels suggested by [6], implying that there were no problems of multicollinearity in our data.

We provide information of variable correlations in Table 2. Variables concerning the hypothesized effects are not highly correlated among themselves or with control variables.

In Table 3, we report our hierarchical regression analyses results. In Hypothesis 1, we predicted previous failure times are negatively related with entrepreneurs' well-bing. First, we test the linear relationship of times of failure with entrepreneurs' overall well-being in In Model 1. The result indicates that prior failure times are negatively related to entrepreneur's overall well-being (p < 0.001), which supports our hypothesis 1a. In model 2, model 3 and model 4, we test the three aspects, i.e. job satisfaction, life satisfaction and psychology well-being of entrepreneurs' overall well-being individually. Prior failure times are all negatively related to these three aspects (p < 0.001), thus our hypothesis 1b, 1c, 1d are all got supported. Our findings from both the overall well-being and each individual construct suggest that prior failure times have negative relationship with entrepreneurs' well-being.

	Variable	Mean	SD	Min	Max
1.	Overall well-being	0.08	0.98	-4.08	2.54
2.	Job satisfaction	0.07	0.80	-2.36	1.84
3.	Psychology well-being	0.01	0.88	-2.15	2.62
4.	Life satisfaction	0.07	0.82	-2.81	1.02
5.	Failure times	0.71	0.94	0	4
6.	Entrepreneurial environment	0.00	0.99	-3.69	1.94
7.	Age	3.09	0.83	1	5
8.	Education	3.97	1.15	1	6
9.	Sales2010	2.39	1.45	1	8
10.	Gender	0.24	0.43	0	1
11.	Firm age	7.44	5.62	0	58
12.	Agriculture	0.29	0.45	0	1
13.	Processing industry	0.14	0.35	0	1
14.	Service industry	0.59	0.49	0	1

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Note: 2107 individuals

TABLE 2 CORRELATION MATRIXES

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Overall	1													
	well-being														
2.	Job satisfaction	0.74*	1												
3.	Psychology well-being	0.65*	0.36*	1											
4.	Life satisfaction	0.79*	0.45*	0.34*	1										
5.	Failure times	-0.14*	-0.07*	-0.12*	-0.11*	1									
6.	Entrepreneurial environment	0.12*	0.17*	0.06*	0.02	-0.09*	1								
7.	Age	0.15*	0.12*	0.12*	0.06*	0.03	0.02	1							
8.	Education	-0.09*	-0.04	-0.11*	-0.05*	-0.09*	0.04	-0.12*	1						
9.	Sales2010	0.14*	0.21*	0.02	0.03	0.02	0.13*	0.15*	0.09*	1					
10.	Gender	-0.04	-0.06*	-0.03	-0.04	-0.03	-0.01	-0.09*	0.03	-0.11*	1				
11.	Firm age	0.10*	0.06*	0.06*	0.06*	-0.03	0.08*	0.11*	-0.11*	0.36*	-0.05*	1			
12.	Agriculture	0.02	-0.01	0.03	0.01	0.11*	0.05*	-0.04	-0.15*	0.04	-0.11*	0.05*	1		
13.	Processing industry	-0.02	0.03	-0.03	-0.02	0.02	-0.00	0.08*	-0.04	0.11*	-0.02	0.12*	-0.24*	1	
14.	Service industry	-0.01	-0.01	-0.00	-0.01	-0.10*	-0.05*	-0.03	0.16*	-0.11*	0.13*	-0.12*	-0.71*	-0.43*	1
Note	: N=2107 observa	itions													

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	(1)	(2)	(3)	(4)
	Overall well-being	Job satisfaction	Life satisfaction	Psychology
				well-being
Age	0.14***	0.08^{***}	0.05^{*}	0.12***
	(5.62)	(3.83)	(2.42)	(5.06)
Education	-0.08***	-0.04**	-0.04*	-0.08***
	(-4.40)	(-2.58)	(-2.25)	(-4.80)
Gender	-0.04	-0.07	-0.06	-0.04
	(-0.86)	(-1.66)	(-1.52)	(-0.85)
Firm age	0.01	-0.01	0.01	0.01
	(1.39)	(-1.67)	(1.50)	(1.43)
Sales2010	0.09***	0.12***	0.01	0.01
	(5.54)	(9.01)	(0.74)	(0.35)
Processing industry	-0.14*	0.03	-0.09	-0.15*
	(-2.13)	(0.65)	(-1.53)	(-2.53)
Service industry	-0.01	0.04	-0.02	-0.03
•	(-0.22)	(0.94)	(-0.59)	(-0.66)
Failure times	-0.16****	-0.07****	-0.10***	-0.12***
	(-7.37)	(-3.72)	(-5.45)	(-6.00)
cons	-0.13	-0.22*	0.10	0.05
-	(-1.08)	(-2.21)	(0.98)	(0.49)
	Standard errors in parenthese	s * p<0.05 ** p<0).01 *** p<0.001	

To further tests the effect of each failure on the well-being of entrepreneur, we conduct marginal effect analysis, and the results is presented in Table 4. Take model 1 for example. Model 1 shows the overall well-being doesn't decrease immediately after entrepreneurs have failed. Their well-being begin to decrease after entrepreneurs have failed for two times. Although The Δ well-being in time 0 and time 1 shows positive increment, the increment in times 1 reduces significantly compared with time 0. And by two times of failure, Δ well-being produces negative results (P<0.001) thereafter. The marginal effect on job satisfaction, life satisfaction and psychology well-being all display the same trend in general. Together with regression results, we can say that prior failure times will be negatively related to entrepreneur's overall well-being, job satisfaction, life satisfaction, psychological well-being.

In order to show our results more directly, we present the marginal effect results of overall well-being in Fig.1. From Fig.1, we can see that well-being decreased with failure times increasing.

	(1)	(2)	(3)	(4)
	Overall	Job	Life	Psychology
	well-being	satisfaction	satisfaction	well-being
0 time	0.20****	0.12***	0.15***	0.10***
	(0.03)	(0.02)	(0.02)	(0.02)
1 time	0.04^{+}	0.05^{**}	0.04^{*}	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)
2 times	-0.13***	-0.02	-0.06*	-0.15***
	(0.04)	(0.03)	(0.03)	(0.03)
3 times	-0.29****	-0.08+	-0.17***	-0.27***
	(0.05)	(0.04)	(0.05)	(0.05)
4 times	-0.45***	-0.15	-0.27***	-0.39***
	(0.08)	(0.06)	(0.07)	(0.07)

Standard errors in parentheses + p<0.10 * p<0.05 ** p<0.01 *** p<0.01

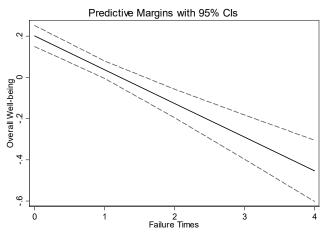


Figure 1. Marginal effect of failure times on overall well-being

In Hypotheses 2, we predicted there is a positive moderating effects of perceived entrepreneurial environment on the negative relationship between failure times and entrepreneurial well-bing. We predicted that, in a highly entrepreneurial friendly environment, the mental shock caused by failure times experienced by entrepreneurs would be devastating. We can see that the interaction effect of failure times and entrepreneurial environment is supported in overall satisfaction (P<0.1) and life satisfaction (P<0.05). Our hypothesis 2 is supported.

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	(1) Overall well-being	(2) Job satisfaction	(3) Life satisfaction	(4) Psychology well-being
Age	0.14^{***}	0.08^{***}	0.05^{*}	0.12***
Education	(5.56)	(3.82)	(2.35)	(5.00)
	-0.09***	-0.04**	-0.04*	-0.08 ^{****}
Gender	(-4.67) -0.04	(-2.87) -0.07 (1.75)	(-2.38) -0.06 (1.52)	(-4.97) -0.04
Firm age	(-0.91)	(-1.75)	(-1.52)	(-0.88)
	0.00	-0.01	0.00	0.00
	(1, 18)	(1.05)	(1.42)	(1.20)
Sales2010	(1.18) 0.08***	(-1.95) 0.11***	(1.42) 0.01 (0.02)	(1.29) 0.00 (0.20)
Processing industry	(5.21)	(8.41)	(0.83)	(0.20)
	-0.13	0.05	-0.08	-0.15 [*]
Service industry	(-1.94)	(0.92)	(-1.48)	(-2.41)
	0.00	0.05	-0.02	-0.02
Failure times	(0.07)	(1.34)	(-0.53)	(-0.49)
	-0.16 ^{***}	-0.06**	-0.11****	-0.12***
Entrepreneurial environment	(-7.20)	(-3.15)	(-5.72)	(-5.97)
	0.12***	0.12***	0.03	0.07**
Failure times \times	(4.31)	(5.41)	(1.40)	(2.67)
	-0.04+	-0.01	-0.04*	-0.03
entrepreneurial environment	(-1.81)	(-0.41)	(-2.15)	(-1.58)
_cons	-0.10	-0.19	0.12	0.07
Standard errors in parentheses + j	(-0.82)	(-1.95)	(1.11)	(0.66)

To have a directly feeling, we also display the relationships graphically (as Fig.2 and Fig.3). We observe that from the very beginning, if entrepreneurs perceived that they are in a supportive environment, entrepreneurs have a generally high imitative well-being. But with the times of failure increase, well-being of entrepreneurs in a supportive environment drop quickly than those in less friendly environment. The result shows in Fig. 2 reproof this result again. Result of failure times and life satisfaction follows the same trend as well (Fig.3).

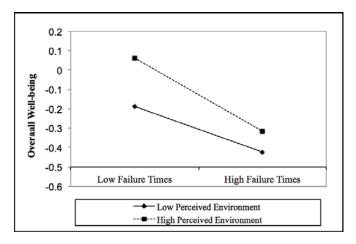


Figure 2 Moderating effect on times of failure and overall well-being

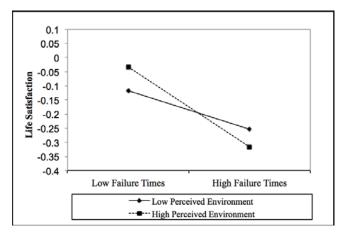


Figure 3 Moderating effect on times of failure and life satisfaction

VI. DISCUSSION

By doing hierarchy regression, we found that entrepreneurs' prior failure times have a negative relationship to entrepreneurs' well-being, and such relationship is strengthened when entrepreneurs are embedded in a entrepreneurial friendly environment. By testing the marginal effect of failure times, we find that each time of failure will cause the entrepreneur's well-being, including their job satisfaction, life satisfaction and psychology well-being, decreasing significantly.

The moderating role is significant on overall well-being and life satisfaction, but not on job satisfaction and psychology well-being. We think it may due to the magnitude of failure towards a certain person. Entrepreneurs regard the importance of their firm differently, so when their firm collapses, they will react differently. As in [13], the extent to which their entrepreneurial projects satisfied their psychological needs is consistent with their psychological ownership and personal engagement at work. On the other words, it depends on how much extent that their competence, relatedness and autonomy are satisfied [11].

A. Contributions

First, we further clarify the mechanism between failure experiences and entrepreneurs' well-being. We use marginal effect analysis to find out that every time of failure makes the entrepreneur suffer from psychological attack. Each time accounts.

Second, we break down well-being into job satisfaction, life satisfaction, and psychology well-being to test the effect of failure times on these detailed aspects of well-being. As we can see, few researchers have tested the relationship between failure times and entrepreneurs' job satisfaction, life satisfaction, and psychology well-being all together.

Third, we further discriminate the effects of different entrepreneurial environment on entrepreneurs' well-being. Entrepreneurial environment work differently on entrepreneurs' job satisfaction, life satisfaction, and psychology well-being and the overall well-being. When researchers further study this issue, they should pay attention to the different psychological factors.

B. Implications

Entrepreneurship is context-dependent. Context variables such like market environment and institutional environment cannot be neglected when study issues of entrepreneurship due to that entrepreneurship is a phenomenon which will exert different power and traits in different contexts. In an entrepreneurial friendly environment, entrepreneurs are more easily to get supportive policy, large funding pool, talents and experts, good infrastructure, and free market environment, but they also face more severe peer pressure during their entrepreneurial process. We should take care of entrepreneurs' well-being. Firm failure does not mean they are not capable in being entrepreneurs. Only to let those entrepreneurs treat failure more naturally and objectively, more and more individuals will devote to the process of being entrepreneurs.

Entrepreneurs should have such preparedness for the further loss and frustration they may have in the process of entrepreneurship. There is no short cut to be successful, since failure for more than ten times in starting a business is normal. Besides that, our research is also important for government officials. Since we find that market environment is particularly important in boosting the prosperous of entrepreneurial activities, the government officials should create entrepreneurship friendly environment for those new startups to grow.

C. Limitations and future direction

This study is not without limitations. First, this study doesn't include in the measure of new firm performance due to the limitation of data. We suppose it may be more meaningful to investigate the role that failure experience has on entrepreneurs' well-being and firm performance. How does entrepreneurs' metal shock brought about by failure experience exerting on firm performance seems interesting.

Second, reference [7] states that only those experience that is similar to the condition right now is useful to avoid pitfalls during the process of entrepreneurship, and that which is irrelevant to present situation may not be useful. So here we suggest that future studies to distinguish different kind of experience, especially the role failure experience plays in influencing entrepreneur's cognition and firm performance.

Third, our cross-sectional data fail to capture the dynamic nature of knowledge accumulation and experience increasing. Future studies can make a valuable contribution by drilling into the difference stages of experience accumulation and from the perspective of steam of experience to explore the path dependent nature of knowledge [12].

ACKNOWLEDGMENTS

Thanks Jian Gao, the dean of National Entrepreneurship Research Center of Tsinghua University, for his kindness to let us use the data of National Entrepreneurship Research Center of Tsinghua University. Thanks for National Entrepreneurship Research Center of Tsinghua University, for its efforts to collect such high quality data.

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