A Study on the Impact of Entrepreneurial Failure Experiences on Learning Behavior—From the Perspective of Grief Recovery

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Abstract: Based on experiential learning theory and grief recovery theory, this paper uses the survey data of 169 entrepreneurs to investigate the influence of entrepreneurs' failure experience on subsequent learning behavior, and introduces the moderating effects of different recovery orientations of entrepreneurs. The results show that entrepreneurial failure experience has a positive impact on entrepreneurs' failure learning behavior, which is conducive to both exploitative learning and exploratory learning. Reflective orientation positively moderates the relationship between entrepreneurial failure experience and exploitative learning behavior; Entrepreneur recovery orientation negatively moderates the relationship between entrepreneurial failure experience and exploratory learning behavior; Entrepreneur alternating orientation has a positive moderating effect on entrepreneurial failure experience and exploitative and exploratory learning behavior.

Keywords: Entrepreneurial failure experience; Failure learning behavior; Reflective orientation; Recovery orientation; Alternate orientation

1. Introduction

The entrepreneurial environment changes dynamically, and the uncertainty of the success or failure of entrepreneurial activities is high. In particular, the spread of the novel coronavirus has caused a huge impact on the global economy. For entrepreneurs, failure is undoubtedly a painful experience, bringing economic, social, psychological and other aspects of loss for entrepreneurs. However, research by Lee et al. (2021) showed that failure experience also contains a lot of information and knowledge, which can help entrepreneurs correct previous wrong behaviors, and learning from failure is an excellent skill [1]. At present, research on entrepreneurial failure and learning behavior has attracted extensive attention in the field of entrepreneurship, which mainly forms two research branches: The first is to explore the valuable resources available for learning from entrepreneurial failure, arguing that negative entrepreneurial practice is also a rare learning opportunity for entrepreneurs [2]. This learning behavior transforms experience into richer entrepreneurial ability by breaking the old cognitive thinking mode [3], and virtually cultivates higher-level entrepreneurial spirit^[4]. The second is to explore the impact of learning behavior on subsequent entrepreneurial performance.

Whether it is the improvement of entrepreneurial ability^[8], or the development of entrepreneurial perseverance^[9]and entrepreneurial alertness^[10], they all pay attention to the learning results of failure ^[11]. However, it relatively ignores the question of whether entrepreneurs can learn from failure. Grief recovery orientation is a common negative emotion regulation strategy used by entrepreneurs after entrepreneurial failure, which is mainly divided into three aspects: reflection orientation, recovery orientation and alternate orientation^[12]. Boso et al. (2019) pointed out that entrepreneurs' different grief recovery orientations may have an impact on the relationship between failure experience and failure learning behavior^[13]. Especially considering that entrepreneurial failure learning includes exploitative learning and explorative learning, this further complicates the impact of the three grief recovery orientations on the relationship between failure experience and failure learning behavior. Therefore, this study will introduce three types of grief recovery orientation, namely "reflection orientation, recovery orientation and alternate orientation," and explore their impact on entrepreneurs' exploitative learning and explorative learning from the experience of failure, so as to further promote the development of relevant theories such as grief recovery.

2. Theoretical basis and research hypothesis

2.1. Experiential learning theory

The research on failure and failure learning behaviors is based on the experiential learning theory proposed by Kolb (1984), that is, the transformation of experience is realized through learning processes such as information processing, reflection and observation, concept abstraction and re-practice^[14]. Experiential learning theory points out that learning is a cyclical process, and individuals are in reverse

Moving back and forth between thinking and action, experience and thinking modes can be divided into exploitative learning and explorative learning. Exploitative learning emphasizes the "reflection and thinking" process of individuals, and achieves the goal of improving and developing existing technologies and capabilities through "refining, integrating, revising, extending and restructuring" of previous knowledge and experience. Explorative learning emphasizes the process of individual "experience-action," which is different from the "use of old knowledge" of exploitative learning. Based on the basic view of experiential learning theory, current scholars have explored its application in the field of learning failure behavior and other fields. From the perspective of process, they have explored the impact of emotional and idiosyncratic factors such as failure attribution, overconfidence and stigma on reflective learning[16], as well as their important role in opportunity recognition and re-entrepreneurial performance. However, there are still the following shortcomings. That is, the effects of different grief recovery orientations on post-failure learning mechanisms were not explored. Therefore, this study will be based on experiential learning theory to further explore the influence of entrepreneurial failure experience on exploitative learning and explorative learning, and introduce the moderating effect of grief recovery orientation, so as to clarify the learning process and recovery mechanism of entrepreneurs after entrepreneurial failure, so as to promote the development of experiential learning theory.

2.2. Grief recovery theory

Entrepreneurship is an environment that generates "huge emotions". When entrepreneurs experience adversity or failure, they will often show sadness, loss and other negative emotions, or even immerse themselves in them, which will cause a significant decline in entrepreneurial performance and is not conducive to the rapid learning and growth of entrepreneurs. Whether entrepreneurs can recover quickly from grief is very important. The most important thing for entrepreneurs after failure is to carry out self-psychological adjustment and break the link with negative emotions. The grief recovery theory points out that individuals have three ways to manage grief; reflection orientation, recovery orientation and alternate orientation^[12]. Entrepreneurs who adopt a reflective orientation focus their thoughts on the loss situation and cause of the failure event. By scanning and processing the information related to the failure event, they can confront the negative emotions directly and promote the reflection process with in-depth thinking. Restoration-oriented entrepreneurs choose to deliberately distract themselves from failure and focus on addressing secondary stressors in order to suppress negative emotions. Entrepreneurs who adopt alternate orientation emphasize oscillating between reflective orientation and recovery orientation in order to absorb the advantages of both and avoid the disadvantages of both. On the one hand, it can distract the thinking of failure events and reduce negative emotions. On the other hand, it can scan for information about the cause of failure. It is not difficult to find that grief recovery orientation, as the main strategy for entrepreneurs to cope with grief, which orientation or combination of orientation entrepreneurs adopt after startup failure will affect the way they scan and process information, and thus affect the process of failure learning. Based on the basic views of the grief recovery theory, Xie Yapping et al. (2017) explored the impact of three different grief recovery orienting on entrepreneurial ability and found that alternate orienting can improve the entrepreneurial ability of entrepreneurs, while reflective orienting and restorative orienting hinder the improvement of entrepreneurial ability^[17]. In view of the existing research, this study believes that whether different grief recovery orientation can improve entrepreneurial performance is also related to the learning style of entrepreneurs after failure. Therefore, based on the empirical learning theory, this study divides failure learning styles into exploitative learning and exploratory learning, so as to further clarify how three different grief recovery orientations affect the relationship between failure experience and failure learning behavior.

2.3. Entrepreneur's failure experience and failure learning

Failure is a painful experience for most entrepreneurs and negatively affects their confidence and self-efficacy. Ucbasaran et al. (2013) pointed out that although failure is a kind of negative practical experience, it is also a unique learning resource^[18]. A large amount of information and knowledge contained in failure experience has become a "stepping stone" for entrepreneurs to improve old processes and find new opportunities. Experiential learning theory shows that discontinuous experiences in the entrepreneurial process can stimulate different forms of high-level learning, which is crucial for the future development of entrepreneurs. Therefore, it is not difficult to find that entrepreneurial failure experience will have an impact on failure learning behavior. On the one hand, the entrepreneurial failure experience will promote the entrepreneur's reflection and self-criticism. By analyzing the key factors of failure, wrong business process and improper way of thinking, the entrepreneur will enter the profound thinking process^[19]. In this process, the entrepreneur can refine the previous knowledge and experience, correct the previous wrong practices, and grasp the source of the problem. And increase the skills and knowledge about the entrepreneurial process, which is conducive to their utilization learning; On the other hand, a series of negative results produced by an entrepreneur's failure experience, such as project shutdown, dismissal of employees or even business closure, will exacerbate the frustration and lack of confidence of entrepreneurs and lead them into self-doubt and self-denial. At this time, the behavioral system and related cognitive schema of entrepreneurs will be subconsciously reshaped. Entrepreneurs will build on the experience of failure to build new cognition, and use the new cognitive model to explore new opportunities that may exist in new fields. Eggers et al. (2015) found that entrepreneurs with failure experience tend to show higher risk-taking and innovation when starting new businesses, so as to achieve new breakthroughs in entrepreneurial activities^[20]. Therefore, the experience of entrepreneurial failure is also conducive to exploratory learning. Based on this, hypothesis is proposed:

H1a: Entrepreneurial failure experience is positively correlated with exploitative learning behavior.

H1b: Entrepreneurial failure experience is positively correlated with exploratory learning behavior.

2.4. The moderating effect of reflective orientation on the relationship between entrepreneurial failure experience and learning from failure

According to the grief recovery theory, whether entrepreneurs can recover from grief as quickly as possible after experiencing trauma or failure depends on the individual's coping orientation to grief. Entrepreneurs with high introspection orientation are often immersed in failure "unable to extricate themselves", replaying the key events of failure in their mind, such as "the first transaction activity of the enterprise", "the first time the enterprise receives praise from customers", "the first time the enterprise loses important customers", "the enterprise cannot continue to survive" and so on. They are committed to reflecting on behavior, refining experience and revising cognition from failure experience, and tend to integrate, revise and restructure old knowledge, but have little interest in mining new knowledge. This will further strengthen the relationship between entrepreneurial failure experience and exploitative learning, and weaken the relationship between entrepreneurial failure experience and exploratory learning. Therefore, entrepreneurs with high introspection orientation are more inclined to pursue low-cost and highly controllable utilization learning behaviors from the failure experience. Entrepreneurs tend to seek a reasonable explanation for failure and focus on analyzing the causes of failure and scanning the information related to failure. It is precisely the deep thinking of entrepreneurs on failure events. As a result, their thoughts shifted from focusing on the failure event to the failure itself and negative emotions, which imperceptibly intensified the reflection and even caused some loss and regret^[21]. In this case, the heterogeneous information processing and scanning abilities of entrepreneurs are gradually consumed, which leads to the shielding of their perception of new things from their hearts and their reluctance to search for new knowledge and try new methods, and to pursue risks in new fields^[22]. Therefore, high reflection orientation is not conducive to exploratory learning from failure experiences. On the contrary, if entrepreneurs have low reflection orientation, they will relatively put down the existing "failure burden", more "forward", get rid of the old failure experience.

Focus on new knowledge and explore learning. Based on this, hypothesis is proposed:

H2a: Reflective orientation positively moderates the relationship between entrepreneurial failure experience and exploitative learning behavior.

H2b: Reflective orientation negatively moderates the relationship between entrepreneurial failure

experience and exploratory learning behavior.

2.5. The moderating effect of recovery orientation on the relationship between entrepreneurial failure experiences and failed learning

According to grief recovery theory, entrepreneurs who adopt a recovery orientation to cope with grief will behave differently from a reflective orientation after failure. This is because recovery orientation contains two dimensions-avoidance and "initiative". Avoidance allows entrepreneurs to take their attention away from failure and the events leading to failure, while "initiative" makes their life seem to return to normal after failure, which is a kind of negative escape "initiative". On the one hand, highly restoration-oriented entrepreneurs do not wallow in pain after a failed venture, but deliberately suppress their attention to the failure event in order to "normalize" their life, such as "at home

Do sports, do odd jobs, sell the house or apply for the minimum living security ", etc., which will make entrepreneurs who fail no longer worry about entrepreneurial failure and reduce the interference of negative emotions^[23], but also weakens the willingness of entrepreneurs to learn from failure, and the previous knowledge and experience are not well refined and integrated. Existing technologies and capabilities are not being improved, which further weakens the relationship between experience of failure and exploitative learning. On the other hand, avoidance and negative "initiative" after entrepreneurial failure will not actually help to deal with future entrepreneurial problems, but lead to the constant consumption of entrepreneurs' exploration ability and heterogeneous information scanning ability^[24]. Blindly pursuing negative "recovery" will eventually lead entrepreneurs to be stuck in a self-restricted situation. Unable to acquire new knowledge and the ability to solve new problems, so when the recovery orientation of entrepreneurs is high, entrepreneurs cannot learn from the failure experience. Based on this, hypothesis is proposed:

H3a: Recovery orientation negatively moderates the relationship between entrepreneurial failure experience and exploitative learning behavior.

H3b: Recovery orientation negatively moderates the relationship between entrepreneurial failure experience and exploratory learning behavior.

2.6. The moderating effect of alternate orientation on the relationship between entrepreneurial failure experience and learning from failure

According to the grief recovery theory, entrepreneurs with alternate orientation do not immerse themselves in the pain of failure or deliberately avoid the fact of failure. Instead, they seek a balance between reflective orientation and recovery orientation by constructing a central regulatory mechanism, so as to absorb the advantages of both and overcome the disadvantages of both, so as to learn more from failure. When an entrepreneur focuses for a long time on the causes of a failure, it can be backfired by negative emotions. Highly alternative-oriented entrepreneurs shift their personal focus from failure to other activities include successfully solving secondary stressors to break the vicious cycle caused by rumination^[25]. When the individual's negative emotions are alleviated, the highly alternative-oriented entrepreneur can reflect fully to understand the reasons for the failure and learn from the experience. When entrepreneurs with low alternating orientation cannot benefit from the central adjustment mechanism of alternating orientation, it will not be conducive to the summary of experience and lessons. Therefore, entrepreneurs with high alternating orientation will be conducive to the utilization learning from failure experience. Entrepreneurs with high alternating orientation will not blindly immerse themselves in the pain of failure, which weakens the self-blame and emotional burden brought by reflective orientation. They will not deliberately escape failure, but have the courage to seek new knowledge and information^[26], which also weakens the negative "initiative" brought by recovery orientation. As a result, highly alternative-oriented entrepreneurs will become better at scanning and exploring new and heterogeneous information, which will ultimately promote innovation entrepreneurs learn by exploring entrepreneurial failures. Based on this, hypothesis is proposed:

H4a: Alternate orientation positively moderates the relationship between entrepreneurial failure experience and exploitative learning behavior.

H4b: Alternate orientation positively moderates the relationship between entrepreneurial failure experience and exploratory learning behavior.

Based on the above research assumptions, this study builds the following theoretical model, as shown in Figure 1:

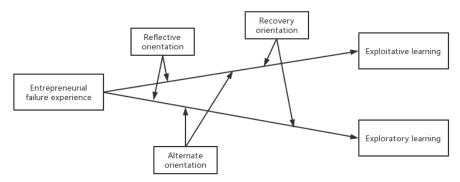


Figure 1: Theoretical model

3. Research design

3.1. Data collection and sample characteristics

This study uses the questionnaire method to collect data, and the respondents are entrepreneurs who have experienced failure. 118 questionnaires were distributed in business incubators and hackerspaces; 150questionnaires were distributed by professional questionnaire collection service companies and entrepreneur consulting agencies; Ninety questionnaires were distributed to relatives, colleagues, friends and entrepreneurs with indirect relationships. A total of 358questionnaires were distributed and 273were returned. In the process of questionnaire processing, the questionnaires with incomplete information, multiple questions with the same option, and obvious logical errors were eliminated, and 169valid questionnaires were finally obtained, with an effective recovery rate of 47.2%.

3.2. Variable measurement

3.2.1. Entrepreneurial failure experience

The measurement of entrepreneurial failure experience mainly refers to the measurement scale of Ucbasaran et al. (2010)^[27] and uses the number of entrepreneurs' failure experiences as a way to measure entrepreneurial failure experience. It is regarded as an entrepreneurial failure "as a prompt, which can clearly and objectively reflect the entrepreneur's failure experience.

3.2.2. Failure learning behavior

According to the experiential learning theory, failing learning behaviors are divided into exploitative learning and explorative learning, which are mainly based on the scale of Politis et al. (2009). ^[28] Exploitative learning is measured by four items such as "I prefer to conduct in-depth exploration in the field I am familiar with." Explorative learning is measured by four items such as "I like to explore new fields and try new behaviors."

3.2.3. Grief recovery orientation

The grief recovery orientation mainly draws on the measurement scale of Shepherd et al. (2011). ^[25]Among them, reflective orientation is measured by three items such as "In my mind, I often repeatedly review the causes of failure"; Recovery orientation was measured by three items, including "after failure caused some problems, I tried to get my life back to normal." The alternate orientation is measured by three items such as "After easing my emotions, I will face negative emotions caused by failure." Each item is measured by the 5-point Likert scale, ranging from 1 to 5 as "strongly disagree" to "strongly agree."

3.2.4. Control variable

According to the literature review, individual differences of entrepreneurs may have an impact on learning failure behavior, including gender, age, educational background, previous work experience, failure time, failure attribution method and so on. Therefore, these variables are used as control variables in this study. First, entrepreneurs were asked to list their gender, age and education. Secondly, the previous work experience is measured by the "working years before the entrepreneur starts a business," and the time of failure is measured by the "time of last failure." Finally, the attribution method is measured by "the cause of the latest failure," and the external attribution and internal

attribution are determined by coding according to the three items selected by the entrepreneur from the 10 causes of failure.

3.3. Reliability, validity, and common method variation bias

In this study, Cronbach's α coefficient and CR value, an international common index, were used to determine its reliability. The Cronbach's α coefficient and CR value of all variables, such as reflective orientation, recovery orientation, alternate orientation, exploitative learning and explorative learning, exceed 0.7, indicating that the questionnaire has good reliability. In terms of validity, content validity and construct validity are considered. Firstly, the scales in this questionnaire are developed by foreign scholars and revised repeatedly on the basis of consulting experts in related fields, so it has good content validity. Secondly, confirmatory factor analysis shows that the loading values of each factor are greater than 0.7, indicating that the scale has good convergent validity, and the correlation coefficients of all variables are less than the square root of AVE, indicating that the scale has good discriminant validity.

In this study, two methods of pre-programmed control and post-statistical test were adopted to reduce the common method variation deviation. First of all, when designing the questionnaire, we should reduce the suggestiveness of the questionnaire items and the contextual connection between the contexts, so as to avoid the understanding bias caused by the questionnaire items or content. When the questionnaire was distributed, each questionnaire was divided into two copies, so that the respondents were not affected by psychological presets when they filled in, so as to reduce the bias in the process of data collection. Secondly, when analyzing the questionnaire, Harman's single factor analysis is used to conduct exploratory factor analysis on all variables without rotation, and it is found that 7 factors are obtained without rotation.

4. Empirical analysis

4.1. Hypothesis testing

exploitative learning exploratory learning variable model1 model 2 model 3 model 4 model5 model 6 model 7 model 8 0.107 0.184 0.238 0.141 -0.223 -0.108 -0.105 -0.106 gender age 0.124 0.119 0.145 0.122 -0.053 -0.060 -0.073-0.031 0.155** 0.068 0.073 0.059 0.015 0.147* education 0.1050.092 0.158*0.102 0.122 0.093 0.137 0.053 0.021 0.005 previous work experience failure time -0.094 0.100 -0.131*-0.104 0.083 0.074 0.073 0.0540.233* 0.218* 0.200 0.176 0.042 0.020 0.059 0.047 attribution of failure failure experience 0.233*** 0.134*** 0.212*** 0.351***).327*** 0.352*** 0.242*** reflection oriented 0.111 0.046 -0.279** -0.047 -0.041 0.038 0.055 recovery orientation 0.212** 0.219*** 0.209** 0.178** alternating guidance 0.317*** failure experience x reflective 0.118 orientation failure experience 0.119 -0.255** recovery orientation 0.122** 0.124** failure experience reflective orientation 0.013 0.032 \mathbb{R}^2 0.055 0.086 0.152 0.125 0.203 0.251 0.042 0.031 0.066 0.093 0.078 $\triangle \mathbb{R}^2$ 0.048 2.391** 2.581** 3.313** 1.919* 4.443*** 5.323*** 1.377 5.278*** F

Table 1: Results of the regression analysis

Note: N = 169, * means p < 0.1, ** means p < 0.05; *** indicates p < 0.01.

In this study, SPSS23.0 software was used to conduct hierarchical regression analysis on the constructed model. Before the regression analysis, the variance inflation coefficient of each model was tested, and it was found that the VIF value of all models was less than 1.5, indicating that there was no serious multicollinearity problem in the equation. Next, the formal test is started, and the regression analysis results are shown in Table 1.

Set exploitative learning and exploratory learning as dependent variables, and Model 1 and Model 5 verify the impact of variables such as gender, age, and education on the dependent variables, and

control them in future models. Model 2 shows a significant positive correlation between failure experiences and exploitative learning (β =0.233, p<0.01), assuming H1a holds; Model6shows a significant positive correlation between failure experiences and exploratory learning(β =0.351, p<0.01), assuming H1b holds.

To verify the moderating effect of three types of grief recovery orientations on failure experiences and learning behavior, first, three moderating variables, reflective orientation, recovery orientation, and alternating orientation, were added to Model 3 and Model 7. The results show that reflective orientation has no significant impact on exploitative learning (β =0.111, p>0.1), Significant negative impact on exploratory learning(β =- 0.242, p<0.01); Recovery oriented approach for exploitative learning(β = 0.038, p>0.1) and exploratory learning(β =-The effects of 0.047 p>0.1) were not significant; Alternating Direction for Utilitative Learning(β =0.219, p<0.05) and exploratory learning(β =The effects of 0.209 (p<0.05) are significant. Secondly, include failure experiences in Model 4 and Model 8 × Reflection oriented, failure experience × Recovery oriented, failure experience × Interactive items such as alternate guidance, and centralized processing before putting interactive items in order to eliminate the collinearity effect. The results showed that the R2 of Model 4 increased by 0.066 compared to Model 3, and the R2 of Model 8 increased by 0.048 compared to Model 7, indicating an increase in the degree of explanation for the dependent variable. Finally, Model 4 shows that reflective orientation significantly positively moderates the relationship between entrepreneurial failure experiences and exploitative learning behavior(β=0.317, p<0.01), assuming H2a holds; The moderating effect of recovery orientation on the relationship between entrepreneurial failure experiences and exploitative learning behavior is not significant(β=0.119, p>0.1), assuming H3a does not hold; But alternating orientation significantly positively moderates the relationship between entrepreneurial failure experiences and exploitative learning behavior(β=0.122, p<0.05), assuming H4a holds. Model 8 shows that the moderating effect of reflective orientation on the relationship between entrepreneurial failure experiences and exploratory learning behavior is not significant(β=0.118, p>0.1), assuming H2b does not hold; Recovery oriented significantly negatively regulates the relationship between entrepreneurial failure experiences and exploratory learning behavior(β=-0.255, p<0.01), assuming H3b holds; The relationship between entrepreneurial failure experiences and exploratory learning behavior regulated positively by alternating orientation(β ==0.124, p<0.05), assuming H4b holds.

5. Conclusion

Firstly, entrepreneurial failure experiences are positively correlated with both exploitative learning and exploratory learning. Entrepreneurial failure experiences provide entrepreneurs with a unique practical context, which contains a large amount of knowledge, information, and experience. This not only helps entrepreneurs reflect on their behavior patterns, correct previously ineffective practices, but also facilitates entrepreneurs to refine and reorganize old knowledge, and engage in utilitarian learning. At the same time, the new cognition established by entrepreneurs based on negative experiences invisibly increases their awareness of discrimination and exploration ability, which helps them identify new opportunities in new fields and engage in exploratory learning. This conclusion preliminarily confirms the view of Politis et al. (2009)^[28]that failure experiences are an opportunity for entrepreneurs to reflect and consider, which may bring positive results.

Secondly, the different grief recovery orientations of entrepreneurs regulate the functional relationship between entrepreneurial failure experiences and failed learning behaviors. Specifically, reflective orientation positively regulates the relationship between failed experiences and exploitative learning behavior, restorative orientation negatively regulates the relationship between failed experiences and exploratory learning behavior, and alternating orientation positively regulates the relationship between entrepreneurial failure experiences and exploitative learning behavior and exploratory learning behavior. The negative moderating effect of reflective orientation on the relationship between entrepreneurial failure experiences and exploratory learning behavior has not been verified. The reason may be that entrepreneurs who adopt reflective orientation immerse themselves in the review of failure experiences and the revision of their own cognitive structure for a long time. which leads them to fully recognize the shortcomings of their own abilities and knowledge system. Therefore, sometimes they tend to search for new knowledge and expand new fields to supplement the shortcomings of existing knowledge; The negative moderating effect of recovery orientation on the relationship between entrepreneurial failure experiences and exploitative learning behavior has not been verified. The reason may be that entrepreneurs with recovery orientation, due to their proactive avoidance characteristics, do not realize that their knowledge structure and behavioral path may

encounter problems, and still utilize existing knowledge structures and thinking patterns in subsequent entrepreneurial actions, So the negative moderating effect of recovery orientation on the relationship between entrepreneurial failure experiences and exploitative learning behavior may not be significant. It is not difficult to find that the moderating effect of reflection orientation on the relationship between entrepreneurial failure experiences and exploratory learning behavior, and the moderating effect of recovery orientation on the relationship between entrepreneurial failure experiences and exploitative learning behavior may not be a linear relationship. It is recommended that subsequent scholars use a larger sample for further exploration.

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