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Breakdown or Breakthrough? How Event Disruption Shapes Entrepreneurial Resilience

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Abstract

In a business ecosystem where technological change and sudden crises intertwine, entrepreneurial resilience reshapes the survival paradigm of new ventures, becoming a key factor in their success. The entrepreneurial journey is essentially a dynamic accumulation of event chains. The way entrepreneurs learn in response to events has emerged as a central driving force in cultivating entrepreneurial resilience. Event System Theory provides the theoretical foundation for studying how entrepreneurial resilience can be cultivated in non-normal situations. Event disruption drives entrepreneurs to break through traditional comfort zones and confront new challenges and uncertainty. Drawing on event system theory, this study investigates how entrepreneurs' perceived event disruption influences entrepreneurial resilience through ambidextrous learning. Through the analysis of data from a three-wave time survey of 225 entrepreneurs, it was found that event disruption has a positive promoting effect on entrepreneurial resilience. Event disruption strengthens entrepreneurial resilience through exploratory learning, rather than exploitative learning. Additionally, the positive impact of event disruption on entrepreneurial resilience weakens as event duration increases; however, when event spatial proximity is closer, the positive impact of event disruption on entrepreneurial resilience is stronger. The research findings provide both theoretical grounding and practical guidance for entrepreneurs seeking to build entrepreneurial resilience in uncertain venture contexts.

Introduction

Increasing complexity and uncertainty in the economic environment have substantially raised the likelihood and occurrence of non-routine events, presenting severe challenges to new ventures and entrepreneurs (Morgeson et al., 2025). Some entrepreneurs, by virtue of strong entrepreneurial resilience (ER), stabilize situations amid turmoil, keenly explore and seize potential business opportunities, successfully adapt to environmental changes, and achieve better development (Liang & Li, 2024). For instance, after founding DeepSeek in 2023, Liang Wenfeng faced numerous challenges, including a shortage of funds, technological bottlenecks, insufficient market recognition, and competition from foreign tech giants. Especially in early 2025, after DeepSeek launched, it encountered crisis events such as malicious cyberattacks. Despite these setbacks, through tenacious resilience and continuous learning, Liang Wenfeng led his team to breakthroughs in both technology and market, demonstrating his strong resilience in overcoming adversity. However, there are some entrepreneurs who show significant vulnerability to sudden changes and are unable to cope effectively. As a result, enterprises will fall into trouble or even close down, and entrepreneurs will never recover from it (Liu et al., 2021; Salem et al., 2026). In this challenging context, it becomes crucial to cultivate the ER of entrepreneurs. ER is a key factor for entrepreneurs to keep their businesses growing and achieving success in the face of uncertainties and challenges (Branca et al., 2025; Nurse et al., 2026; Seyfi et al., 2025). Entrepreneurs should possess tenacious determination and courage, and the ability to quickly adapt to environmental changes. Only in this way can risks be resisted, opportunities be seized, and sustainable development and success be achieved in the highly competitive market (Ciasullo et al., 2024; Yu et al., 2022).

ER refers to the ability of entrepreneurs to actively adapt, flexibly cope, and even develop themselves in the face of risks and uncertainties brought about by environmental changes. Resilience is of great significance to the innovative growth and high-quality development of enterprises (Ciasullo et al., 2024; Yeshi et al., 2024). ER significantly impacts entrepreneurial behavior and entrepreneurial outcomes. Therefore, an increasing number of scholars have begun to pay attention to the formation mechanism of ER and the factors that affect it. Factors affecting ER mainly include the entrepreneur's individual characteristics and contextual factors (Haddoud et al., 2022; Yeshi et al., 2024). Entrepreneurs' individual characteristics are inevitably influenced by internal and external environments, which means that contextual factors are key determinants of ER (Hartmann et al., 2022). Existing studies have predominantly examined the antecedents of ER from the perspective of static characteristics of individual entrepreneurs or macro-level contextual factors (Anwar et al., 2023; Branca et al., 2025; Klein, 2025). However, less attention has been paid to how micro-level environmental uncertainty and complexity—particularly event-related influences—shape ER. Entrepreneurship is inherently a dynamic process driven by a series of unexpected events (Anwar et al., 2023). In highly uncertain entrepreneurial contexts, ER is not only a psychological resource for coping with routine events, but also a core asset for navigating disruptive events (Anwar et al., 2023; Stephan et al., 2023). However, while prior studies often treat event strength—encompassing novelty, criticality, and disruption—as a holistic construct, they tend to overlook differences in the characteristics of events. In reality, what profoundly shapes entrepreneurial trajectories and ER is often event disruption (ED) that breaks existing routines and established order. Prior research has demonstrated that ED fosters individuals' coping capabilities (Roulet & Bothello, 2023). As a powerful external shock, ED greatly intensifies environmental complexity. Meanwhile, it pushes entrepreneurs beyond their original cognitive comfort zones and prompts capability upgrading in the face of unprecedented change (Mayberry et al., 2024). While prior studies have investigated the outcomes of events using overall indicators of event strength, relatively few have directly examined the effect of ED on ER (Kiefer et al., 2025; Zhang et al., 2023). Therefore, by unpacking the mechanisms through which ED impacts ER, this study offers significant theoretical value and practical implications for entrepreneurs navigating highly uncertain external shocks and achieving growth in adversity.

Event System Theory (EST) primarily studies how events alter the behavior and characteristics of entities. Event attributes, including strength, time, and space, jointly determine the impact of the event (Morgeson et al., 2015). ED forces entrepreneurs to transcend traditional boundaries and comfort zones, confronting unprecedented challenges and uncertainties. Survival and growth in such extreme situations serve as a test of the entrepreneur's leadership, innovative thinking, and crisis management abilities, while also being a key factor in the forging and strengthening

of their resilience. When faced with disruptive changes, the first challenge for entrepreneurs is to process the large influx of new information and data. The complexity and diversity of this information require entrepreneurs to conduct efficient information processing (X. Liu et al., 2023). When coping with ED, differences in information processing behaviors lead to varying impacts on entrepreneurial capacity. Therefore, this study adopts an information processing perspective to examine the mediated mechanisms of exploratory learning (EXR) and exploitative learning (EXL) as two distinct behaviors for processing information. The goal is to explore how different information processing affects entrepreneurs' cognition and decision-making in the face of ED, which in turn leads to different results. A deeper study of these potential mechanisms will not only enhance our understanding of entrepreneurs' behavioral patterns under disruptive changes but also provide targeted insights to help them respond flexibly and achieve sustainability in the complex and ever-changing entrepreneurial environment (DiBella et al., 2023).

In conclusion, based on EST, this study aims to examine the impact mechanism of ED on ER. The answer to this question provides a new perspective for understanding the formation mechanism of ER. At the same time, entrepreneurs can be deeply inspired and encouraged to cope and actively learn in the face of risks. Lessons are learned from various events, strategic direction is adjusted, and sustained development is achieved.

Theoretical framework and Hypothesis development

Event system theory. EST focuses on how events are attended to and have an impact on entities' characteristics, behavior, and subsequent events. According to this theory, event strength and its temporal and spatial attributes jointly determine the extent to which an event affects an entity. Event strength is a key attribute in assessing its impact, while disruption is a central characteristic in measuring event strength (Lin et al., 2021; D. Liu et al., 2023; Morgeson et al., 2015). ED is the disruption and disturbance of an entity's routine activities by an event. Disruptive events can disrupt the continuity of the environment and stimulate entrepreneurs to conduct deliberated information processing (Morgeson et al., 2015). Such information processing can enable entrepreneurs to better cope with changes and challenges in the internal and external environments. In addition, the temporal and spatial attributes of events moderate their influence: when event duration is short and event spatial proximity is close, the impact of events on entities tends to be greater (Morgeson et al., 2015). In sum, to accurately capture the impact or shock of an event in event-oriented research, it is imperative to consider three primary dimensions simultaneously: event strength, event time, and event space.

EST emphasizes the multilevel and dynamic influence of event attributes on the development of focal entities (D. Liu et al., 2023; Morgeson et al., 2015). Although the application of EST has become increasingly widespread, most studies remain concentrated in the fields of organizational behavior and public administration (Kiefer et al., 2025; Roulet & Bothello, 2023; Ye et al., 2023). Few have applied the theory to the field of entrepreneurship to explore event characteristics and their effects during the entrepreneurial process. Moreover, existing studies tend to focus on theoretical discussions or case analyses of EST, with relatively limited empirical evidence based on large-sample data (Raddatz, 2024; Roulet & Bothello, 2023). The shaping of entrepreneurial ability is a dynamic process. The rich entrepreneurial events experienced by entrepreneurs will have an impact on the formation of entrepreneurial ability in multiple dimensions such as time, space, and strength. Therefore, this study extends EST into the entrepreneurial domain, empirically examining the underlying mechanisms and boundary conditions through which ED shapes ER. It provides empirical support for the expansion of EST and scientific guidance for the management of events.

ED and ER. EST states that ED tends to disrupt an entity's routine operating state (Morgeson et al., 2015). This prompts entrepreneurs to activate conscious information processing mechanisms, adjusting existing behavioral patterns and characteristics (Lin et al., 2021). Entrepreneurs' ability to adapt, cope, and develop in response to environmental changes is enhanced, which in turn strengthens ER.

ED causes entrepreneurs to perceive a disruption in the original steady state, forcing them to face new challenges (Lucas & Mitra, 2024). This situation can stimulate the sense of urgency and vigilance of entrepreneurs, enabling them to be more sensitive to changes in the internal and external environments, while also enhancing their response speed to market dynamics (Antony et al., 2025). Entrepreneurs' ability to adapt to environmental changes is enhanced, which in turn strengthens ER (Shore et al., 2024).

Faced with the disturbance caused by the event, entrepreneurs must quickly assess the impact scope of the event, and formulate corresponding coping strategies accordingly (Lucas & Mitra, 2024). This process tests the judgment of entrepreneurs, and also effectively exercises their adaptability. With the accumulation of coping experience, entrepreneurs can respond more efficiently in the face of similar emergencies. Therefore, they will continue to improve their ability to cope with uncertainty and further enhance their ER (Lucas & Mitra, 2024).

When the disruptive level of an event is high, entrepreneurs may be confronted with a large amount of information that is different from the past. The complexity and diversity of these inputs fundamentally challenge their existing cognitive framework and force them to enter a deep cognitive reconstruction process, which is not just a process of accumulating new information, but a process of deconstructing and reconstructing their previous knowledge structures, involving the transformation and upgrading of their rooted thinking patterns. Through this process, entrepreneurs have gradually developed a more advanced and comprehensive cognitive system (Mayberry et al., 2024). This advanced cognitive transformation will stimulate entrepreneurs' motivation to develop themselves in the future, enhance their ability to more keenly

identify opportunities, and strengthen the self-development aspect of ER (Antony et al., 2025). Based on the above, the following hypothesis is proposed:

H1

ED has a significant positive effect on ER.

The mediating role of ambidextrous learning (AL). When ED makes regular and predictable organizational environments unstable, entrepreneurs are forced to quickly process information and adapt strategies to the new environment. Through in-depth processing of information, changes can be identified more rapidly, strategies can be adjusted, and coping methods can be found, thereby improving the ability to deal with challenges and uncertainties (X. Liu et al., 2023). EXR and EXL are two key learning behaviors (Harrison & Leitch, 2005). EXR is dedicated to exploring new knowledge, acquiring new knowledge through innovative approaches, and breaking away from old thinking patterns. It adopts an open information strategy, integrates cross-domain knowledge, and seeks innovative connection points, enabling entrepreneurs to quickly adapt to changes and optimize business models (El-Awad, 2023). In contrast, EXL emphasizes the refinement of existing knowledge, drawing on past experience to more accurately analyze and apply knowledge to improve efficiency and organizational stability (Ait-Hammou & Abdulkader, 2026). EST points out that disruptive events will disrupt the continuity of the environment, and entities need to process information at a deeper level, adjust or change existing behavioral patterns or characteristics (Lin et al., 2021). Only in this way can they better respond to the changes and challenges in the entrepreneurial environment and achieve the continuous development of individuals and organizations.

ED breaks the conventional and stable environment, forcing entrepreneurs to face new challenges and uncertainties. They need to seek new knowledge and methods to solve problems in order to effectively cope with the complex and ever-changing internal and external environments. ED forces companies and entrepreneurs to face new challenges and opportunities. The sudden and unpredictable nature of such events often invalidates the existing knowledge system, reduces the applicability of past experience, and encourages entrepreneurs to conduct EXR. EXR inspires entrepreneurs' innovation. Entrepreneurs can constantly explore new business models, and learn new skills and methods (Yang et al., 2025). Through repeated trial and error and iteration, they can accumulate experience, and find new solutions by integrating new information. This enables them to actively adapt and flexibly respond to changes in the internal and external environment, so as to improve their ER (DiBella et al., 2023).

ED also prompts entrepreneurs to strengthen interaction with internal and external environments. Facing the uncertainties and changes brought by events, entrepreneurs need to communicate and collaborate with industry peers, and experts to acquire new information (Bai et al., 2021), which in turn stimulates their EXR. In the process of constantly exploring new fields and markets, entrepreneurs will accumulate more experience. This makes them more capable of coping with uncertainties, thus enhancing ER (Anwar et al., 2023). Based on this, the hypothesis is proposed:

H2a

EXR serves as a mediating mechanism in the relationship between ED and ER.

When dealing with the challenges brought by ED, entrepreneurs need to flexibly apply existing resources, and constantly optimize their strategies to adapt to the new market environment. ED can either bring huge shocks or harbor new opportunities for growth. When confronted with disruptive changes, entrepreneurs can often identify environmental changes based on their existing knowledge reserves. Through adaptive transformation of historical experience, they can transfer verified solutions to new scenarios. This process of refining the existing cognitive framework prompts entrepreneurs to be more inclined to adopt EXL. EXL encourages entrepreneurs to learn from the wisdom of past experiences and make targeted adjustments to current realities (Winkler et al., 2023). This learning behavior helps entrepreneurs better understand the essence and trends of environmental changes, thereby formulating effective response strategies and strengthening ER (Yang et al., 2025).

In the face of changes and uncertainties brought about by ED, entrepreneurs need to maintain stability during environmental changes. ED disrupts the original market balance, forcing entrepreneurs to re-examine existing knowledge and behavior patterns. EXL helps entrepreneurs progressively adjust their business strategies by digging deeper into existing resources and experiences (Winkler et al., 2023). This gradual process of change enables entrepreneurs to better grasp the direction and rhythm of change, and achieve steady and sustainable development (Ait-Hammou & Abdulkader, 2026). Accordingly, the study proposes the following hypothesis:

H2b

EXL serves as a mediating mechanism in the relationship between ED and ER.

The moderating role of event duration and event spatial proximity. EST believes that the event duration has different impacts on the structure and behavior of entities (Morgeson et al., 2015). The increase in duration means that the disruptive impact of the event is prolonged over time.

The prolonged impact may lead to entrepreneurs becoming sluggish in adapting to disruptive changes (Nogueira et al., 2023). At the early stage of the event, the sense of urgency and pressure brought by disruption can often stimulate entrepreneurs' ability for innovation (Liu et al., 2024). This ability can make them effectively cope with the volatile changes. Therefore, their ER can be improved. However, over time, entrepreneurs gradually adapt to the disruption brought by events. They can develop more mature coping mechanisms, and form a habitual coping mode (Morgeson & DeRue, 2006). This may limit the vision and thinking of entrepreneurs. It can be difficult for them to jump out of the existing thinking framework. Moreover, they will reduce the sensitivity to new markets and the ability to seize new opportunities, and further weaken the positive impact of ED on ER.

Prolonged duration may lead to increased entrepreneurial fatigue from ED, which in turn weakens the positive impact of ED on ER. Long-term disruption requires entrepreneurs to constantly invest resources and make strategic adjustments. This continuous pressure may lead to excessive consumption of entrepreneurial resources and cause fatigue (Morgeson et al., 2025), thereby affecting the innovation ability and adaptability of entrepreneurs (Patzelt & Shepherd, 2024). As entrepreneurial resources are exhausted and entrepreneurial motivation wanes, entrepreneurs may become less capable of identifying new opportunities and coping with emerging challenges, causing the positive influence of ED on ER to gradually diminish. Accordingly, the study proposes the following hypothesis:

H3a

Event duration functions as a moderator in the relationship between ED and ER. The longer the duration, the weaker the positive relationship.

EST posits that the impact of an event on an entity is positively related to its spatial proximity (Morgeson et al., 2015). First, closer spatial proximity amplifies the sense of urgency and the disruptive impact of the event on the entrepreneur (Lu & Zhou, 2025). When ED originates from the firm's immediate internal environment (i.e., close spatial proximity), entrepreneurs are more directly exposed to its shock and pressure. They can obtain firsthand information more quickly (Morgeson, 2005), which stimulates their innovative thinking and crisis response capacity (Ye et al., 2023), thereby facilitating timely adjustments to strategies and action plans. This accelerates their capacity to cope with a complex and volatile entrepreneurial environment and strengthens their ER.

Second, when ED stems from the firm's more distant external environment (i.e., distant spatial proximity), the weaker direct connection between the external event and internal operations may require entrepreneurs to invest more time and resources to comprehend its impact and formulate appropriate coping strategies. This indirectness may lead to slower or less accurate reactions on the part of entrepreneurs (Morgeson et al., 2015), ultimately weakening the positive impact of ED on ER. On the contrary, when the source of disruption is internal, closer spatial proximity fosters communication and collaboration among entrepreneurs. Such collaboration not only helps disperse risks but also enhances the efficiency and effectiveness in coping with challenges through collective intelligence and resource integration (Dutta et al., 2022), ultimately strengthening ER. In light of the above discussion, the following hypothesis is proposed:

H3b

Event spatial proximity functions as a moderator in the relationship between ED and ER. The closer the spatial proximity, the stronger the positive relationship.

In summary, the theoretical model of this study is presented in Fig. 1.

Methodology

Sample and data collection. Entrepreneurs located in business incubators across several Chinese cities were surveyed using a structured questionnaire as the primary means of data collection. Data were collected through both in-person and online surveys. For the in-person collection, the Jiangsu Provincial Enterprise Informatization Association was commissioned to distribute questionnaires during industrial park training sessions, where the purpose of the study was explained. For the online collection, questionnaires were distributed via WeChat or email to entrepreneurs with whom prior consultation or contact had been established, following their consent. The survey was primarily distributed across Beijing, Shanghai, Jiangsu, Guangzhou, and Anhui. Entrepreneurs were explicitly informed that the survey was anonymous and that the collected data would be used solely for research purposes. To mitigate the impact of common method bias, data were collected at three-wave time (T1, T2, and T3), with a 2-week interval between each adjacent time point. Additionally, to enhance the response rate, participants who successfully completed all three phases of the survey were compensated. At Time 1, we collected data on entrepreneurs' demographic information, event disruption, event duration, and event spatial proximity. A total of 500 questionnaires were distributed, with 438 valid responses received, yielding a response rate of 87.60%. At Time 2, the second wave of questionnaires was distributed to entrepreneurs who had participated in the first phase, focusing on exploratory and exploitative learning. This phase resulted in 366 valid responses, with a response rate of 83.56%. Finally, at Time 3, the third wave of questionnaires was administered to those who had participated in the second phase, targeting entrepreneurial resilience. Ultimately, 313 valid responses were obtained, representing a response rate of 85.52%. In this study, an event is defined as a non-routine incident that occurs suddenly and has a significant impact on business development. Entrepreneurs were asked

whether their businesses had encountered such events. After excluding 88 cases without relevant event experiences, 225 valid responses from entrepreneurs with qualifying experiences were retained for analysis.

Among the 225 entrepreneur respondents, 74.7% were male and 25.3% female, reflecting the gender distribution typically observed among entrepreneurs in China. Of the sample, 59.6% of entrepreneurs were aged 35 or below, while 40.4% were above 35. In terms of education, the sample included a broad range of educational backgrounds: 20.9% had an associate degree or below, 60.0% held a bachelor's degree (the largest group), and 19.1% had a master's degree or higher. Regarding entrepreneurial experience, 29.8% were first-time entrepreneurs, 33.8% had started a business twice, and 36.4% had more than three entrepreneurial experiences. The demographic statistics indicate that the sample is broadly representative.

Measures. This study employed established measurement scales sourced from both domestic and international academic literature to ensure the validity of the variables. After appropriate adaptation, a questionnaire survey was administered to entrepreneurs. A 5-point Likert scale was used, where "1" indicates "totally disagree" and "5" indicates "totally agree."

ER The scale, derived from Coates et al. (2013) and comprising 11 items, included the statement "coping with stress can make me stronger" (Cronbach's α = 0.830).

ED The scale was adapted from the study by Lin et al. (2021), comprising 4 items. A sample item is "The event altered the firm's conventional ways of coping with crises" (Cronbach's α = 0.671).

AL A 10-item scale adapted from Atuahene-Gima and Murray (2007) was employed. It comprises two dimensions: EXR and EXL. EXR comprises 5 items. An example item is "I learn about new markets or technologies to acquire knowledge" (Cronbach's α = 0.762). EXL also consists of 5 items. An example item is "We emphasize using knowledge related to our existing experience" (Cronbach's α = 0.640).

Event duration The variable was based on the study by Morgeson et al. (2015). It was calculated based on the respondents' report of the most recent event experienced by their firm. It was coded using a yearly time scale, where firms with a duration of one year or less were coded as 0, and those with more than one year as 1.

Event spatial proximity The variable was drawn from Morgeson et al. (2015). Based on the distinction between internal and external environmental factors highlighted by Leoni (2025) and Yamakawa et al. (2013), we operationalized and coded the disruptive events encountered by the firms. Specifically, disruptive events originating from the internal environment (e.g., internal conflicts or the departure of core team members) were coded as "close spatial proximity," whereas those from the external environment (e.g., surge in costs due to macroeconomic fluctuationss) were coded as "distant spatial proximity."

Control variables Demographic factors such as gender, age, education, number of entrepreneurial attempts, number of successful ventures, and years of pre-entrepreneurial work experience were controlled for, as they may influence perceptions of ED, AL, and ER (Branca et al., 2025; Seyfi et al., 2025; Yu et al., 2022).

Results

Common method bias. First, this study employed Harman's single-factor test to examine the potential presence of common method bias (CMB). The results of the unrotated exploratory factor analysis indicated that the first factor accounted for only 25.288% of the total variance, thus it can be judged that there is no serious common method deviation. Second, as shown in Table 1, we used the common latent factor (CLF) approach to evaluate the potential for CMB. CLF fit well (χ^2/df = 1.541, CFI = 0.903, IFI = 0.907, RMSEA = 0.049). However, the fit index did not improve significantly with the addition of CLF (ΔCFI = 0.003, ΔIFI = 0.002, ΔRMSEA = 0.003). Therefore, the effects of CMB are not a major issue in this research.

Table 1
Common Method Bias Analysis and Validity Tests

Model	Factors	χ^2	*df*	χ^2/df	CFI	IFI	RMSEA
Five-factor model	Four factors + method factor	371.369	241	1.541	0.903	0.907	0.049
Four-factor model	ED、EXR、EXL、ER	391.354	265	1.477	0.906	0.909	0.046
Three-factor model	ED、EXR + EXL、ER	431.310	268	1.609	0.879	0.882	0.052
Two-factor model	ED + EXR+EXL、ER	552.391	270	2.046	0.791	0.795	0.068
Single-factor model	ED + EXR+EXL + ER	609.890	271	2.251	0.749	0.754	0.075
Note(s): ED = Event Disruption; EXR = Exploratory Learning; EXL = Exploitative Learning; ER = Entrepreneurial Resilience.							

Reliability and validity testing. Cronbach's alpha coefficients, ranging from 0.640 to 0.830, were used to assess the internal consistency of the variables. All values exceeded the acceptable threshold of 0.60, demonstrating satisfactory internal reliability. Factor analysis was conducted using SPSS 25.0 and AMOS 26.0. The KMO measure yielded a value of 0.856, while Bartlett's sphericity test reached statistical significance ($p < 0.001$), confirming the dataset's appropriateness for factor analysis. Furthermore, as presented in Table 1, the confirmatory factor analysis (CFA) results revealed that the hypothesized four-factor model demonstrated the best fit to the data compared to alternative models ($\chi^2 = 391.354$, $df = 265$, $\chi^2/df = 1.477$, $RMSEA = 0.046$, $CFI = 0.906$, $IFI = 0.909$), thereby establishing robust discriminant validity among the focal variables.

Descriptive statistics and correlation analysis. Table 2 presents the means, standard deviations, and correlations for the focal variables. As shown, ED was positively correlated with EXR ($r = 0.223$, $p < 0.001$), EXL ($r = 0.117$, $p < 0.10$), and ER ($r = 0.133$, $p < 0.001$). Furthermore, both EXR and EXL were positively associated with ER ($r = 0.569$, $p < 0.001$; $r = 0.509$, $p < 0.001$). These preliminary results supported our hypotheses.

Table 2
Descriptive statistics and correlation analysis results

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	1											
2. Age	0.086	1										
3. Education	0.145*	-0.042	1									
3. Entrepreneurial attempts	-0.002	0.183**	0.082	1								
4. Successful ventures	-0.038	0.251***	0.137*	0.431***	1							
6. Pre-entrepreneurial work experience	0.125+	0.564***	0.006	-0.074	0.073	1						
7. Event duration	0.094	0.057	0.040	-0.033	0.009	-0.089	1					
8. Event spatial proximity	0.011	0.009	-0.005	0.110+	-0.009	-0.046	-0.020	1				
9. Event disruption	0.011	0.076	0.038	0.009	0.090	0.043	0.010	-0.015	1			
10. Exploratory learning	-0.111+	0.004	0.182**	0.108	0.186	0.022	-0.041	-0.033	0.223***	1		
11. Exploitative learning	-0.024	0.019	0.044	0.068	0.145*	-0.032	0.062	-0.073	0.117+	0.477***	1	
12. Entrepreneurial resilience	-0.049	-0.043	0.094	0.069	0.094	0.021	-0.006	0.013*	0.133***	0.569***	0.509***	1
Mean	0.748	0.502	0.982	0.822	1.071	0.653	0.467	0.658	3.814	4.055	4.092	3.98
Standard Deviation	0.436	0.669	0.634	0.623	0.530	0.759	0.500	0.476	0.652	0.557	0.473	0.490

Note(s): N = 225, $^+p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Hypothesis test

The main effect test. As shown in Model 1 of Table 3, ED had a significant positive impact on ER ($B = 0.097$, $SE = 0.050$, $p < 0.10$), thus supporting H1. Model 4 demonstrates that ED significantly and positively influenced EXR ($B = 0.178$, $SE = 0.055$, $p < 0.01$), whereas Model 5 indicates that its effect on EXL was positive but non-significant ($B = 0.076$, $SE = 0.049$, $p > 0.10$). Furthermore, Models 2 and 3 reveal that both EXR and EXL positively predicted ER ($B = 0.504$, $SE = 0.051$, $p < 0.001$; $B = 0.529$; $SE = 0.061$, $p < 0.001$). Additionally, as shown in Model 6, the direct influence of ED on ER became non-significant ($B = 0.007$, $SE = 0.041$, $p > 0.10$) after the inclusion of the mediators. These results provide preliminary evidence that EXR mediates the relationship between ED and ER, thereby supporting H2a.

Table 3
Main effect

Variable	Entrepreneurial resilience			Exploratory learning	Exploitative learning	Entrepreneurial resilience
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gender	-0.069	0.015	-0.055	-0.168*	-0.026	0.001
	(0.077)	(0.065)	(0.067)	(0.084)	(0.074)	(0.062)
Age	-0.093	-0.065	-0.089	-0.054	-0.001	-0.073
	(0.063)	(0.053)	(0.055)	(0.069)	(0.061)	(0.050)
Education	0.060	-0.015	0.053	0.149*	0.017	0.000
	(0.053)	(0.045)	(0.046)	(0.058)	(0.051)	(0.043)
Entrepreneurial attempts	0.049	0.023	0.039	0.049	0.014	0.026
	(0.060)	(0.050)	(0.052)	(0.066)	(0.058)	(0.048)
Successful ventures	0.062	-0.005	0.009	0.135+	0.112	-0.024
	(0.071)	(0.060)	(0.062)	(0.077)	(0.068)	(0.057)
Pre-entrepreneurial work experience	0.062	0.041	0.074	0.041	-0.024	0.055
	(0.055)	(0.046)	(0.047)	(0.059)	(0.053)	(0.043)
Event duration	0.013	0.030	-0.015	-0.032	0.054	0.007
	(0.067)	(0.056)	(0.058)	(0.073)	(0.065)	(0.053)
Event spatial proximity	0.016	0.033	0.053	-0.035	-0.072	0.052
	(0.069)	(0.058)	(0.060)	(0.075)	(0.067)	(0.055)
Event disruption	0.097+			0.178**	0.076	0.007
	(0.050)			(0.055)	(0.049)	(0.041)
Exploratory learning		0.504***				0.366***
		(0.051)				(0.056)
Exploitative learning			0.529***			0.330***
			(0.061)			(0.063)
R^2	0.046	0.330	0.281	0.125	0.043	0.407
Adjusted R^2	0.006	0.302	0.251	0.088	0.003	0.376
F-value	1.144	11.771***	9.356***	3.408***	1.080	13.265***
Max VIF	1.686	1.685	1.682	1.608	1.686	1.692

Note(s): N = 225, $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The mediating effect test. As shown in Table 4, the mediation effects were estimated and tested using path analysis with the bootstrap method (5,000 resamples), and 95% confidence intervals were reported. The results show that the indirect effect of ED on ER via EXR is 0.065, with a 95% confidence interval of [0.020, 0.118], which does not include 0. This result is statistically significant, thus supporting H2a. An indirect path from ED to ER via EXL yields an indirect effect of 0.025 However, the confidence interval [− 0.009, 0.064] includes 0, indicating that the result is not statistically significant. Therefore, H2b is not supported.

Table 4
Mediating effect of ambidextrous learning

Mediated path	Coefficient	Boot SE	Boot LLCI	Boot ULCI
Event disruption → Exploratory learning → Entrepreneurial resilience	0.065	0.025	0.020	0.118
Event disruption → Exploitative learning → Entrepreneurial resilience	0.025	0.018	-0.009	0.064
Total indirect effect	0.090	0.036	0.023	0.164

The moderating effect test. Table 5 presents the regression results for the moderation effects. As shown in Models 1 and 2, when event duration is one year or less, a significant positive relationship is found between ED and ER (B = 0.119, SE = 0.070, p < 0.1). In contrast, when event duration exceeds one year, the relationship becomes non-significant (B = 0.090, SE = 0.077, p > 0.1). These findings suggest that the impact of ED on ER weakens as event duration increases, supporting H3a. Models 3 and 4 reveal that the impact of ED on ER varies with spatial proximity. Specifically, when the event occurs at a greater distance, the effect is statistically insignificant (B = 0.039, SE = 0.088, p > 0.1). However, in cases of close spatial proximity, a statistically significant and positive effect is observed (B = 0.124, SE = 0.063, p < 0.1). These results indicate that the closer the spatial proximity, the stronger the influence of ED on ER, thereby supporting H3b.

Table 5 Moderating effect of duration and spatial proximity

Variable	Entrepreneurial resilience			
	Duration ≤ 1 year (N=120)	Duration > 1 year (N=105)	Spatial Proximity = distant (N=119)	Spatial Proximity = close (N=106)
	Model 1	Model 2	Model 3	Model 4
Gender	-0.156	0.041	-0.312*	0.041
	(0.104)	(0.115)	(0.140)	(0.093)
Age	-0.028	-0.150+	-0.198+	-0.042
	(0.093)	(0.086)	(0.117)	(0.076)
Education	0.097	0.048	0.049	0.070
	(0.076)	(0.075)	(0.103)	(0.062)
Entrepreneurial attempts	-0.088	0.214*	0.146	0.015
	(0.085)	(0.085)	(0.120)	(0.070)
Successful ventures	0.001	0.083	0.041	0.061
	(0.108)	(0.094)	(0.140)	(0.082)
Pre-entrepreneurial work experience	0.014	0.089	0.036	0.049
	(0.076)	(0.079)	(0.096)	(0.067)
Event duration	—	—	-0.093	0.038
			(0.121)	(0.081)
Event spatial proximity	-0.051	0.056	—	—
	(0.100)	(0.098)		
Event disruption	0.119+	0.090	0.039	0.124+
	(0.070)	(0.077)	(0.088)	(0.063)
R^2	0.063	0.139	0.137	0.061
Adjusted R^2	-0.004	0.067	0.036	0.007
F-value	0.933	1.933+	0.036	1.127
Max VIF	1.729	1.725	1.527	1.839

Note(s): $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Discussion

Theoretical implications. First, by adopting an event-system perspective on disruption, this study significantly enriches the existing literature on the antecedents of ER. prior studies have predominantly examined the antecedents of ER from the perspective of static characteristics of individual entrepreneurs or macro-level contextual factors.(Anwar et al., 2023; Branca et al., 2025; Klein, 2025) However, less attention has been paid to how micro-level environmental uncertainty and complexity—particularly disruptive events with strong shock effects—shape ER. Moreover, most existing studies have examined the outcomes of event from an overall attribute perspective (e.g., event strength), with limited attention paid to specific characteristics within an event.(D. Liu et al., 2023) Drawing on EST, this study explicitly incorporates ED into the analytical framework and examines how it influences ER through AL. In doing so, this study bridges the theoretical gap between micro-level environmental shocks and the formation of ER. More importantly, it provides a novel theoretical lens for understanding the development of entrepreneurial capacity in highly uncertain environments.

Second, the study enriches the literature on the differentiated effects of AL. While prior research has thoroughly explored the antecedents and outcomes of AL (Ait-Hammou & Abdulkader, 2026; El-Awad, 2023; X. Liu et al., 2023), it has largely overlooked how these two distinct information processing behaviors lead to divergent results. This study addresses this gap by examining the mediating mechanisms from the perspective of differentiated information processing. It reveals the “black box” of how ED fosters ER by demonstrating the differential impacts of EXR and EXL.In doing so, it contributes to understanding how entrepreneurs can leverage effective learning to adapt to and cope with dynamic environments.

Third, this study expands the application of EST to the entrepreneurial field. Existing studies on EST have primarily focused on organizational behavior and public administration, with relatively limited application in the entrepreneurial field to examine event characteristics and their effects in the entrepreneurial process (Kiefer et al., 2025; Roulet & Bothello, 2023; Ye et al., 2023). Furthermore, empirical studies utilizing large-sample data remain scarce in the current body of EST literature (Raddatz, 2024; Roulet & Bothello, 2023). From the perspective of ambidextrous learning and in combination with temporal and spatial attributes, this paper explores the underlying mechanism and boundary conditions by which event strength affects entrepreneurial ability. It makes up for the deficiencies of the existing EST in the application of the entrepreneurial field and empirical research. Moreover, most existing studies have examined event effects from an overall attribute perspective, with limited attention paid to specific characteristics within an event (Zhang et al., 2023). Focusing on ED as a key event characteristic, this study explores its impact on entrepreneurial capacity under conditions of uncertainty and instability. In doing so, it refines and broadens the applicability and theoretical boundaries of EST.

Practical implications. First, entrepreneurs should be encouraged to adopt a dialectical perspective toward ED. ED is not just a challenge; it can also be a catalyst for innovation and improved organizational adaptability. On the one hand, entrepreneurs should regard ED as an opportunity to grow and learn, and cultivate their own ability to adapt, respond, and develop in uncertain environments. On the other hand, entrepreneurs should be encouraged to adopt EXR behavior in the face of disruptive changes, thereby enhancing their company’s innovative capabilities and flexibility to maintain a competitive advantage.

Second, entrepreneurs should always be alert to the problem of innovation fatigue related to long event duration. Continuous motivation is crucial to combat the adaptive fatigue that accumulates over time. To alleviate this situation, entrepreneurs can regularly revise strategic goals and introduce new innovation challenges to re-arouse the sense of urgency and enthusiasm for change, and then enhance the ability to respond to changing environmental needs. By systematically collecting and analyzing market data, monitoring industry trends and tracking competitors’ strategies, entrepreneurs can keep abreast of changes and reduce the risk of strategic inertia caused by long event duration.

Third, entrepreneurs should be inspired to strengthen their sensitivity to changes in the internal environment, and timely capture and effectively respond to close-proximity events. On the one hand, entrepreneurs can build an efficient information collection, analysis and response mechanism. In this way, they can quickly obtain accurate information and make rapid and accurate decisions and adjustments when events occur. On the other hand, entrepreneurs should also pay attention to the establishment of convenient communication channels and coordination mechanisms. Consequently, the team can effectively integrate resources and knowledge, form a collective response ability, and jointly grasp the development opportunities brought by close-proximity events.

Limitations and future research directions. This study has several limitations. First, it considers only the disruptive characteristic of event strength as a proxy for event impact, while other characteristics of event strength remain underexplored. Future research could further investigate how other characteristics of event strength, such as novelty and criticality, play a role in the entrepreneurial process, thereby offering a deeper and more holistic understanding of how they affect entrepreneurial capacity. Second, self-reported data is predominantly used in this study, rendering it inherently susceptible to biases, including subjective interpretation and the tendency to respond in socially desirable ways. Future studies could incorporate field observations and behavioral tracking methods to obtain more objective and comprehensive data, thereby contributing to more accurate and trustworthy research outcomes.

Conclusion

As ventures increasingly confront highly uncertain environments, entrepreneurial resilience has emerged as a critical capability for surviving and thriving amidst disruptive shocks. While prior research emphasizes static individual traits and macro-level antecedents of entrepreneurial resilience (ER) (Anwar et al., 2023; Branca et al., 2025; Klein, 2025), the impact of micro-level, event-driven uncertainty remains largely underexplored. Grounded in EST, our study uses extensive theoretical and empirical analysis to investigate the relationship between ED and ER. It explains how ED foster ER via the two distinct information-processing pathways of EXR and EXL. Furthermore, beyond elucidating the differential mediating effects of these dual learning behaviors, we are among the first to identify the temporal (event duration) and spatial (event spatial proximity) attributes of events as critical boundary conditions shaping this relationship. This study provides actionable insights for entrepreneurs and organizational managers to better understand the routes by which environmental shocks can be translated into resilience capital, especially in today's era of high uncertainty and dynamic market transitions.

Declarations

To maintain the integrity of the double-blind peer review process, all author-identifying declarations (including acknowledgements, ethics approval, competing interests) have been removed from this document. Complete information has been submitted securely in the Cover Letter.

Author Contribution

Mingchun Wu: conceptualization, writing—original draft preparation, methodology, and data curation. Xiao Ma: project administration, and writing—reviewing and editing. Xiling Hao: conceptualization, supervision, and resources. All authors reviewed the manuscript.

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Data Availability

All data generated or analyzed during this study are included in this published article and its supplementary information files.

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Figures

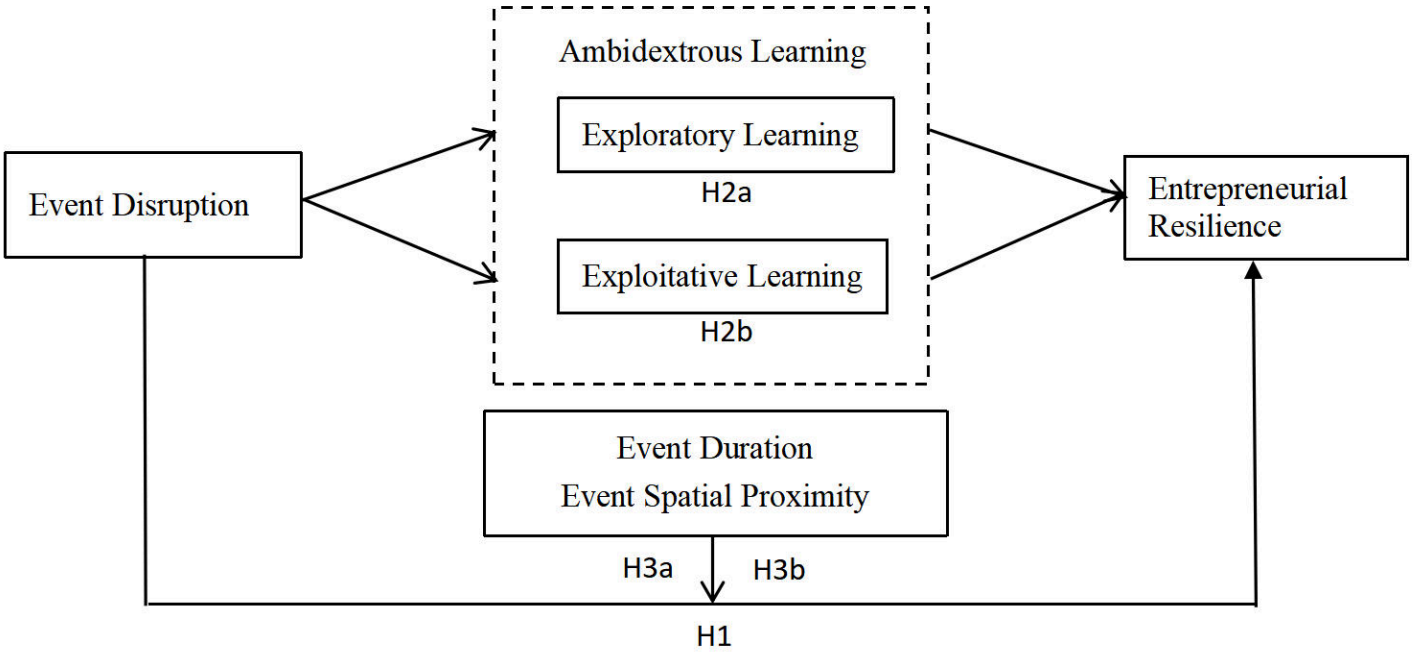


Figure 1

The impact of event disruption on entrepreneurial resilience is illustrated in Fig 1. Furthermore, the parallel mediating roles of exploratory learning and exploitative learning, as well as the moderating roles of event duration and spatial proximity, are also depicted.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- AppendixA.RawdataandProcesseddata.xlsx
- AppendixB.SurveyandCodingProtocol.docx