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Andrea S. Gubik & Zsófia Vörös

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Bouncing, believing and building: Resilient coping, entrepreneurial self-efficacy, perceived venture performance, and state fragility

Andrea S. Gubik ^a and Zsófia Vörös ^b

^aDepartment of Economic Theory and Methodology, Faculty of Economics, University of Miskolc, Hungary; ^bDepartment of Finance and Accounting, Faculty of Business and Economics, University of Pécs, Hungary

ABSTRACT

Using data from 19,593 entrepreneurs across 37 countries, we examine whether the associations among resilient coping, entrepreneurial self-efficacy, and perceived venture performance vary across levels of state fragility. The results show that the conditional indirect effect of resilience on perceived venture performance through entrepreneurial self-efficacy is stronger in non-fragile contexts than in the most fragile contexts represented by the Iraqi and Nigerian samples. In the most fragile context, resilience is more directly associated with perceived venture performance, while the association between resilience and entrepreneurial self-efficacy becomes stronger under moderate fragility before weakening under extreme fragility. This exploratory pattern is consistent with the possibility that resilience may serve multiple functions across contextual conditions, while primarily supporting capability building in more stable environments and serving a more direct, maintenance-oriented role under extreme fragility. The findings point to the importance of context-sensitive approaches to entrepreneurial support and capability development.

KEYWORDS

State fragility; resilience; entrepreneurial self-efficacy; entrepreneurial performance

SUBJECT CLASSIFICATION CODES

D91; L26

Introduction

The personal characteristics of entrepreneurs are fundamental determinants of entrepreneurial performance (Allen et al., 2021; Gubik & Vörös, 2023; Kerr et al., 2018; Wiklund & Shepherd, 2005) but their role is highly context-dependent, as different skills and behavioral patterns are useful in different economic, cultural, and institutional environments (for example, Acs et al., 2018; Busenitz et al., 2003; Guerrero et al., 2021) and their relevance may also vary across different stages of the entrepreneurial process (Álvarez et al., 2025). In this study, we examine whether and how the association between entrepreneurs' resilient coping and perceived venture performance differs between

CONTACT Zsófia Vörös  voros.zsofia@ktk.pte.hu  Pécsi Tudományegyetem, Vasvári Pál Utca. 4, Pécs 7622, Hungary

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fragile and non-fragile states, where state fragility refers to the extent to which a state is unable or unwilling to provide security, rule of law, protection of human rights, and basic services to its population (Ault & Spicer, 2016; Kolk & Lenfant, 2015).

Most of the studies implicitly suppose that resilience is vital to entrepreneurial success as entrepreneurs act in a dynamic, risky, and fast-spaced environment where actions may unfold in unpredictable ways. In line with many studies, we define resilience as a process by which entrepreneurs use their inherent capacities to adjust their actions, adapt positively during adversity, and recover from traumatic events to achieve their goals (Hartmann et al., 2022; Renko et al., 2021; Sinclair & Wallston, 2004; Williams et al., 2017). Thus, in this study, resilience refers to individual psychological resilience, which is a personal capability that may contribute to, but is not equivalent to, venture-level resilience, which reflects the organization's ability to survive, adapt, and recover from disruptive events (Haase & Eberl, 2019; Koporcic et al., 2026; von Ritter et al., 2025).

We know little about the mechanisms through which resilience affects entrepreneurial performance and studies do not examine whether in the case of fragile states, resilience exercises its effect on success the same way as amid favorable conditions (Hartmann et al., 2022). In this study, we argue that the role of resilience in entrepreneurial success is linked to how it relates to entrepreneurial self-efficacy and the predictive validity of entrepreneurial self-efficacy in forecasting performance within a given environment.

Entrepreneurial self-efficacy addresses whether individuals feel able to perform general entrepreneurial tasks needed to start and manage ventures and to successfully identify new business opportunities (C. C. Chen et al., 1998; Duong & Vu, 2024; Newman et al., 2019; Zhao et al., 2005). Although domain-specific self-efficacy has been theorized and generally empirically demonstrated to have high performance predictive validity, the association between entrepreneurial self-efficacy and venture performance varies widely across countries (Miao et al., 2017). This suggests that macro-level factors may influence when entrepreneurial self-efficacy is an effective driver of outcomes.

Additionally, both the theory of planned behavior (Ajzen, 1991) and social cognitive theory (Bandura, 1986), the most widely used frameworks for explaining entrepreneurial behavior and performance, suggest that the effect of entrepreneurial self-efficacy depends on environmental conditions. Unfavorable circumstances can inhibit the positive impact of entrepreneurial self-efficacy by limiting access to resources, support, and opportunities, thereby constraining the translation of efficacy beliefs into effective entrepreneurial actions. Yet, empirical examinations of such contextual moderators remain largely absent (Newman et al., 2019).

In this study, we propose that state fragility is one such factor that limits the predictive value of entrepreneurial self-efficacy for small venture success, while resilience becomes particularly important for coping with

uncontrollable exogenous obstacles (e.g., corrupt officials, weak institutional frameworks, and war-related damage) that are less prevalent in non-fragile states. In fragile states, much of the entrepreneurial effort may not translate into generalizable and reusable entrepreneurial skills and abilities. Thus, resilience may contribute less to entrepreneurial self-efficacy and instead serve to counterbalance its reduced effectiveness in achieving venture success. On the other hand, in non-fragile states, adversities that entrepreneurs must face are directly related to the innovative, risky, and competitive nature of entrepreneurship and therefore resilience translates into entrepreneurial self-efficacy; entrepreneurs learn by doing more efficiently than in fragile states.

Using data from 19,593 entrepreneurs across 37 countries, we show that the pattern of associations among resilience, entrepreneurial self-efficacy, and venture performance varies across levels of state fragility. The results show that the conditional indirect effect of resilience on perceived venture performance through entrepreneurial self-efficacy is stronger in non-fragile contexts than in the most fragile contexts represented by the Iraqi and Nigerian samples. In the most fragile context, resilience is more directly associated with perceived venture performance, while the association between resilience and entrepreneurial self-efficacy becomes stronger under moderate fragility before weakening under extreme fragility.

This research makes two significant contributions to entrepreneurship research. First, it contributes to research on entrepreneurial resilience by suggesting an exploratory pattern consistent with the possibility that resilience may serve multiple functions across contextual conditions, while primarily supporting capability building in more stable environments and serving a more direct, maintenance-oriented role under extreme fragility. Second, by jointly examining psychological microfoundations and institutional context, the study contributes to contextualized perspectives on entrepreneurship that emphasize the embeddedness of individual agency in broader structural conditions (Ben-Hafaïedh et al., 2024; Korsgaard et al., 2022; Roundy & Lyons, 2023; Welter & Baker, 2020). The findings point to the importance of context-sensitive entrepreneurial support and capability-building interventions.

Literature review and hypotheses

State fragility (Haken et al., 2023) is a multidimensional concept encompassing security, political, economic, and social vulnerabilities that affect the capacity of the state to provide effective governance and a predictable environment for economic activity. Institutional theory argues that entrepreneurial action is embedded in formal and informal institutional arrangements that shape the extent to which individual capabilities can be translated into venture performance by influencing opportunity recognition, resource mobilization, and strategic actions (Acs et al., 2018; Bruton et al., 2010; Su et al., 2017; Welter

& Smallbone, 2011). While supportive institutional environments provide stable rules, effective enforcement mechanisms, and market-supporting structures, weak institutional environments increase uncertainty, restrict access to critical resources, and expose entrepreneurs to external constraints beyond their control (Mair & Marti, 2009; Webb et al., 2020). Thus, institutional theory suggests that those dimensions of state fragility that generate institutional uncertainty and voids, such as weak governance, corruption, limited protection of property and contractual rights, and the absence of supportive entrepreneurial ecosystems, may influence how effectively entrepreneurial capabilities are converted into entrepreneurial action and performance outcomes.

Resilience, state fragility, and venture performance

Resilience is considered a key factor influencing entrepreneurial behavior and success (for example Bullough et al., 2014; Renko et al., 2021; Santoro et al., 2021; Shepherd et al., 2020). When exposed to adversity, individuals who use resilient coping strategies are likely to rely on cognitive reappraisal of the situation and actively search for solutions (Sinclair & Wallston, 2004).

Typically, studies assume that productive engagement in entrepreneurial activities is inherently challenging; in a competitive world, successful entrepreneurs must routinely deal with the liability of newness, make decisions under uncertainty, be innovative, and act quickly to stay ahead of the curve. Therefore, entrepreneurs often face adversity and setbacks, experience hardships and failures (for example, Chadwick & Raver, 2020; Hopp & Sonderegger, 2015; Pidduck & Clark, 2021). In such circumstances, the positive adaptation to adversity, positive emotions and resourcefulness associated with resilience are considered to be key contributors to the positive outcomes associated with entrepreneurial resilience (Baron & Markman, 2003; Bullough & Renko, 2013; Enrick, 2005; Fisher et al., 2016; Luthans et al., 2007; Markman et al., 2005). A few studies found that resilience predicts stronger persistence, opportunity exploitation, more adaptive problem-solving, and efficient stress management which translate into enhanced business performance (Agarwal et al., 2023; Ayala & Manzano, 2014; Fisher et al., 2016; Hayward et al., 2010; Santoro et al., 2020). Research on entrepreneurial resilience further suggests that resilient entrepreneurs are better able to sustain effort, and adapt their actions when facing uncertainty and setbacks, which can contribute to entrepreneurial persistence, opportunity pursuit, survival, and improved venture-related outcomes (Bullough & Renko, 2013; Chadwick & Raver, 2020; Hartmann et al., 2022). At the organizational level, research on startup, SME, and family-business resilience highlights the importance of adaptive capabilities, resource reconfiguration, and organizational flexibility in enabling firms to withstand and recover from disruptive events (Haase &

Eberl, 2019; Koporcic et al., 2026; von Ritter et al., 2025). The literature also recognizes that organizational resilience is shaped by individual-level characteristics, such as leadership capabilities, decision-making, and human agency, which influence how firms respond to adversity (Koporcic et al., 2026).

Thus, we formulate the following hypothesis:

H1: *Resilience positively associates with entrepreneurial performance.*

Under conditions of state fragility, entrepreneurs face heightened uncertainty, frequent adversity, and limited institutional support and external resources. When external structures are unreliable, individuals must rely more heavily on internal resources. Empirical research demonstrates that resilience uniquely enhances perseverance and performance under conditions of resource scarcity (Luthans et al., 2007; Youssef & Luthans, 2007). A few studies also argued that adverse circumstances, such as high market volatility, institutional voids, or state fragility, increase the role of resilience in entrepreneurial behavior (Bullough et al., 2014; Hmieleski et al., 2015; Yeshi et al., 2024).

In contexts characterized by institutional voids and severe resource and governance constraints, entrepreneurs often face disrupted or unpredictable action–outcome contingencies (Mair & Marti, 2009). We posit that in such environments, resilience becomes not merely advantageous but functionally essential for sustaining entrepreneurial motivation, coping with setbacks, and maintaining goal-directed action. Additionally, resilience enables entrepreneurs to reinterpret threats as manageable challenges while preserving behavioral effort.

In such environments, the relationship between individual action and achievable outcomes becomes less stable, thereby weakening the extent to which perceived capability can reliably translate into performance. Building on this logic, resilience can be understood as the capacity to continue acting, adapting, and persisting despite low or absent control. While entrepreneurial self-efficacy primarily reflects agency grounded in anticipated control over action–outcome relationships, resilience reflects adaptive endurance under conditions of uncertainty and constrained controllability. Thus, while entrepreneurial self-efficacy concerns perceived capability to successfully perform entrepreneurial tasks, individual resilience concerns the ability to maintain functioning and adapt when such capability is challenged by adversity. Consequently, resilience may remain performance-relevant under extreme fragility because it operates as a coping and maintenance resource that sustains entrepreneurial engagement even when self-efficacy becomes less informative for guiding effective action.

Accordingly, state fragility functions as a contextual condition under which resilience exhibits a stronger association with entrepreneurial performance:

H2: The positive relationship between resilience and entrepreneurial performance is stronger in fragile states than in non-fragile states.

Entrepreneurial self-efficacy, state fragility, and venture performance

When predicting behavioral intentions and the outcomes or performance of the intended behaviors, Ajzen's theory of planned behavior (TPB) has become one of the dominant theoretical foundations in entrepreneurship research. TPB explains how human action is guided by three key determinants: attitudes toward the behavior, subjective norms, and perceived behavioral control. Attitudes reflect an individual's evaluation of the behavior as positive or negative; subjective norms capture perceived social pressure from important others to perform or refrain from the behavior; and perceived behavioral control refers to the individual's sense of capability and control over performing the action. Together, these three factors shape behavioral intentions, which constitute the immediate antecedent of behavior. Empirical findings demonstrate that TPB offers a robust and parsimonious framework for explaining why individuals form intentions to start a business and engage in various entrepreneurial actions (Carr & Sequeira, 2007; Kautonen et al., 2013, 2015; Liñán & Fayolle, 2015).

In entrepreneurship research, TPB's perceived behavioral control is often operationalized as entrepreneurial self-efficacy (Caliendo et al., 2023; Krueger et al., 2000; Newman et al., 2019). According to the social cognitive theory, general self-efficacy refers to a person's global confidence in their ability to mobilize motivation, cognitive resources, and actions needed to successfully manage life challenges (Bandura, 1997; Bandura & Locke, 2003). Entrepreneurial self-efficacy is a domain-specific application of general self-efficacy, reflecting individuals' beliefs in their capacity to perform entrepreneurial tasks, including identifying opportunities, acquiring resources, managing risk, innovating, and growing ventures (Baum & Locke, 2004; C. C. Chen et al., 1998; Newman et al., 2019; Zhao et al., 2005). Unlike motives, which explain why individuals engage in entrepreneurship and direct their pursuit of goals such as achievement, power, and affiliation (T. K. Maran et al., 2021), and personality traits, which reflects relatively stable patterns of thinking and behaving (T. Maran et al., 2026; Rauch & Frese, 2007; Zhao et al., 2010), entrepreneurial self-efficacy concerns what individuals believe they can accomplish in the entrepreneurial domain. Although motives and personality may be linked to entrepreneurial self-efficacy, it represents a distinct construct (Baum & Locke, 2004; Frese & Gielnik, 2014, 2023).

Frese and Gielnik (2014, 2023) argue that entrepreneurial self-efficacy influences entrepreneurial action characteristics, including planning, proactivity, entrepreneurial orientation, and perseverance, which subsequently

affect venture performance. Some empirical pieces of evidence also support a positive relationship between ESE and performance (Hallak et al., 2015; McGee & Peterson, 2017; Miao et al., 2017). Therefore, we formulate the following hypothesis:

H3: Entrepreneurial self-efficacy and venture performance associate positively.

While empirical studies have consistently demonstrated the link between self-efficacy and entrepreneurial intention (for example, Barbosa et al., 2007; Fuller et al., 2018), the relationship between self-efficacy and entrepreneurial success, however, is less straightforward. In a meta-analysis of data from 26 studies, Miao et al. (2017) found only a moderate correlation (0.309) between self-efficacy and firm financial performance and heterogeneity across studies, with several reporting weak or even negative relationship (Trevelyan, 2011).

Given that social cognitive theory suggests that the relationship between self-efficacy and outcome expectations depends on how closely the eventualities between actions and outcomes are linked in a domain (Bandura, 1986), a logical explanation for the highly variable relationship between entrepreneurial self-efficacy and firm performance is that the effect of entrepreneurial self-efficacy on success is influenced by other, circumstantial constructs.

This argumentation is also in line with TPB. While in entrepreneurship research TPB's perceived behavioral control is often operationalized narrowly as entrepreneurial self-efficacy, Ajzen's framework conceptualizes this construct more broadly. Ajzen defines perceived behavioral control as the perceived ease or difficulty of performing a behavior, which includes internal factors, such as self-efficacy, and external factors, such as the availability of resources, opportunities, barriers, and environmental constraints.

Conceptualizing perceived behavioral control solely as entrepreneurial self-efficacy neglects individuals' perceived control over external constraints, as well as the perceived ease or difficulty of enacting a behavior. The results of Schlaegel and Koenig (2014), for example, indicate that including both self-efficacy and the perceived external control component into the construct of perceived behavioral control enhances the predictive validity of TPB in explaining entrepreneurial intentions.

Therefore, in this study, we argue that state fragility negatively moderates the relationship between self-efficacy and firm performance. Fragile states limit entrepreneurs' access to resources, market infrastructure, legal protections, and predictable governance. Consequently, the enabling quality of the environment necessary for translating self-efficacy into performance is weakened. When structural barriers become severe, even highly efficacious individuals may struggle to achieve expected results, not because of lack of ability, but because the environment undermines effective action.

Additionally, according to social cognitive theory, self-efficacy mainly develops through the interpretation of mastery experiences and vicarious learning (Bandura, 1997). In highly fragile environments, however, these informational sources are weakened. Entrepreneurs often face ambiguous or delayed feedback, limited access to reliable role models, and unstable causal structures, thereby constraining the formation of clear mastery experiences and opportunities for vicarious learning (McMullen & Shepherd, 2006). As a result, efficacy beliefs are less firmly grounded in consistent experiential inputs and become less reliable predictors of performance-relevant action and outcomes.

Based on the above processes, we formulate the following hypothesis:

H4: *The positive link between entrepreneurial self-efficacy and venture performance is stronger in non-fragile states than in fragile states.*

Resilience, state fragility, and entrepreneurial self-efficacy

Scholars suppose that learning-by-doing is the primary way entrepreneurs learn (for example, Frese & Gielnik, 2023; Minniti & Bygrave, 2001). Thus, entrepreneurs become more skilled as they gain experience by running their business. Entrepreneurs with high self-efficacy were theorized to perform better than their peers because of setting more challenging goals, investing more effort to achieve those goals, and being more innovative or persistent when meeting obstacles (for example: Hallak et al., 2015; Markman et al., 2005; McGee & Peterson, 2017). Authors also note that increasing resilience in the face of adverse conditions is associated with learning, growing skills and abilities (Korber & McNaughton, 2018). Resilient coping, the mobilization of internal resources or the development of new psychological resources to adapt to environmental challenges with optimism, requires the acquisition of knowledge and skills while learning from mistakes and through experiencing hardships (Cannon & Edmondson, 2005; Enkvick, 2005).

Thus, the literature suggests that self-efficacy and resilience are intertwined. In their meta-analysis, Korber and McNaughton (2018) even note that scholars sometimes use resilience synonymously with entrepreneurial self-efficacy. However, although resilience and entrepreneurial self-efficacy are related psychological constructs, they are conceptually distinct. Entrepreneurial self-efficacy reflects an individual's belief in their capability to successfully perform specific entrepreneurial tasks, focusing on perceived competence and confidence in action execution. In contrast, resilience refers to the capacity to adapt to, recover from, and persist in the face of adversity, stress, or failure. Accordingly, self-efficacy is primarily prospective and task-oriented, whereas resilience is reactive and recovery-oriented. While both constructs may

mutually reinforce entrepreneurial functioning, they capture different mechanisms underlying entrepreneurial behavior and performance.

We propose that experiencing failure and setbacks with successful recovering builds the mastery experiences that Bandura (1997) identifies as the strongest source of self-efficacy. Resilient individuals persist through setbacks and therefore accumulate successful coping and task experiences over time. As resilient entrepreneurs are better at sustaining effort and converting adverse experiences into learning, their efficacy beliefs must be higher than their peers. Also, resilient people more readily generate or maintain positive affect under stress that is crucial for self-efficacy beliefs (Bandura, 1997). Positive emotions facilitate constructive self-appraisal and lower anxiety, which improves efficacy judgments. The results of González-López et al. (2019) show, for example, that an educational intervention designed to increase resilience had an indirect effect on entrepreneurial intention through the TPB's perceived behavioral control. Thus, resilience is hypothesized as being positively linked to entrepreneurial self-efficacy:

H5: *Resilience and entrepreneurial self-efficacy are positively correlated.*

Additionally, we suggest that in highly volatile, fragile, and unfavorable environments, resilience is less likely to be transformed into entrepreneurial self-efficacy than in non-fragile countries. Under fragile circumstances, resilience is important to overcome fundamental obstacles, such as institutional weakness. Therefore, resilience is more likely to be used up to overcome obstacles that are not intrinsically linked to the entrepreneurial process, such as dealing with corrupt officials or creating basic infrastructure. In fragile states, war-torn countries, or amidst economic or political turmoil, the effectiveness of learning from experience and learning-by-doing is limited and resilient coping is less likely to result in reusable, generalizable knowledge or entrepreneurial skills than they are in non-fragile states.

Thus, although adversity is central to entrepreneurship, adversities arising from the fragility of states and adversities linked to the innovative and risky nature of entrepreneurship may differently affect the ways through which resilience exercise its effect on entrepreneurial performance:

H6: *The positive relationship between resilience and entrepreneurial self-efficacy is stronger in non-fragile states than in fragile states.*

The proposed theoretical model

Taken together, we propose that while entrepreneurial self-efficacy generally predicts venture performance, its predictive validity varies across institutional

contexts. In fragile states, external constraints limit the extent to which efficacy believes translate entrepreneurial efforts into measurable performance outcomes. In these environments, resilience becomes essential, enabling entrepreneurs to cope with uncontrollable, exogenous obstacles and maintain goal-directed behavior despite adversity. Conversely, in non-fragile states resilience is hypothesized to operate partly through self-efficacy, which is conceptually aligned with Ajzen’s perceived behavioral control and Bandura’s social cognitive theory. This resilience-driven increase in self-efficacy then boosts entrepreneurial success. This argumentation can be summarized in the following hypothesis:

H7: The role of entrepreneurial self-efficacy in linking resilience and the performance of small firms is weaker in fragile states than in non-fragile states.

Figure 1 shows the conceptual model of the research.

Material and methods

To test the hypotheses, we used data from the 2023 wave of the Global University Entrepreneurial Spirit Students’ Survey (GUESSS), one of the largest entrepreneurship research datasets in the world. The survey covers 57 countries and includes 226,000 university-enrolled respondents. University-enrolled entrepreneurs typically operate solo or small ventures, a context in which founders’ psychological characteristics are particularly consequential due to their direct involvement in strategic and operational activities (AnhAnh Do & Bui, 2022; Pillai, 2022; Hambrick & Mason, 1984; Rauch & Frese, 2007). This makes the GUESSS dataset well-suited for examining how resilience and

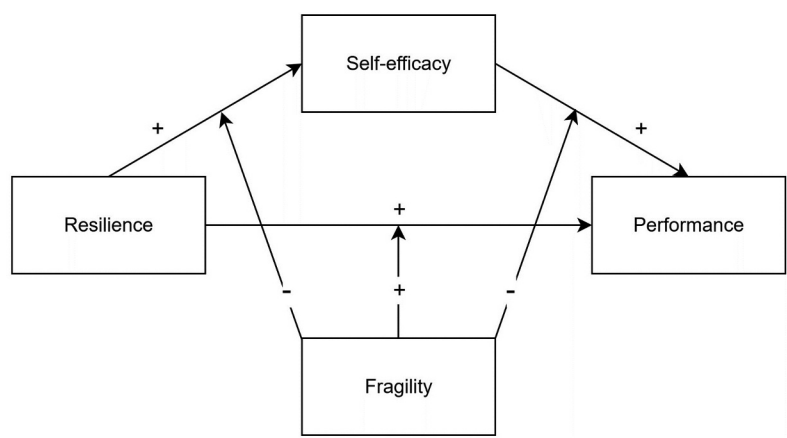


Figure 1. The relationship between resilience, entrepreneurial self-efficacy and perceived performance.

self-efficacy translate into venture performance across varying macro-level conditions.

Sample

Given our focus on founder-driven ventures and the limited presence of larger firms in the dataset, we follow established international conventions and classify firms with fewer than 250 employees as small ventures (European Commission, 2020; OECD, *n.d.*; U.S. Small Business Administration, 2025).

For this study, we selected all countries with at least 50 respondents who owned a small venture at the time of the survey and had complete data for the variables included in the analyses. The final analytical sample consisted of 19,593 entrepreneurs across 37 countries. A detailed country-level overview of the sequential sample selection process is provided in Appendix A (Table A1).

Measures

We relied on previously validated international scales. Entrepreneurial self-efficacy was measured using the scale developed by Zhao et al. (2005). The scale consists of four items assessing entrepreneurs' confidence in performing selected entrepreneurial tasks: discovering new business opportunities, creating new products, thinking creatively, and commercializing ideas. Thus, the measure reflects important entrepreneurial task domains rather than the full spectrum of entrepreneurial self-efficacy. Resilience was assessed with the instrument proposed by Sinclair and Wallston (2004). Its four items capture general individual resilience, including positive adaptation to adversity, replacing losses, regulating one's reactions to difficult situations, and creatively responding to challenges. Accordingly, the measure captures general resilient coping rather than venture-specific entrepreneurial resilience or organizational resilience.

Entrepreneurial performance was assessed using the subjective scales developed by Dess and Robinson (1984) and Eddleston et al. (2008), which capture multiple dimensions of venture outcomes, including sales growth, market share growth, profit growth, job creation, and innovativeness. Subjective performance evaluation in relation to competitors is frequently used in the literature (Brändle et al., 2019; de la Cruz et al., 2018; Wiklund & Shepherd, 2005; Wu et al., 2022) and shows a strong correlation with objective performance outcomes (Vij & Bedi, 2016; Wall et al., 2004). The items of the scales used are included in Appendix B (Table B1).

Entrepreneurial self-efficacy and resilience were measured on 1–7 Likert scales ranging from 1 = “strongly disagree” to 7 = “strongly agree,” whereas perceived venture performance was measured on a 1–7 scale ranging from 1 = “much worse” to 7 = “much better. All multi-item constructs were

operationalized as arithmetic means of their respective items, a common practice in large-scale entrepreneurship research.

The empirical models include gender (female, male, other), firm size (operationalized as the presence or absence of employees) and sector (primary, secondary, tertiary, quaternary sector, other / not sure) as individual- and firm-level control variables. These controls were selected because they are relevant in prior research and exhibit sufficient variation in the present dataset (Brändle et al., 2019; Eddleston et al., 2008; Hoang et al., 2022; Wiklund & Shepherd, 2005; Wu et al., 2022). Other demographic characteristics, such as educational level and age, were not included because of their limited variance within the university-based sample.

At the macro level, we include GDP (PPP GDP per capita, current prices, thousand dollars, 2023) (International Monetary Fund, 2023) to capture cross-national differences in economic development.

Countries were classified into four fragility categories based on the Fragile States Index methodology (Haken et al., 2023): Sustainable (FSI index: 0–29.9), Stable (FSI index: 30–59.9), Warning (FSI index: 60–89.9), and Alert (FSI index: 90–120). This categorical operationalization facilitates comparisons across substantively distinct fragility environments and supports the identification of potential non-linear relationships.

Measurement validation

The distributions of the measurement items showed no substantial departures from normality (skewness ranged from –1.51 to –0.25, kurtosis ranged from –1.18 to 2.50). Internal consistency was supported by Cronbach’s alpha values ranging from 0.840 to 0.890 and composite reliability (ω) values ranging from 0.846 to 0.885. Convergent validity was supported by average variance extracted (AVE) values ranging from 0.578 to 0.658, all exceeding the recommended threshold of 0.50 (Fornell & Larcker, 1981) (Appendix C, Table C1).

To evaluate discriminant validity, the hypothesized three-factor measurement model was compared with alternative one-factor and two-factor specifications. Following prior recommendations (Fornell & Larcker, 1981; Hu & Bentler, 1999), model fit was evaluated using χ^2 statistics, the comparative fit index (CFI), Tucker–Lewis index (TLI), root mean square error of

Table 1. Confirmatory factor analysis model comparisons.

Model	χ^2 (df)	CFI	TLI	RMSEA	SRMR
One-factor model	60,593.653 (65)	0.597	0.517	0.218	0.142
Two-factor model	15,821.758 (64)	0.895	0.872	0.112	0.055
(RES + ESE combined)					
Three-factor model	6,921.387 (62)	0.954	0.943	0.075	0.040

Note: PER = performance. RES = resilience. ESE = entrepreneurial self-efficacy.

approximation (RMSEA), and standardized root mean square residual (SRMR). The model comparisons are presented in Table 1.

As shown in Table 1, the one-factor model exhibited poor fit, whereas combining resilience and entrepreneurial self-efficacy into a single construct improved model fit but still fit the data less well than the hypothesized three-factor solution. Overall, the three-factor model provided the best fit to the data, supporting the empirical distinctiveness of entrepreneurial self-efficacy, resilience, and entrepreneurial performance. Additional evidence for discriminant validity is reported in Appendix C, including standardized latent correlations, the Fornell-Larcker criterion, and HTMT ratios (Tables C2–C4). The standardized latent correlation between resilience and entrepreneurial self-efficacy was relatively high ($r = 0.747$), reflecting the conceptual relatedness of the two constructs. Nevertheless, discriminant validity was supported by both the Fornell-Larcker criterion and the HTMT ratios, indicating that the constructs remain empirically distinguishable despite their moderate association.

To ensure that the measurement model operated equivalently across countries with different levels of fragility, we tested measurement invariance across the four fragility groups. Configural, metric, and scalar invariance were all supported. Changes in fit indices between increasingly constrained models remained within the recommended thresholds ($\Delta\text{CFI} \leq 0.007$, $\Delta\text{RMSEA} \leq 0.003$, $\Delta\text{SRMR} \leq 0.005$), indicating that the constructs were measured equivalently across groups, although the χ^2 difference tests were statistically significant, as expected given the large sample size (F. F. Chen, 2007) (Detailed results are reported in Appendix C (Table C5)). An additional CFA conducted within the Alert subgroup ($N = 181$) also favored the three-factor structure over two- and one-factor alternatives (Appendix C, Table C6), although absolute fit was weaker in this small subgroup.

To assess the potential influence of common method variance, we estimated two latent common method factor (LCMF) models. The first specified an equal method loading across all indicators. Compared with the baseline three-factor CFA, inclusion of the method factor resulted in a modest improvement in model fit ($\text{CFI} = 0.954$ to 0.961 ; $\text{TLI} = 0.943$ to 0.950 ; $\text{RMSEA} = 0.075$ to 0.070), although SRMR increased slightly from $.040$ to $.053$. The second model specified construct-specific equal method loadings, allowing the method loading to differ across entrepreneurial self-efficacy, resilience, and performance while remaining equal within each construct. This specification provided a further improvement in model fit ($\text{CFI} = 0.969$; $\text{TLI} = 0.959$; $\text{RMSEA} = 0.064$; $\text{SRMR} = 0.031$). The results indicate that the estimated latent correlations are sensitive to both the inclusion and specification of the common method factor (Appendix C, Tables C7–C8). Therefore, consistent with Conway and Lance (2010) and Podsakoff et al. (2024), we acknowledge same-source, single-wave measurement as a limitation but do not interpret the

LCMF estimates as evidence of systematic bias in the substantive associations, since common method effects may inflate, attenuate, or have little net effect depending on their specific sources and structure.

Analytical strategy

Table 2 presents the descriptive statistics and correlation coefficients of the variables used in the analyses.

Following recent recommendations for robust empirical analyses in entrepreneurship research (Strobl et al., 2025), we conducted standard diagnostic and robustness checks. Multicollinearity was assessed using variance inflation factors (VIFs), and the results indicated no multicollinearity concerns, as all VIF values were below 2.8. This suggests that the independent variables were not excessively correlated with one another and could therefore be reliably included in the same regression models. The intraclass correlation coefficient from the null model was relatively low (ICC = 0.095), suggesting that the between-country variance was modest and did not justify full multilevel modeling. Still, to account for the potential non-independence of observations within countries, the final model was additionally re-estimated using generalized estimating equations (GEE) with country-level clustering and robust sandwich estimators.

To examine the hypothesized relationships, we first estimated a series of general linear models using hierarchical regression procedures. The indirect effect of resilience (H7) was subsequently examined using Hayes’ PROCESS macro (Model 59). Indirect effects were estimated using bias-corrected bootstrapping with 5,000 resamples, providing confidence intervals without relying

Table 2. Descriptive statistics and correlations.

		Mean	SD	PER	ESE	RES
Sustainable N = 947	PER	4.113	1.464	1	0.374**	0.238**
	ESE	5.422	1.248	0.374**	1	0.539**
	RES	5.654	0.981	0.238**	0.539**	1
Stable N = 9 863	PER	4.631	1.376	1	0.352**	0.274**
	ESE	5.517	1.230	0.352**	1	0.598**
	RES	5.717	1.025	0.274**	0.598**	1
Warning N = 8 602	PER	5.113	1.456	1	0.435**	0.404**
	ESE	5.759	1.266	0.435**	1	0.720**
	RES	5.763	1.201	0.404**	0.720**	1
Alert N = 181	PER	5.034	1.529	1	0.254**	0.441**
	ESE	5.330	1.523	0.254**	1	0.503**
	RES	5.596	1.436	0.441**	0.503**	1

Note: PER = performance. RES = resilience. ESE = entrepreneurial self-efficacy.
N = 19,593** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).
Sustainable: Austria, Canada, Germany, Netherlands, New Zealand, Switzerland.
Stable: Argentina, Belgium, Bulgaria, Chile, Costa Rica, Czech Republic, England, Hungary, Italy, Lithuania, Panama, Slovakia, Spain, Uruguay, USA.
Warning: Bolivia, Brazil, China, Colombia, Dominican Republic, Ecuador, India, Indonesia, Jordan, Kazakhstan, Mexico, Paraguay, Russia, Saudi Arabia.
Alert: Iraq, Nigeria.

on the assumption of normally distributed indirect effects. Because the indirect effects were estimated using individual-level bootstrap resampling, which does not preserve the country-clustered structure of the data, we treat the resulting indirect-effect estimates as an exploratory assessment of conditional associations rather than as a formal test of cluster-robust moderated mediation.

As additional robustness checks, we re-estimated the analyses using robust HC3 standard errors, the continuous Fragile States Index score instead of categorical fragility groups, leave-one-Alert-country-out analyses, alternative reference category specifications, and nonlinear (quadratic) fragility specifications.

All statistical analyses were conducted using IBM SPSS Statistics (Version 30.0.0.0), Hayes' PROCESS macro (version 4.2), and R (version 4.6.1) using the lavaan and semTools packages for the confirmatory factor analyses and additional measurement validation procedures.

Results

Before testing the proposed complex model, we first estimated a series of hierarchical general linear models to examine the direct and conditional relationships between the psychological microfoundations of entrepreneurship and entrepreneurial performance.

Hierarchical regression analyses

Tables 3–5 report the hierarchical GLM results (Type III sums of squares) for the three focal links in the proposed framework. In all models, individual-, firm-, and macro-level control variables were entered in the first step (Model 0), the focal predictor was added in the second step (Model 1), and the theoretically derived interaction term with state fragility was introduced in the final step (Model 2).

Table 3 reports the hierarchical GLM models predicting entrepreneurial performance with resilience as focal predictor. Adding resilience (RES Model 1) results in a significant increase in explained variance ($\Delta R^2 = 0.105$), indicating that resilience accounts for a substantial proportion of the variance in entrepreneurial performance beyond the control variables.

The parameter estimates reported in Appendix D Table D1 show that resilience is positively associated with performance ($B = 0.425$, $p < .001$). Introducing the Resilience $\times$ Fragility interaction (RES Model 2) explained only an additional 0.3% of the variance ($\Delta R^2 = 0.003$), although the interaction remained statistically significant ($F = 23.066$, $p < .001$), suggesting that macro-level fragility may function as a contextual boundary condition for the resilience–performance relationship.

Table 3. Hierarchical GLM results predicting entrepreneurial performance (resilience).

Variables	Model 0 (Controls)	Res Model 1 (Model 0 + Resilience)	RES Model 2 (Model 1 + Interaction)
Corrected model	144.637***	358.263***	292.193***
Intercept	7088.554***	7832.190***	7897.420***
Individual-level control			
Gender	12.258***	4.678**	4.465*
Firm-level controls			
Firm size	598.743***	623.976***	633.042***
Industry	4.712***	10.111***	10.139***
Macro-level controls			
Fragility	17.245***	26.077***	22.765***
GDP	111.957***	61.094***	70.574***
Main effect			
Resilience	–	2504.720***	385.928***
Interaction effect			
Fragility × Resilience	–	–	23.066***
Model fit			
R ²	0.075	0.180	0.183
ΔR ²	–	0.105	0.003
N	19,593	19,593	19,593

Table 4. Hierarchical GLM results predicting entrepreneurial performance (entrepreneurial self-efficacy).

Variables	Model 0 (Controls)	ESE Model 1 (Model 0 + Self- efficacy)	ESE Model 2 (Model 1 + Interaction)
Corrected model	144.637***	432.982***	352.303***
Intercept	7088.554***	7883.783***	7850.774***
Individual-level control			
Gender	12.258***	4.953**	5.325**
Firm-level controls			
Firm size	598.743***	548.271***	553.730***
Industry	4.712***	5.898***	6.180***
Macro-level controls			
Fragility	17.245***	32.673***	27.749***
GDP	111.957***	22.006***	28.410***
Main effect			
Entrepreneurial self-efficacy (ESE)	–	3333.960***	438.075***
Interaction effect			
Fragility × Self-efficacy	–	–	23.595***
Model fit			
R ²	0.075	0.210	0.213
ΔR ²	–	0.135	0.003
N	19,593	19,593	19,593

Note: All continuous predictors are mean-centered. F-statistics from GLM (Type III sums of squares). * $p < .05$, ** $p < .01$, *** $p < .001$.

All continuous predictors are mean-centered. F-statistics from GLM (Type III sums of squares). * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4 presents the hierarchical GLM results predicting entrepreneurial performance with self-efficacy as the focal predictor. Adding entrepreneurial self-efficacy to the control variables (ESE Model 1) increases the explained

variance in entrepreneurial performance ($\Delta R^2 = 0.135$; $F = 3,333.960$, $p < .001$), indicating that entrepreneurial self-efficacy accounts for additional variance beyond that explained by the control variables. The main effect of entrepreneurial self-efficacy is positive and significant (Appendix D Table D2, $B = 0.429$, $p < .001$). Introducing the interaction with fragility explained only a modest additional increase in explained variance ($\Delta R^2 = 0.003$). Nevertheless, the interaction between entrepreneurial self-efficacy and state fragility is statistically significant ($F = 23.595$, $p < .001$), indicating that the association between entrepreneurial self-efficacy and entrepreneurial performance varies across levels of state fragility.

Table 5 presents the associations of the control variables, resilience, and its interaction with fragility with entrepreneurial self-efficacy. Adding resilience to the baseline model increases the explained variance from 3.1% to 44.1% ($\Delta R^2 = 0.410$). The main effect of resilience is statistically significant (Model 1 ESE: $F = 14,357.655$, $p < .001$). The parameter estimates reported in Appendix D, Table D3, show a positive association between resilience and entrepreneurial self-efficacy ($B = 0.730$, $p < .001$; Table 5: $F = 14,357.655$, $p < .001$). Introducing the Resilience $\times$ Fragility interaction term results in a further increase in explained variance ($\Delta R^2 = 0.001$). The Resilience $\times$ Fragility interaction is statistically significant (Model 2 ESE: $F = 13.508$, $p < .001$), suggesting that the association between resilience and entrepreneurial self-efficacy varies across levels of state fragility.

Taken together, the hierarchical GLM results indicate that resilience and entrepreneurial self-efficacy are both positively associated with

Table 5. Hierarchical GLM results predicting entrepreneurial self-efficacy.

Variables	Model 0 ESE (Controls)	Model 1 ESE (Model 0 ESE + Resilience)	Model 2 ESE (Model 1 ESE + Interaction)
Corrected model	57.148***	1287.265***	1034.487***
Intercept	12846.268***	21619.377***	21629.170***
Individual-level control			
Gender	14.800***	1.710	1.704
Firm-level controls			
Firm size	53.662***	52.467***	53.892***
Industry	14.226***	25.669***	25.448***
Macro-level control			
Fragility	21.673***	14.547***	16.007***
GDP	265.489***	176.182***	184.362***
Main effect			
Resilience	–	14357.655***	2018.962***
Interaction effect			
Fragility $\times$ Resilience	–	–	13.508***
Model fit			
R^2	0.031	0.441	0.442
ΔR^2	–	0.410	0.001
N	19,593	19,593	19,593

Note: All continuous predictors are mean-centered. F-statistics from GLM (Type III sums of squares). * $p < .05$, ** $p < .01$, *** $p < .001$.

entrepreneurial performance (Tables 3–4), while resilience is strongly related to entrepreneurial self-efficacy (Table 5). The interaction terms contribute comparatively small additional proportions of explained variance but consistently indicate that the strength of these relationships may depend on the surrounding institutional context. To better understand the practical implications of these interactions, we next examine the conditional direct and indirect associations using Hayes' PROCESS Model 59.

Conditional direct and indirect associations between resilience and venture performance

We used Hayes's PROCESS Model 59 to conduct exploratory analyses of the conditional direct and indirect associations and to examine whether the estimated indirect association between resilience and entrepreneurial performance through entrepreneurial self-efficacy varies across levels of state fragility.

Table 6 reports the main regression results. When evaluated at the reference category (Alert countries), resilience shows a positive and statistically significant relationship with perceived entrepreneurial performance ($b = 0.452$, $p < .001$), whereas entrepreneurial self-efficacy is not statistically significantly associated with performance ($b = 0.035$, $p = .628$).

Beyond these conditional main effects, the interaction terms indicate that the associations of resilience and entrepreneurial self-efficacy with entrepreneurial performance vary across fragility categories. The interaction between resilience and fragility is statistically significant across all fragility categories

Table 6. Regression coefficients, standard errors, and model summary information of Hayes's process macro Model 59.

	Self-Efficacy			Performance		
Variable	Coeff	SE	p	Coeff	SE	p
Constant	−0.273	0.079	0.001	4.417	0.107	0.000
Resilience	0.530	0.049	0.000	0.452	0.077	0.000
Entrepreneurial Self-Efficacy	−	−	−	0.035	0.072	0.628
Fragility: Warning (vs. Alert)	0.409	0.071	0.000	−0.007	0.098	0.939
Fragility: Stable (vs. Alert)	0.460	0.074	0.000	−0.202	0.101	0.047
Fragility: Sustainable (vs. Alert)	0.602	0.084	0.000	−0.553	0.115	0.000
Resilience × Warning	0.229	0.050	0.000	−0.214	0.078	0.006
Resilience × Stable	0.174	0.050	0.001	−0.313	0.078	0.000
Resilience × Sustainable	0.133	0.058	0.021	−0.405	0.092	0.000
Self-Efficacy × Warning	−	−	−	0.297	0.074	0.000
Self-Efficacy × Stable	−	−	−	0.270	0.073	0.000
Self-Efficacy × Sustainable	−	−	−	0.352	0.082	0.000
Gender	−0.013	0.013	0.322	−0.045	0.018	0.011
Industry	−0.007	0.005	0.231	−0.033	0.007	0.000
Firm size	0.111	0.015	0.000	0.493	0.021	0.000
GDP	−0.009	0.001	0.000	−0.005	0.001	0.000
	$R^2 = 0.4393$			$R^2 = 0.2249$		
	$F(11, 19,581)=1394.4436, p = .0000$			$F(15, 19,577)=378.7552, p = .0000$		

Note: Alert is the reference category of the Fragility scale.

($p < .05$), as is the interaction between entrepreneurial self-efficacy and fragility ($p < .001$). These findings are consistent with systematic differences in the associations of resilience and entrepreneurial self-efficacy with entrepreneurial performance between the Alert-category countries and the other macro-level fragility contexts represented in the sample (Table 6).

To facilitate interpretation, Table 7 reports the conditional direct effects of resilience and entrepreneurial self-efficacy on performance at each fragility level. The conditional effect reveals a clear shift in the relative importance of the two psychological microfoundations across institutional contexts. The association between resilience and entrepreneurial performance decreases from Alert countries ($B = 0.452$, $p < .001$) to Sustainable countries ($B = 0.046$, $p = .358$), whereas the association between entrepreneurial self-efficacy and performance is not significant in Alert countries ($B = 0.035$, $p = .628$) but is strong and positive in Sustainable countries ($B = 0.387$, $p < .001$).

The standardized conditional effects (Appendix E, Table E1) further facilitate comparisons of the relative strength of these relationships across fragility contexts. Pairwise comparisons further show that the conditional direct effect of resilience on performance differs significantly across fragile and non-fragile countries. The relationship between entrepreneurial self-efficacy and performance, however, is weaker in Alert countries than in non-fragile contexts, while no differences are observed between Warning countries and the two non-fragile categories (Appendix E, Table E2). These results reveal a pattern of associations consistent with hypotheses H1–H3, while the findings for H4 are consistent only with the differences observed between the Alert and non-fragile categories. Thus, the findings did not provide empirical support for H4 as a general prediction distinguishing fragile from non-fragile states.

Moving from a relatively low (-1 SD; 4.62) to a relatively high ($+1$ SD; 6.84) level of resilience is associated with an increase in predicted entrepreneurial performance from 4.45 to 5.45 in Alert countries, but only from 4.35 to 4.45 in Sustainable countries. Conversely, moving from a relatively low (-1 SD; 4.36) to a relatively high ($+1$ SD; 6.87) level of entrepreneurial self-efficacy changes predicted performance only marginally in Alert countries (4.91 to 4.99), whereas it increases performance from 3.91 to 4.88 in Sustainable countries. Figures 2 and 3 provide a graphical representation of these conditional effects. Predicted

Table 7. Conditional direct effects of the focal predictors at the categories of the moderator.

	Resilience → Performance			Self-efficacy → Performance		
	Effect	SE	p	Effect	SE	p
Alert	0.452	0.077	<0.001	0.035	0.072	0.628
Warning Stable	0.238	0.017	<0.001	0.332	0.016	<0.001
Stable	0.138	0.016	<0.001	0.305	0.013	<0.001
Sustainable	0.046	0.050	0.358	0.387	0.039	<0.001

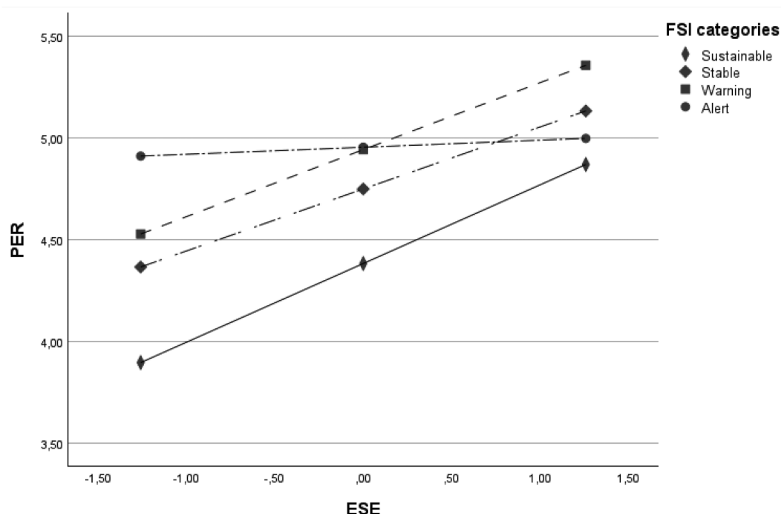


Figure 2. Interaction between entrepreneurial self-efficacy and performance across fragility categories.

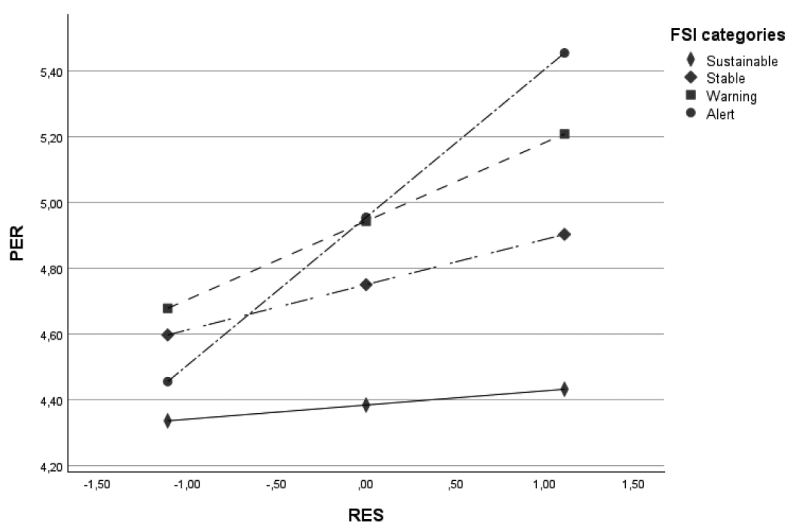


Figure 3. Interaction between resilience and performance across fragility categories.

entrepreneurial performance values on the original 1–7 scale (Appendix E, Table E3) further illustrate the practical implications of the moderation effects.

Furthermore, resilience has a significant positive relationship with entrepreneurial self-efficacy ($B = 0.530$, $p < .001$) but the omnibus F-test of the resilience*fragility interaction terms is significant, indicating that country fragility moderates the relationship between resilience and entrepreneurial self-efficacy ($\Delta R^2 = 0.0012$, $F(3, 19,581) = 14.34$, $p < .001$).

Table E2 indicates that the relationship between resilience and entrepreneurial self-efficacy is stronger in non-fragile states than in Alert countries. However, contrary to the hypothesized pattern, this relationship is stronger in Warning countries than in non-fragile contexts, indicating that the expected differentiation across fragility levels is not observed uniformly.

These findings provide evidence consistent with H6 only in the comparison between the Alert and non-fragile categories and therefore do not support H6 as a general prediction distinguishing fragile from non-fragile states. By contrast, the findings for H5 are fully consistent with the hypothesized relationship.

Table 8 reports the conditional indirect associations between resilience and entrepreneurial performance via entrepreneurial self-efficacy across the four fragility categories. The indirect association is statistically significant in the Sustainable, Stable, and Warning groups (bootstrapped confidence intervals excluding zero), with effect sizes ranging from 0.214 to 0.257.

In contrast, it is close to zero in Alert countries ($B = 0.019$) and not statistically significant, as indicated by confidence intervals including zero. To account for potential non-normality of indirect effects, inference is based on bias-corrected bootstrapped confidence intervals. Thus, the exploratory assessment of conditional associations suggests that entrepreneurial self-efficacy may represent an important transmission mechanism linking resilience to venture performance outside highly fragile environments (Alert countries). In Alert countries, resilience remains directly associated with performance, whereas its indirect pathway through entrepreneurial self-efficacy is not statistically significant.

The exploratory index of moderated mediation is statistically significant for all three groups comparing less fragile contexts to the Alert category.

Overall, the findings are consistent with the view that state fragility functions as a contextual boundary condition for the resilience–self-efficacy–performance relationship. The conditional indirect effect of resilience on venture performance through entrepreneurial self-efficacy differs between the Alert category and non-fragile categories, with the estimated indirect

Table 8. Conditional indirect effects of resilience on performance.

	Conditional indirect effect Resilience → Self-efficacy → Performance		
	Effect	BootSE	95% BootCI [LL–UL]
Alert	0.019	0.043	[−0.071, 0.104]
Warning	0.252	0.014	[0.225, 0.279]
Stable	0.214	0.010	[0.195, 0.234]
Sustainable	0.257	0.032	[0.194, 0.323]

Note: Conditional indirect effects were estimated using Hayes' PROCESS macro Model 59 with 5,000 bootstrap samples. Fragility is modeled as a categorical moderator (Alert = 1, Warning = 2, Stable = 3, Sustainable = 4). Effects are considered significant when the 95% bootstrapped confidence interval does not include zero.

effects being more pronounced in non-fragile contexts and absent under extreme fragility.

Accordingly, this pattern is consistent with H7 in the comparison between the Alert and non-fragile contexts. These results should nevertheless be interpreted as exploratory, as the bootstrap procedure does not preserve country-level clustering. Moreover, the Warning category does not provide comparable evidence for the hypothesized relationship.

Robustness checks and sensitivity analyses

All the analyses of Hierarchical regression analyses were re-estimated using robust HC3 standard errors. The overall coefficient pattern was stable, although the statistical significance of some individual between-category contrasts was sensitive to the standard-error specification (Appendix F, Tables F1–F3).

As an additional robustness check, we re-estimated the two regression equations using generalized estimating equations (GEE) with robust sandwich estimators clustered by country. The cluster-robust conditional effects closely reproduced the pattern observed in the PROCESS analyses, providing additional support for the stability of the categorical pattern across estimation approaches. In particular, the Resilience $\times$ Fragility interaction remained statistically significant in both the entrepreneurial self-efficacy and entrepreneurial performance equations, and the Entrepreneurial Self-Efficacy $\times$ Fragility interaction remained significant in predicting entrepreneurial performance (see Appendix F Tables F4–F6).

We further examined the robustness of the findings using four complementary sensitivity analyses: (1) alternative reference category specifications, (2) leave-one-Alert-country-out analyses, (3) the continuous Fragile States Index, and (4) nonlinear (quadratic) fragility specifications. The alternative reference category specifications and leave-one-Alert-country-out analyses both reproduced the original categorical pattern of findings (Appendix F, Tables F7–F8).

The re-estimated results of the PROCESS-based analyses using the continuous Fragile States Index (FSI) score instead of categorical fragility groups provide additional insights into the observed patterns of the three focal relationships. In particular, the interaction between resilience and fragility remained statistically significant in predicting both entrepreneurial self-efficacy and entrepreneurial performance (Appendix F, Table F9), indicating that these relationships vary across levels of country fragility. In the performance equation, the positive Resilience $\times$ FSI interaction was consistent with the directional pattern predicted in H2. In the entrepreneurial self-efficacy equation, however, the positive Resilience $\times$ FSI interaction indicated a direction opposite to the logic of H6. The negative quadratic interaction further suggests that this strengthening effect attenuates at higher levels of

fragility (Appendix F, Tables F10 and F11). This pattern is broadly in line with the categorical FSI models, which showed that the relationship between resilience and entrepreneurial self-efficacy was strongest in Warning countries.

Additionally, the interaction between entrepreneurial self-efficacy and state fragility was not statistically significant in predicting entrepreneurial performance. This finding is broadly consistent with the categorical FSI models, in which the most notable difference was observed for Alert countries relative to the other categories, while several categories did not differ significantly from one another. The difference, as well as the weaker relationship between resilience and entrepreneurial self-efficacy observed in Alert countries relative to less fragile countries, may be less apparent in the continuous specification because the continuous model estimates an overall gradient across the full range of fragility rather than allowing for category-specific differences. In particular, the Alert category contains substantially fewer observations than the other fragility categories, which limits its contribution to the estimation of the overall continuous association. A distinctive relationship concentrated in this relatively small subgroup may therefore have less influence on the estimated continuous interaction than on the corresponding category-specific comparison. Thus, the absence of a significant continuous interaction does not necessarily imply the absence of the category-specific difference identified in the categorical analysis.

Overall, the analyses suggest that there is a decrease in the resilience–entrepreneurial self-efficacy and entrepreneurial self-efficacy–performance relationships under extreme fragility, particularly in Alert countries, rather than a gradual decline in the strength of these relationships along the fragility continuum. The results are consistent with a tendency in which the resilience–entrepreneurial self-efficacy relationship may become increasingly important as fragility increases, up to a point beyond which the benefits of resilience for entrepreneurial self-efficacy may become less effective in the presence of severe environmental and institutional voids. This pattern may help interpret why the results for Warning countries are not consistent with H4, H6, and H7.

Finally, we examined whether the findings were sensitive to potentially overlapping item content across the focal constructs. We therefore re-estimated the analyses after excluding the creativity-related items from the resilience and entrepreneurial self-efficacy scales and the innovativeness item from the perceived venture performance scale. The resulting conditional direct and indirect associations closely reproduced the substantive pattern of the original specification, suggesting that the main findings are not driven by the overlapping item content (Appendix F, Tables F12–F15).

Discussion

There is limited understanding of why the relationship between resilience and entrepreneurial outcomes differs significantly across countries. In their recent meta-analysis, Hartmann et al. (2022) called for studies on how different types of adversities affect entrepreneurial resilience and its interaction with other capabilities in shaping firm success. Responding to this call, the present study examines how entrepreneurial self-efficacy and resilience, two basic building blocks of the microfoundations of entrepreneurial action (Frese & Gielnik, 2014; Newman et al., 2019), relate to entrepreneurial success across countries with different levels of state fragility.

The findings are consistent with the view that the association between resilience and perceived venture performance is more pronounced in the most fragile, Alert context than in non-fragile states, whereas the associations between resilience and entrepreneurial self-efficacy and between entrepreneurial self-efficacy and perceived venture performance are comparatively weaker in the Alert context. However, as the Alert category consists of only two countries, these results should be considered an exploratory pattern observed in the Iraqi and Nigerian samples rather than as evidence that necessarily generalizes to highly fragile states. Future research involving a broader range of highly fragile country contexts would be valuable for examining the extent to which these patterns extend across different institutional environments and for further developing our understanding of how resilience and entrepreneurial self-efficacy relate to venture performance under conditions of different kinds of extreme fragility.

The observed weakening of the entrepreneurial self-efficacy–performance association under extreme fragility represents an associational pattern consistent with the core assumptions of social cognitive theory (Bandura, 1986, 1997). Social cognitive theory posits that self-efficacy beliefs influence behavior and performance primarily when individuals can reasonably expect that their actions will produce desired outcomes. In highly fragile environments, where access to resources, institutional support, and predictable governance is limited (Ault & Spicer, 2016; Kolk & Lenfant, 2015), the link between effort and outcome becomes less observable and less controllable. Under such conditions, entrepreneurial self-efficacy may be less effective in translating perceived capability into performance.

This interpretation is also aligned with Ajzen's (1991) theory of planned behavior. While entrepreneurial research often operationalizes perceived behavioral control narrowly as entrepreneurial self-efficacy (Krueger et al., 2000; Newman et al., 2019), Ajzen conceptualizes perceived behavioral control more broadly as encompassing both internal capabilities and external constraints. Our findings are consistent with the view that when external constraints dominate, as in highly fragile states, the explanatory relevance of self-

efficacy as a proxy for perceived behavioral control diminishes, echoing arguments by Schlaegel and Koenig (2014) that perceived external control is critical for understanding entrepreneurial outcomes.

In contrast, the stronger role of entrepreneurial self-efficacy in linking resilience and performance in more stable environments represents an associational pattern consistent with learning-by-doing perspectives on entrepreneurship (Frese & Gielnik, 2023; Minniti & Bygrave, 2001). In relatively stable institutional contexts, entrepreneurs are more likely to receive interpretable feedback from their actions, allowing resilience-driven persistence to translate into mastery experiences, identified by Bandura (1997) as the primary source of self-efficacy. Accordingly, resilience in these environments is more likely to contribute to entrepreneurial self-efficacy than under extreme fragility.

The findings also contribute to ongoing debates in the resilience literature regarding the mechanisms through which resilience affects entrepreneurial outcomes (Hartmann et al., 2022; Korber & McNaughton, 2018). Prior research often conceptualizes resilience as a learning- and growth-oriented capability that enhances opportunity recognition and adaptive problem-solving (Bullough et al., 2014; Renko et al., 2021). Our findings extend this view by suggesting that resilience initially becomes more important as fragility increases, potentially compensating for institutional weaknesses and environmental hazards. However, this strengthening effect attenuates at very high levels of fragility, suggesting that severe institutional and environmental voids may eventually erode the effectiveness of resilience in fostering entrepreneurial self-efficacy. A plausible explanation for the observed conditional association pattern is that resilience may primarily serve two roles across different contextual conditions: a capability-building function under adversity and a maintenance-oriented function under extreme fragility. In relatively stable environments, where the adversities entrepreneurs encounter are mostly linked to the inherent demands of entrepreneurship, such as innovation, risk-taking, and competition, resilience may primarily support mastery beliefs and entrepreneurial self-efficacy, thereby contributing to venture performance mainly indirectly (Bullough et al., 2014; Renko et al., 2021), whereas under conditions of extreme fragility, it may primarily function as a direct, maintenance-oriented resource that helps entrepreneurs cope with persistent environmental adversity. These roles are not mutually exclusive, but their relative importance may vary with contextual conditions.

This distinction helps reconcile mixed empirical findings regarding the performance effects of resilience noted by Hartmann et al. (2022). Future studies should, however, directly test the proposed mechanisms underlying the observed relationships. While our model theorizes resilience as an antecedent of entrepreneurial self-efficacy, it is also possible that entrepreneurial self-efficacy strengthens resilience through persistent engagement with entrepreneurial challenges. Moreover, resilience may moderate the extent to which

entrepreneurial self-efficacy translates into venture performance, particularly under conditions of adversity (e.g., Bullough et al., 2014; Tantawy et al., 2026)

Building on these theoretical insights, the study offers two main contributions. First, the study advances research on entrepreneurial resilience by suggesting that its main functional role may depend on the nature and severity of adversity. The results are consistent with the view that resilience may support learning and capability development when adversity is inherent to the entrepreneurial process and remains manageable, but may assume an additional coping- or maintenance-oriented role when severe institutional and environmental constraints limit the effectiveness of such processes. Second, by jointly examining psychological microfoundations and institutional context, the study contributes to contextualized perspectives on entrepreneurship that emphasize the embeddedness of individual agency in broader structural conditions (Ben-Hafaïedh et al., 2024; Korsgaard et al., 2022; Roundy & Lyons, 2023; Welter & Baker, 2020). Rather than treating psychological capabilities as universally effective, the findings highlight the importance of examining when and where specific capabilities are associated with entrepreneurial outcomes.

This study also offers implications for policymakers and entrepreneurship professionals. Our findings are consistent with the view that the institutional and environmental context shapes the conditions under which entrepreneurs can develop and exercise their capabilities, underscoring the importance of a well-functioning macro-level institutional environment for entrepreneurial activity (Acs et al., 2018; Bruton et al., 2010; Su et al., 2017; Welter & Smallbone, 2011). Policies that strengthen institutional support, promote transparency, and address corruption may therefore help create more supportive conditions for sustainable entrepreneurship (Mair & Marti, 2009; Webb et al., 2020). The exploratory results further suggest that learning through doing may be less effective under extreme fragility than in more stable environments. Therefore, in highly fragile contexts, where resilience appears to play a more direct role in sustaining entrepreneurial performance, interventions that strengthen entrepreneurs' capacity to cope with adversity may be particularly relevant.

Finally, we acknowledge several limitations of this study and outline related avenues for future research. While our focus on university-enrolled entrepreneurs operating founder-managed small ventures allowed us to examine psychological microfoundations of entrepreneurial performance in a context where individual agency is particularly salient, this focus also constrains the generalizability of our findings. Future research should therefore examine whether the observed relationships hold among more experienced entrepreneurs and in larger, more established firms, where organizational structures and decision-making processes may shape the role of individual-level psychological resources (Miao et al., 2017; Newman et al., 2019). Second, a limitation

of this study is that resilience, entrepreneurial self-efficacy, and venture performance were measured using self-reported data collected within the same survey and the assessment of venture performance was based on a subjective scale. Future research should therefore incorporate objective performance indicators and multi-source assessments to further validate these relationships. Third, this study is based on cross-sectional analyses. Accordingly, the findings should be interpreted as conditional associations rather than causal effects. The results indicate systematic differences in the estimated indirect effects across context categories, consistent with a conditional mediation pattern in which the relationship between resilience and entrepreneurial performance through entrepreneurial self-efficacy varies across levels of country fragility. Longitudinal studies could provide valuable insights into how entrepreneurial self-efficacy and resilience evolve over time in economies with different levels of fragility, and how these changes subsequently influence entrepreneurial performance as entrepreneurs navigate crises and accumulate experience (McGee & Peterson, 2017; Newman et al., 2019). Investigating the specific mechanisms by which resilience contributes to entrepreneurial outcomes when self-efficacy is less influential would be especially valuable. A fourth limitation of this study is the uneven number of countries and respondents represented across the fragility categories. The Alert category includes only Iraq and Nigeria, while other categories are also disproportionately represented by particular countries. Thus, subgroup-specific findings should be interpreted with caution, as they may partly reflect country-specific characteristics and sample composition rather than differences associated with state fragility alone. Therefore, future studies involving a larger and more balanced number of countries and respondents across fragility categories would be valuable to assess whether these findings extend across different country contexts.

A further limitation concerns the operationalization of the focal constructs. Entrepreneurial self-efficacy was measured using items capturing confidence in opportunity discovery, creativity, new product development, and commercialization, while resilience reflected general individual resilience rather than venture-level resilience. Therefore, future research could examine whether our findings generalize when broader multidimensional measures of entrepreneurial self-efficacy and venture-level or organizational resilience are employed (Korber & McNaughton, 2018; Newman et al., 2019). Moreover, future research could complement self-efficacy measures with more fine-grained indicators of learning environments, feedback structures, and experience-based knowledge accumulation to better capture how contextual conditions shape the formation and reliability of efficacy beliefs, particularly in fragile contexts. Future research should also examine the potentially non-linear relationship between entrepreneurial self-efficacy, state fragility, and venture performance more closely. Exploring whether alternative mediators

(for example, adaptive coping, social capital, opportunity recognition) substitute for self-efficacy in fragile environments is also a promising direction.

Conclusion

This study shows that the relationship between entrepreneurial self-efficacy, resilient coping, and perceived venture performance depends on the level of state fragility. The indirect association between resilience and performance via entrepreneurial self-efficacy is not observed under conditions of extreme fragility (Alert countries) but is present in less fragile contexts. Under extreme fragility, resilience appears to function more directly as a maintenance-oriented coping strategy, with heightened importance compared with non-fragile contexts. This study contributes to research on entrepreneurial resilience by suggesting that resilience may perform different psychological functions across contexts. The findings point to the importance of improving institutional conditions, while also underscoring the need to support entrepreneurs through resilience-building interventions where fragility persists.

During the preparation of this work, the authors used Google Translate, Grammarly, and ChatGPT in order to support language refinement, clarity improvements, and the editing of selected passages. After using these tools, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article. ChatGPT was used to assist with the development and documentation of R code used in the analyses. All code was reviewed, tested, and verified by the authors, who retain full responsibility for the accuracy and reproducibility of the analyses.

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Author contributions

The authors contributed equally to the preparation of this article.

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ORCID

Andrea S. Gubik  <http://orcid.org/0000-0002-7632-9828>

Zsófia Vörös  <http://orcid.org/0000-0003-4756-8050>

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