



Entrepreneurial Readiness in Health Science Education

The Roles of Mental Health and Psychological Resilience Using Structural Equation Modelling

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ABSTRACT

This study examined the role of psychological resilience and mental health in predicting entrepreneurial readiness among health students. Using a cross-sectional explanatory design, 412 students were recruited through purposive sampling from a faculty of health sciences. Data were collected using the Connor-Davidson Resilience Scale (CD-RISC), the Depression Anxiety Stress Scales (DASS-21), and an entrepreneurial readiness questionnaire. Data analysis was conducted using Structural Equation Modeling (SEM) with model fit indices. The results showed that resilience had a strong and significant direct effect on entrepreneurial readiness ($\beta = 0.929$; $p < 0.001$) and on mental health ($\beta = 0.992$; $p < 0.001$). In contrast, mental health did not show a significant direct effect on entrepreneurial readiness ($\beta = 0.062$; $p = 0.528$). These findings highlight resilience as a central psychological competence that not only enhances well-being but also plays a crucial role in strengthening entrepreneurial readiness among health students. Therefore, strengthening psychological resilience through campus-based training programs and interventions may serve as a relevant strategy to prepare a more resilient generation of health students who are better equipped to face future challenges in both employment and entrepreneurship.

Keywords

Entrepreneurial Readiness
Health-Science Students
Mental Health Resilience

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Introduction

State the objectives of the work and provide an The low level of entrepreneurial interest among health students is closely associated with psychological aspects such as resilience, mental health, and adversity quotient (AQ). Resilience, which reflects the ability to recover from difficulties, can influence students' readiness to engage in entrepreneurial activities.

Previous studies have shown that health students often exhibit lower levels of resilience compared to faculty and staff, possibly due to the high pressures inherent in their educational process [1]. These pressures, including academic demands and the emotional burden of health professional training, can increase stress and mental health problems [2]. For instance, students with low resilience tend to be more vulnerable to stress-related health issues and are more likely to adopt negative coping strategies rather than constructive ones [3]. This indicates that resilience not only functions as a protective factor against mental health disorders but also enhances adaptive coping mechanisms that are essential for entrepreneurial activities [4].

Furthermore, the relationship between resilience and mental health has been widely studied. Resilient individuals tend to experience lower levels of anxiety and depression even after facing significant adversity[2]. This improved mental health status is associated with a greater willingness to take risks and pursue entrepreneurial opportunities [5].

Understanding the role of resilience can lead to structured interventions aimed at improving students' mental health and entrepreneurial readiness. Several studies suggest that resilience-building programs integrated into health education curricula can enhance students' ability to cope with stress and foster a proactive attitude toward entrepreneurship [6]. Evidence also indicates that educational institutions should create supportive environments that strengthen resilience and address the unique stressors faced by health students.

In Indonesia, research exploring these dynamics remains limited. Therefore, targeted studies using methodologies such as Structural Equation Modeling (SEM) are needed to examine the relationships among resilience, mental health, and entrepreneurial readiness in this population [7]. Therefore, the objective of this study is to examine the influence of

psychological resilience and mental health on entrepreneurial readiness among health students.

Material and Methods

This study applied a cross-sectional explanatory design to analyze the contribution of psychological resilience and mental health to entrepreneurial readiness among health students. The main variables measured were psychological resilience, mental health, and entrepreneurial readiness, where resilience served as the primary predictor, mental health as an indirect factor, and entrepreneurial readiness as the dependent outcome. A total of 412 undergraduate health students were recruited through purposive sampling, with eligibility criteria including active enrollment in health-related study programs and willingness to provide informed consent. Data were collected using standardized self-report questionnaires.

Psychological resilience was assessed using the Connor-Davidson Resilience Scale (CD-RISC, 25 items) covering adaptability, perseverance, and emotional regulation. Mental health was measured by the Depression Anxiety Stress Scales (DASS-21), comprising three domains—depression, anxiety, and stress, with 7 items. Entrepreneurial readiness was assessed with a 20-item questionnaire adapted from previous studies, measuring motivation, risk management, opportunity recognition, and managerial competence. All instruments used a 4-point Likert scale, and confirmatory factor analysis confirmed their validity with loading factors above 0.70. Ethical clearance was obtained from the Health Research Ethics Committee of the Faculty of Medicine and Health Sciences, Universitas Jambi (Number: 3354/UN21.8/PT.01.04/2025), and respondents were informed about the research objectives, assured of anonymity, and provided informed consent before participation.

Questionnaires were distributed and completed during scheduled sessions. Data were analyzed using Structural Equation Modeling (SEM) with fit indices, while construct validity and reliability were tested using Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's alpha. Direct effects were further examined through bootstrapping with a 95% confidence interval. Convergent validity was assessed using Average Variance Extracted (AVE), with a threshold of >0.50. Composite reliability (CR) and Cronbach's alpha were used to evaluate internal consistency. To further ensure measurement robustness, discriminant validity was examined using the Heterotrait–Monotrait ratio (HTMT), with acceptable values below 0.90. Multicollinearity among latent constructs was assessed using the Variance Inflation Factor (VIF), with recommended values below 5.00.

In this study, resilience was modeled as the primary exogenous predictor influencing both mental health and entrepreneurial readiness. Mental health was examined as an endogenous construct predicting entrepreneurial readiness. No formal mediation structure was specified in the final structural model.

Results and Discussions

Table 1 presents the demographic characteristics of the 412 respondents. The majority of participants were female (78.9%), while male students accounted for 21.1%. Most respondents were aged 20–21 years (69.9%), with 30.1% aged between 18–20 years. In terms of study program distribution, the largest proportion came from Public Health (22.6%), followed by Nursing (19.9%), Medicine (12.6%), Pharmacy (12.4%), Psychology (11.7%), Midwifery (10.9%), Dental Nursing (5.3%), and Medical Laboratory Technology (4.6%). Regarding entrepreneurial plans, the most preferred sector was Culinary/Food and Beverages (30.1%), followed by Health and Clinic-related businesses (23.3%). Other interests included Fashion and Accessories (10.2%), Services (9.5%), Online Shop/Reseller (7.0%), General Trade (6.8%), Creative or Innovation-based businesses (5.8%), and Agriculture/Livestock (3.6%). A small proportion of students (3.6%) reported not yet having a specific business plan.

Table 1. Respondent Characteristic

Variable	Frequency (n)	Percentage (%)
Gender		
Female	325	78.9
Male	87	21.1
Age		
≤20 years	124	69.9
>20 years	288	30.1
Study Program		
Public Health	93	22.6
Nursing	82	19.9
Medicine	52	12.6
Pharmacy	51	12.4
Psychology	48	11.7
Midwifery	45	10.9
Dental Nursing	22	5.3
Medical Laboratory Technology	19	4.6
Entrepreneurial interest		
Culinary / Food & Beverages	124	30.1
Health and Clinic	96	23.3
Fashion & Accessories	42	10.2
Services	39	9.5
Online Shop/ Reseller / Dropship	29	7.0
General Trade / Retail / MSMEs	28	6.8
Creative / Innovation/ Merchandise	24	5.8
Agriculture / Animal Husbandry	15	3.6
No Business Plan Yet	15	3.6

Table 2 shows the validity and construct reliability results for the measurement model. The Average Variance Extracted (AVE) values were very high across all constructs, with resilience and mental health both at 0.98 and entrepreneurial readiness at 0.99, which are far above the recommended minimum threshold of 0.50, confirming strong convergent validity. Similarly, the composite reliability (CR) values for all constructs were 0.98 or higher, exceeding the cut-off of 0.70, and Cronbach's alpha values ranged from 0.81 to 0.93, indicating excellent

internal consistency. These findings confirm that all instruments used in this study demonstrated robust reliability and validity in measuring the intended constructs.

Although the AVE and composite reliability values were exceptionally high (0.98–0.99), additional analyses were conducted to ensure construct validity. HTMT values were below the recommended threshold of 0.90, indicating adequate discriminant validity among constructs. Furthermore, VIF values were below 5.00, suggesting that multicollinearity was not a concern in the structural model.

Table 2. Validity and Construct Reliability.

Construct	AVE*	CR**	Cronbach's α
Psychological Resilience	0.98	0.98	0.81
Mental Health	0.98	0.98	0.93
Entrepreneurial Readiness	0.99	0.99	0.90

Table 3 presents the structural model results obtained from the SEM analysis. The findings indicate that psychological resilience had a strong and statistically significant direct effect on entrepreneurial readiness ($\beta = 0.929$, $p < 0.001$). This suggests that higher levels of resilience are associated with greater readiness to engage in entrepreneurial activities among health students. Resilience also demonstrated a direct effect on mental health ($\beta = 0.992$, $p < 0.001$), indicating that students with stronger resilience tended to report better psychological well-being. In contrast, mental health did not show a statistically significant direct effect on entrepreneurial readiness ($\beta = 0.062$, $p = 0.528$). This finding suggests that although mental health is positively associated with resilience, it does not independently predict entrepreneurial readiness within the specified structural model.

Table 3. Path Coefficient SEM

Construct	β^*	p-value	Result
Resilience → Entrepreneurial Readiness	0.929	0.000	Supported
Resilience → Mental Health	0.992	0.000	Supported
Mental Health → Entrepreneurial Readiness	0.062	0.528	Not Supported

Fig. 1 illustrates the final structural equation model fit with all outer loadings exceeding 0.70. The model demonstrates the relationships between resilience, mental health, and entrepreneurial readiness, where resilience serves as the central construct influencing both mental health and readiness. All observed indicators loaded strongly on their respective latent constructs, confirming the adequacy of the measurement model. The structural model further shows that resilience has a strong and significant effect on entrepreneurial readiness, as well as on mental health, whereas the direct effect of mental health on entrepreneurial readiness was not statistically significant. These results support the robustness of resilience as the primary predictor of entrepreneurial readiness in this study.

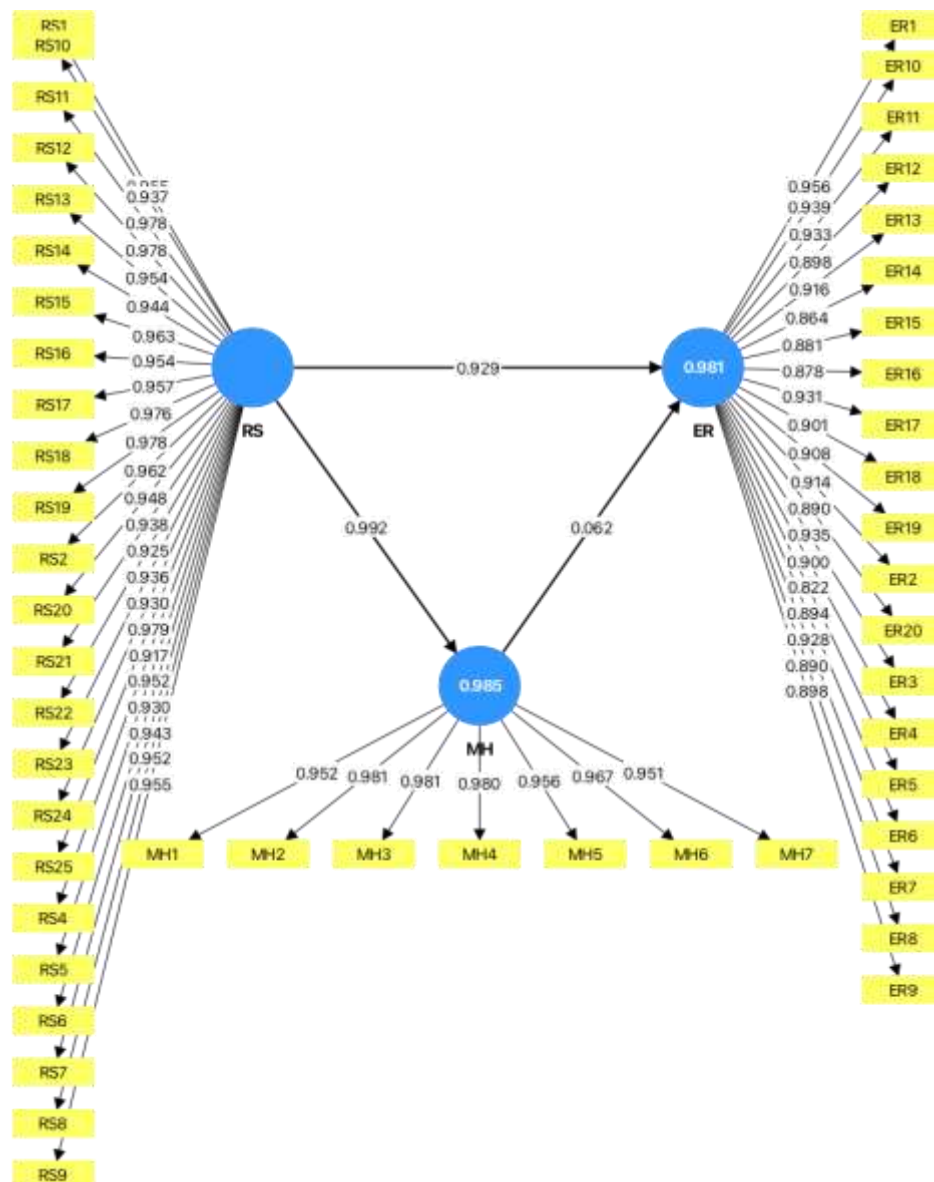


Fig. 1. Final Diagram Fit With Outer Loading Scores >0.7

The findings highlight that resilience is a significant psychological factor predicting entrepreneurial readiness, with strong evidence of its positive influence on both readiness and mental health, while mental health itself shows no direct effect on entrepreneurial readiness. The magnitude of the path coefficient from resilience to entrepreneurial readiness ($\beta = 0.929$) is notably high and therefore warrants careful interpretation. Although statistically significant, such a strong association may reflect conceptual proximity between the constructs, as both resilience and entrepreneurial readiness involve adaptive capacity, persistence, and proactive coping. Additionally, the reliance on self-report measures may contribute to shared method variance. Therefore, while resilience appears to be a dominant predictor, future studies should further examine potential construct overlap using alternative measurement strategies or longitudinal designs.

Previous studies, such as Lin et al. (2024) on entrepreneurial intention and Fukui et al. (2020) on job stressors, do not specifically examine the relationships investigated in the present study [8]. Similarly, the claim regarding the nonsignificant path from mental health to entrepreneurial readiness ($\beta = 0.062$, $p = 0.528$) requires validation with literature that explicitly investigates this association, since Liu & Singhdong (2024) discuss psychological factors broadly but not mental health specifically [9]. In this context, resilience clearly emerges as the primary determinant of entrepreneurial readiness, whereas mental health contributes indirectly through its link to resilience [9]. Future work should strengthen this model with empirical studies that directly connect resilience, mental health, and entrepreneurial readiness, such as those exploring resilience-building programs among health students [10].

Prior research highlights that entrepreneurial education and academic experiences contribute to resilience development [11], [12], while other studies emphasize its role in buffering psychological stress and enhancing recovery among medical and nursing students [2]. The present findings strengthen this evidence by demonstrating the direct effect of resilience on entrepreneurial readiness ($\beta = 0.929$; $p < .001$) as well as its indirect role through mental health, contrasting with much of the existing literature that primarily positions resilience as a support factor for mental health. The common ground across studies is that resilience consistently protects healthy students from the adverse effects of academic pressure [3], [12], yet the unique contribution of this study lies in identifying resilience as a direct determinant of entrepreneurial readiness and underscoring the need for resilience training interventions to enhance entrepreneurial capacity among health students [1].

From an entrepreneurship perspective, resilience can be situated within the broader framework of psychological capital, which includes self-efficacy, optimism, hope, and resilience as core psychological resources supporting entrepreneurial action. In this context, resilience contributes not only to stress management but also to opportunity recognition, persistence in uncertain environments, and adaptive strategic decision-making [13]. Therefore, the strong relationship observed in this study aligns with entrepreneurship theory emphasizing the role of internal psychological resources in shaping entrepreneurial readiness [14].

The theoretical implications of this study highlight the convergence of resilience theory and entrepreneurship theory, particularly within health education. Resilience theory posits that resilience reflects the capacity to endure stress and recover from challenges, a concept validated by the current findings showing that resilience significantly predicts entrepreneurial readiness ($\beta = 0.929$, $p < .001$) and aligns with prior work emphasizing its role as both a protective factor and a catalyst for seizing opportunities [15], [16]. Within entrepreneurship theory, resilience is situated as a core element of psychological capital, complementing self-efficacy, optimism, and hope, thereby broadening the scope of entrepreneurial readiness

beyond technical knowledge to encompass psychological resources essential for initiative and persistence [2], [17]. The non-significant effect of mental health on entrepreneurial readiness suggests that general psychological well-being alone may not directly translate into entrepreneurial preparedness. While mental stability supports functioning, entrepreneurial readiness may require more active psychological resources such as persistence, adaptability, and risk tolerance, which are more directly captured by resilience.

These findings suggest that resilience not only mitigates stress and supports adaptive coping strategies but also underpins the psychological capital required for health students to thrive in academically demanding contexts and future entrepreneurial pursuits, underscoring the need for resilience-building interventions within health education curricula [18].

The practical implications of this study underscore the importance of embedding resilience-building initiatives within health education to simultaneously strengthen students' mental health and entrepreneurial readiness. Integrating resilience training into the health curriculum can equip students with coping strategies to manage the stress typical of health professions, consistent with evidence showing such programs improve psychological well-being and adaptability [19], [20]. Beyond curricular interventions, psychosocial support systems, including tailored counseling and peer-support frameworks, are essential to mitigate anxiety, enhance coping, and promote resilience among health students facing intensive academic demands [21], [22]. Additionally, embedding resilience-focused training within entrepreneurship education is critical for preparing students to manage uncertainty, as resilience has been shown to constitute a component of psychological capital that drives proactive and adaptive entrepreneurial behavior [23]-[25]. Collectively, these strategies position resilience not only as a psychological resource but also as a foundational competency for sustainable success in both healthcare and entrepreneurial contexts.

Conclusion

This study demonstrates that psychological resilience has a significant relationship with entrepreneurial readiness among health students, exerting both direct effects through its relationship with mental health. While resilience emerged as a strong and consistent predictor of entrepreneurial readiness, mental health did not show a significant direct effect, suggesting its influence operates primarily through resilience. These findings highlight resilience as a psychological competency that not only supports well-being but also fosters readiness for entrepreneurial engagement. Integrating resilience-building initiatives into health education may therefore provide students with essential psychological resources to navigate academic pressures, enhance mental health, and prepare for sustainable careers in healthcare and entrepreneurship.

Limitation and Suggestions

This study has several limitations that should be acknowledged. First, the cross-sectional design restricts the ability to draw causal inferences regarding the relationships among resilience, mental health, and entrepreneurial readiness. Second, the use of self-report questionnaires may introduce potential biases, such as social desirability or recall bias, which could affect the accuracy of the responses. Third, the sample was limited to health students from a single university, which constrains the generalizability of the findings to broader populations. Future studies employing longitudinal or multi-site designs with more diverse participants are recommended to strengthen the validity and applicability of the results.

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Conflict of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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