Developing Resilient Healthcare Leaders: Applying Growth Mindset Theory in Higher Education

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Abstract: **Background: Persistence and early leadership readiness are critical outcomes in healthcare management education, yet the psychosocial mechanisms that support them remain under-specified. This study tested whether students' adoption of a growth mindset relates to academic persistence, resilience, and leadership readiness, and whether resilience mediates the growth-mindset → leadership-readiness pathway.**

Methods: In a cross-sectional survey of healthcare management students (N = 220), participants completed validated measures of growth mindset, resilience, academic persistence, and leadership readiness. Analyses used zero-order correlations and a regression-based mediation model with completely standardized coefficients (β). Inference for the indirect effect relied on bias-corrected bootstrap (BCa) 95% confidence intervals, with normal-theory estimates reported for transparency.

Results: Growth mindset was positively associated with academic persistence (r = .363, 95% CI [.242, .473], p < .001; R^2 = .132) and resilience (r = .522, 95% CI [.419, .612], p < .001; R^2 = .272). For leadership readiness, the total association with growth mindset was r = .571 (p < .001). In the mediation model, growth mindset predicted resilience (a = .522), resilience predicted leadership readiness controlling for growth mindset (b ≈ .425), and the direct path remained positive (c′ ≈ .349). The indirect effect was ab ≈ .222, accounting for approximately 39% of the total association (PM = .389). BCa bootstrap 95% CI for the indirect effect excluding zero, indicating statistically reliable mediation. The joint model explained ~46% of the variance in leadership readiness (R^2 ≈ .457).

Conclusions: Among healthcare management students, endorsing a growth mindset is linked to greater persistence and resilience and predicts leadership readiness both directly and via resilience. Findings identify a belief-to-capacity-to-readiness mechanism with actionable implications: pairing mindset-supportive pedagogy with structured resilience training may enhance retention and leader preparation.

Limitations & Implications: Cross-sectional, self-report data limit causal inference; longitudinal or experimental designs are warranted. Programs can leverage these effect-size benchmarks to design and evaluate interventions that integrate mindset scaffolding and resilience-building within authentic, challenge-rich learning experiences.

Keywords: **growth mindset, resilience, persistence, leadership readiness, higher education.**

1. INTRODUCTION AND BACKGROUND

The healthcare sector continues to face unprecedented challenges including workforce shortages, rising costs, technological disruption, and public health crises such as the COVID-19 pandemic. These pressures underscore the need for resilient leaders who can adapt, innovate, and guide organizations through uncertainty. Leadership in healthcare is no longer limited to clinical expertise but requires a combination of problem-solving skills, collaboration, and psychological resilience (West et al., 2020). Preparing the next generation of healthcare leaders therefore requires educational models that cultivate adaptability, persistence, and a mindset oriented toward growth.

Higher education institutions play a pivotal role in equipping healthcare management students with both technical knowledge and adaptive capabilities. Traditional curricula often emphasize technical competencies and regulatory knowledge, but they may fall short in preparing students to handle ambiguity and change (Ng & Luk, 2021). Embedding

theories that enhance self-efficacy, resilience, and problem-solving is vital for bridging this gap. Growth Mindset Theory, originally developed in psychology, offers a promising framework for transforming healthcare leadership education into a process that builds resilience and innovation. Growth Mindset Theory, advanced by Dweck (2006), posits that individuals who believe intelligence and abilities can be developed through effort, strategy, and feedback are more likely to embrace challenges, persist through setbacks, and achieve higher outcomes. In contrast, a fixed mindset assumes that abilities are innate and unchangeable, often resulting in avoidance of challenges and reduced resilience. Recent studies have shown that fostering a growth mindset in higher education leads to improved academic performance, motivation, and overall well-being (Yeager et al., 2019; Burnette et al., 2023). Applying this framework to healthcare education can strengthen future leaders' adaptability in dynamic healthcare environments.

Resilience, the capacity to recover and adapt in the face of adversity is essential for healthcare leaders. Growth mindset interventions have been linked to stronger resilience, as they encourage reframing failure as a learning opportunity (Smith & Capuzzi, 2022). In healthcare education, resilience is particularly important because students must be prepared for the stressors of clinical practice, ethical decision-making, and organizational change. Integrating growth mindset principles into leadership training can therefore promote psychological endurance and persistence, qualities essential to healthcare leadership effectiveness. Recent scholarship highlights the benefits of growth mindset interventions in professional programs, including nursing, public health, and healthcare administration. For example, Nguyen et al. (2022) found that mindset-based curricula improved nursing students' confidence and adaptability in clinical decision-making. Similarly, Jones and Patel (2023) emphasized that growth mindset training enhanced healthcare administration students' problem-solving and leadership skills. These findings suggest that embedding growth mindset pedagogy into higher education can help produce healthcare leaders who are both academically successful and resilient in practice.

Healthcare leadership also requires effective teamwork, communication, and social intelligence. Growth mindset theory promotes relational well-being by fostering openness to feedback and valuing collaboration. In educational settings, students who adopt a growth mindset are more likely to engage constructively with peers, seek mentorship, and build inclusive learning communities (Canning et al., 2020). For healthcare management students, these social competencies translate into stronger leadership capacity in diverse and interprofessional teams.

Well-being is increasingly recognized as a key factor in both educational and professional success. Students with a growth mindset report lower levels of stress and higher life satisfaction, as they view challenges as opportunities rather than threats (Burnette et al., 2023). Within healthcare education, integrating growth mindset approaches aligns with the broader movement toward supporting student well-being and developing leaders who can sustain their health while caring for others (Wasson et al., 2021). This dual emphasis on performance and well-being makes growth mindset particularly relevant to healthcare leadership preparation.

The application of Growth Mindset Theory in healthcare higher education is still an emerging field of inquiry. While evidence supports its effectiveness in general academic settings, there is limited research on its specific role in cultivating resilient healthcare leaders. This article therefore examines how Growth Mindset Theory can be integrated into healthcare leadership curricula to foster resilience, adaptability, and well-being. By exploring recent empirical studies and pedagogical strategies, the discussion highlights how higher education can intentionally shape healthcare leaders capable of navigating the complexities of modern healthcare systems.

Problem Statement

Despite the increasing complexity of healthcare systems, traditional higher education programs in healthcare management often emphasize technical knowledge and regulatory compliance while underemphasizing the cultivation of adaptive mindsets essential for resilient leadership. As a result, graduates may enter the workforce with strong theoretical foundations but limited capacity to navigate ambiguity, persist through setbacks, or lead effectively in rapidly changing environments (Ng & Luk, 2021; West et al., 2020). Growth Mindset Theory offers a promising framework to address this gap by fostering resilience, adaptability, and problem-solving in students. However, research on the application of growth mindset in healthcare higher education remains limited, with most studies focusing on general education or clinical training (Nguyen et al., 2022; Burnette et al., 2023). This lack of targeted integration restricts the ability of healthcare management programs to prepare leaders who can thrive in complex organizational contexts, balance well-being with performance demands, and drive meaningful change. Addressing this problem requires a deliberate application of growth mindset principles in higher education to enhance the development of resilient healthcare leaders.

Purpose of the Study

The purpose of this study is to examine how the application of Growth Mindset Theory in higher education can foster resilience, adaptability, and well-being among healthcare management students, thereby preparing them to become effective future leaders. Specifically, this study seeks to explore pedagogical strategies, such as reflective practice, feedback-rich environments, and experiential learning, that integrate growth mindset principles into healthcare leadership education. By connecting theoretical insights with practical applications, the study aims to highlight how embedding growth mindset approaches can strengthen students' academic persistence, enhance problem-solving abilities, and cultivate resilient leadership qualities essential for navigating the complexities of modern healthcare systems.

Significance of the Study

This study is significant because it addresses a critical gap in healthcare leadership education: the limited integration of psychological and motivational frameworks, such as Growth Mindset Theory, into the preparation of future healthcare leaders. As healthcare systems face increasing uncertainty, workforce shortages, and technological disruption, there is an urgent need for leaders who possess not only technical knowledge but also resilience, adaptability, and the capacity to foster well-being in themselves and others (West et al., 2020). By applying growth mindset principles within higher education, this study advances a model for developing healthcare leaders who can persist through challenges, embrace innovation, and guide teams effectively in dynamic environments.

The findings of this study are also important for higher education institutions seeking to improve student retention, engagement, and success in healthcare management programs. Growth mindset interventions have been shown to enhance persistence and reduce stress in academic settings (Burnette et al., 2023; Yeager et al., 2019). Embedding such approaches into healthcare curricula can therefore strengthen students' academic outcomes while preparing them for the relational and emotional demands of leadership.

Furthermore, this study contributes to the growing literature on resilience and well-being in healthcare education, offering a practical framework that aligns leadership development with holistic student support. By bridging theory and practice, the study provides actionable insights for educators, curriculum designers, and policymakers who aim to cultivate the next generation of healthcare leaders equipped to navigate the complexities of modern healthcare systems.

Research Questions

RQ1: To what extent does students' adoption of a growth mindset predict their academic persistence in healthcare management programs?

H1: Students with higher growth mindset scores will demonstrate significantly greater academic persistence than those with lower growth mindset scores.

RQ2: How does growth mindset relate to resilience among healthcare management students in higher education?

H2: Growth mindset will be positively associated with resilience, such that students who endorse a growth mindset will report higher resilience levels.

RQ3: Does growth mindset predict leadership readiness among healthcare management students?

H3: Growth mindset will significantly predict leadership readiness, with students demonstrating stronger growth mindset beliefs also reporting higher self-perceived preparedness for healthcare leadership roles.

RQ4: To what extent does resilience mediate the relationship between growth mindset and leadership readiness in healthcare education?

H4: Resilience will mediate the relationship between growth mindset and leadership readiness, indicating that growth mindset fosters resilience, which in turn enhances leadership readiness.

Gap in Literature

While Growth Mindset Theory has been widely studied in general education, K–12 settings, and undergraduate populations, its application in professional programs such as healthcare management and leadership education remains limited. Research over the past decade has consistently shown that growth mindset interventions can enhance student motivation, persistence, and well-being (Yeager et al., 2019; Burnette et al., 2023). However, most of these studies focus on broad academic outcomes rather than the specific leadership competencies needed in complex professional fields like healthcare.

Within healthcare education, emerging studies have begun to examine growth mindset in clinical training, particularly in nursing and medical education (Nguyen et al., 2022; Wasson et al., 2021). These findings suggest that fostering a growth mindset can improve resilience, adaptability, and confidence in clinical decision-making. Yet, there is a notable absence of research on how growth mindset can be systematically embedded into healthcare management curricula to cultivate leadership readiness. Existing scholarship on healthcare leadership development often emphasizes competencies, technical skills, or emotional intelligence (West et al., 2020; Ng & Luk, 2021), but few studies explicitly link mindset-oriented frameworks with leadership preparation.

Moreover, while resilience has been identified as a key attribute for effective healthcare leaders, the mechanisms through which growth mindset fosters resilience and subsequently enhances leadership readiness have not been thoroughly investigated (Smith & Capuzzi, 2022). This lack of empirical attention creates a critical gap in understanding how psychological theories of motivation and belief systems can be integrated into leadership development in healthcare higher education.

Therefore, this study addresses a pressing gap by examining the role of growth mindset in predicting resilience, persistence, and leadership readiness among healthcare management students. It also investigates the mediating function of resilience, offering a nuanced understanding of how growth mindset translates into leadership capacity. By filling this gap, the study contributes both to the theoretical expansion of Growth Mindset Theory in professional education and to the practical advancement of healthcare leadership preparation.

2. CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

A study examining the development of resilient healthcare leaders requires a theoretical foundation that integrates psychological, educational, and leadership perspectives. The conceptual framework guiding this investigation draws upon three interrelated constructs: Growth Mindset Theory, Resilience Theory, and Leadership Readiness frameworks. Growth Mindset Theory provides the lens for understanding how beliefs about the malleability of abilities shape persistence and adaptability. Resilience Theory explains the processes by which individuals recover and thrive in challenging environments, a quality essential to both academic and professional success. Leadership readiness theories emphasize the importance of psychological capacities and adaptive skills in preparing students for the demands of modern healthcare leadership. Together, these frameworks create a comprehensive model that situates growth mindset as a catalyst for resilience, resilience as a pathway to leadership readiness, and academic persistence as a parallel outcome critical to student success in higher education. (See Figure 1.)

At the foundation of the model is Dweck's (2006) Growth Mindset Theory, which emphasizes the belief that abilities and intelligence can be developed through effort, learning strategies, and feedback. In the context of healthcare management education, a growth mindset fosters persistence, adaptability, and openness to challenges, those qualities that are indispensable for future leaders. Building on this foundation, the framework incorporates Masten's (2021), Resilience Theory which highlights the capacity to recover from adversity and adapt to stressors. In this model, resilience functions as both an outcome of growth mindset and a mediating process that channels the influence of growth mindset into leadership readiness. Students who internalize growth mindset principles are more likely to view setbacks as opportunities for growth, thereby strengthening their resilience. This resilience, in turn, becomes a critical attribute for effective leadership in the demanding and unpredictable healthcare sector.

The final dimension of the framework is Leadership Readiness, informed by leadership development theories (Day et al., 2014; Hannah & Avolio, 2010) that stress the importance of psychological capacities, adaptability, and confidence in assuming leadership roles. Leadership readiness in this framework represents the extent to which students feel prepared to lead within healthcare organizations, encompassing competencies such as problem-solving, communication, and decision-making. By positioning resilience as a mediator, the framework suggests that a growth mindset does not simply enhance leadership readiness directly but also does so through its positive impact on resilience.

Additionally, the framework acknowledges academic persistence as a parallel outcome of growth mindset. Consistent with research linking mindset interventions to student retention and motivation (Yeager et al., 2019; Burnette et al., 2023), the model proposes that students with a growth mindset are more likely to persist in healthcare management programs, thereby supporting the pipeline of future healthcare leaders.

Taken together, the framework advances a holistic view of leadership development in healthcare education. It connects psychological beliefs (growth mindset), adaptive processes (resilience), and professional outcomes (leadership readiness and persistence) in a unified model. This integrated approach addresses a gap in literature by explicitly linking mindset-

oriented theories to healthcare leadership education and provides a theoretical foundation for investigating how higher education can cultivate leaders capable of thriving in complex healthcare environments.

Figure 1.

Integrated Framework for Developing Resilient Healthcare Leaders
Growth Mindset → Resilience → Leadership Readiness
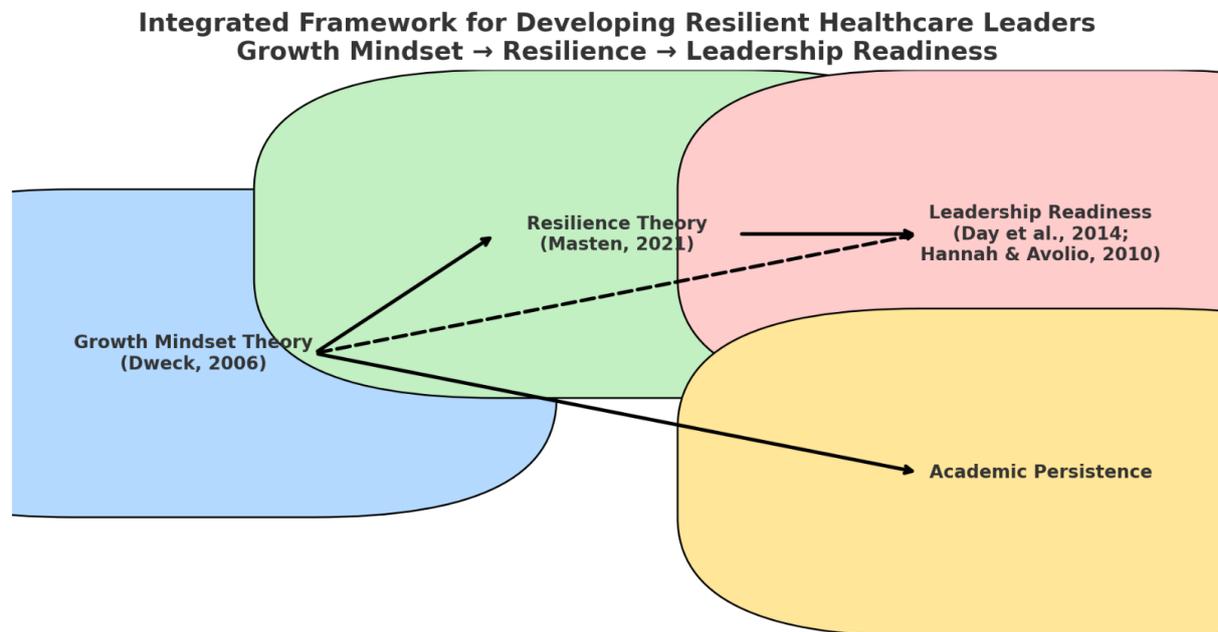
Literature Review:

To inform this study, a comprehensive literature search was conducted across multiple academic databases, including PubMed, CINAHL, PsycINFO, Scopus, and Google Scholar. The search focused on peer-reviewed journal articles published between 2019 and 2024 to ensure currency and relevance. Keywords and Boolean operators were used in various combinations, such as *"growth mindset" AND "higher education"*, *"growth mindset" AND "resilience"*, *"resilience" AND "leadership readiness"*, and *"healthcare leadership" AND "education"*. Inclusion criteria were: (a) empirical studies examining growth mindset, resilience, or leadership development in higher education or healthcare-related contexts; (b) theoretical and conceptual papers linking these constructs to student outcomes or professional readiness; and (c) systematic reviews and meta-analyses published in the last five years. Exclusion criteria included opinion pieces, non-English publications, and studies unrelated to educational or healthcare leadership contexts. Through this strategy, approximately 75 articles were initially retrieved, which were screened for relevance by reviewing titles, abstracts, and keywords. After applying the inclusion and exclusion criteria, a final set of 35 peer-reviewed sources was selected for synthesis in this review. This process ensured that the literature incorporated into the study reflects both the theoretical foundations and the most recent empirical evidence regarding growth mindset, resilience, and leadership readiness in higher education and healthcare contexts

Growth Mindset in Higher Education

Dweck's (2006) Growth Mindset Theory has been extensively researched as a framework for enhancing student motivation, persistence, and achievement. Recent evidence shows that growth mindset interventions positively influence academic performance, particularly among students facing adversity (Yeager et al., 2019). Students who believe their abilities can be developed are more likely to engage in adaptive learning behaviors, embrace feedback, and persist through setbacks (Burnette et al., 2023). In higher education, growth mindset has been linked not only to academic outcomes but also to well-being. For example, Canning et al. (2020) found that growth mindset beliefs mitigated the negative effects of stereotype threat, thereby enhancing belonging and persistence among underrepresented students. In professional programs, including nursing and healthcare administration, growth mindset interventions have demonstrated potential in improving self-efficacy and adaptability (Nguyen et al., 2022). These findings indicate that growth mindset is more than an academic tool, it serves as a foundation for professional readiness and resilience. Yet, despite its established impact in general education, relatively few studies have systematically examined growth mindset in healthcare leadership curricula, underscoring the need for focused research in this domain.

Resilience as a Mediating Construct

Resilience, broadly defined as the ability to recover and adapt in the face of stress and adversity, is a key psychological resource for healthcare professionals. Masten (2021) described resilience as "ordinary magic," emphasizing that it is not a rare trait but a dynamic process that can be nurtured through supportive environments and adaptive mindsets. Within educational contexts, resilience has been associated with reduced stress, greater persistence, and improved academic outcomes (Smith & Capuzzi, 2022).

Healthcare education research highlights resilience as critical to student success and professional preparedness. For example, Wasson et al. (2021) conducted a systematic review of medical education and found that learning environments that foster adaptability and resilience contributed to improved student well-being and reduced burnout. In nursing education, resilience training has been shown to strengthen confidence in clinical decision-making and promote persistence in rigorous programs (Nguyen et al., 2022). Importantly, resilience is not only an outcome but also a mediator: growth mindset fosters resilience by encouraging students to view challenges as opportunities for growth, which in turn enhances leadership capacity. However, few studies have explicitly tested resilience as a mediating mechanism between growth mindset and leadership readiness, leaving a critical gap this study aims to address.

Leadership Readiness in Healthcare Education

Leadership readiness is increasingly emphasized in higher education as institutions seek to prepare students for the demands of modern healthcare systems. Leadership development frameworks argue that readiness involves not only technical and managerial skills but also psychological capacities such as adaptability, resilience, and growth orientation (Day et al., 2014; Hannah & Avolio, 2010). In healthcare contexts, effective leadership has been linked to improved patient outcomes, organizational performance, and workforce well-being (West et al., 2020).

Recent scholarship highlights the importance of embedding leadership preparation early in healthcare education. Ng and Luk (2021) argued that traditional competency-based curricula are insufficient without the inclusion of adaptive skills and mindset-oriented approaches. Similarly, Jones and Patel (2023) demonstrated that growth mindset training improved healthcare administration students' problem-solving skills and leadership confidence, suggesting that mindset frameworks can complement technical leadership training. However, the literature reveals a gap: most leadership readiness studies in healthcare focus on practicing professionals or clinical trainees rather than pre-professional students in healthcare management programs. This creates a missed opportunity to shape leadership capacities before students enter the workforce.

Academic Persistence in Higher Education

Persistence, defined as a student's continued enrollment and intention to complete a degree, is a critical indicator of success in higher education (Tinto, 1993). Persistence reflects not only academic achievement but also motivation, engagement, and institutional support. In professional programs such as healthcare management, persistence is especially important because it ensures that students' progress through rigorous training and contribute to the future healthcare workforce. Recent research underscores the multifaceted nature of persistence. Yeager et al. (2019) demonstrated that psychological interventions, including growth mindset training, significantly improved persistence among at-risk college students by reducing feelings of inadequacy and enhancing motivation. Similarly, Alhadabi and Karpinski (2020) found that academic persistence was strongly associated with self-regulation and resilience, highlighting the interplay between psychological resources and educational outcomes. In healthcare-related education, persistence is linked to both academic and professional readiness, as students who complete their programs are more likely to enter leadership pipelines (Ng & Luk, 2021).

The literature also highlights belongingness and engagement as predictors of persistence. Strayhorn (2019) emphasized that students with a strong sense of belonging are more likely to persist because they perceive themselves as valued members of the academic community. Canning et al. (2020) further showed that growth mindset mitigates feelings of exclusion, thereby promoting persistence among underrepresented students. These findings suggest that growth mindset not only enhances performance but also supports long-term commitment to academic goals. Despite these insights, research linking persistence explicitly to leadership readiness in healthcare education remains scarce. Most studies address persistence as an outcome of psychosocial factors or institutional support, but few explore how persistence interacts with growth mindset and resilience to prepare students for leadership roles. By positioning persistence as a parallel outcome alongside leadership readiness, this study addresses this gap and contributes to a more holistic understanding of how mindset-oriented frameworks influence both immediate academic outcomes and longer-term professional development.

Synthesis and Relevance of the Framework to the Study

The reviewed literature demonstrates that growth mindset, resilience, persistence, and leadership readiness are interconnected constructs critical to higher education and professional development. Research on growth mindset consistently shows that students who believe their abilities can be developed through effort are more motivated, adaptable, and likely to persist in challenging academic environments (Yeager et al., 2019; Burnette et al., 2023). Within healthcare education, these attributes are essential for preparing students to navigate uncertainty and build leadership capacity.

Resilience emerges as a central mechanism that enables students to translate growth mindset beliefs into adaptive behaviors. Studies confirm that students with higher resilience are better equipped to manage stress, persist through demanding programs, and adapt to changing professional landscapes (Smith & Capuzzi, 2022; Wasson et al., 2021). However, few studies have explicitly examined resilience as a mediator between growth mindset and leadership readiness, leaving a theoretical and empirical gap that this study seeks to address.

Persistence, meanwhile, is a well-documented outcome of both psychological and institutional factors. Growth mindset interventions have been shown to promote persistence by fostering motivation and reducing feelings of inadequacy (Yeager et al., 2019), while resilience contributes by helping students remain engaged in the face of adversity (Alhadabi & Karpinski, 2020). Yet, persistence is often studied in isolation, without consideration of how it aligns with broader professional outcomes such as leadership readiness. Integrating persistence into this framework highlights its dual role in ensuring academic continuity and supporting the pipeline of future healthcare leaders.

Leadership readiness, as highlighted in the literature, extends beyond technical competence to include psychological capacities such as adaptability, confidence, and resilience (Day et al., 2014; West et al., 2020). Studies suggest that growth mindset training can enhance leadership confidence (Jones & Patel, 2023), but the integration of mindset, resilience, and persistence into leadership development models in healthcare higher education remains underexplored.

Taken together, these findings reveal clear gaps in the literature: (a) limited application of growth mindset theory in healthcare leadership education, (b) underexplored mediating mechanisms linking mindset to leadership readiness, and (c) minimal integration of persistence into leadership development frameworks. This study addresses these gaps by positioning growth mindset as a predictor, resilience as a mediator, and persistence as a parallel outcome, thereby offering a comprehensive framework for developing resilient and effective healthcare leaders in higher education.

3. METHODOLOGY

This study employed a quantitative, correlational design with a mediation component to examine the relationships among growth mindset, resilience, academic persistence, and leadership readiness in healthcare management students. The design enabled testing predictive associations while assessing whether resilience mediates the effect of growth mindset on leadership readiness, with persistence included as a parallel outcome.

The study population consisted of undergraduate and graduate students enrolled in accredited healthcare management and administration programs in the United States. These students were chosen because they represent the next generation of healthcare leaders, for whom resilience and adaptability are essential.

A purposive sampling approach was used to identify participants from institutions offering management- and leadership-oriented courses. Eligibility criteria included: (a) enrollment in a healthcare management program, (b) age 18 or older, and (c) completion of at least one term of coursework. Students exclusively in clinical programs without leadership training were excluded.

Sample size was determined through a priori power analysis ($f^2 = .15$, $\alpha = .05$, $1 - \beta = .80$), indicating a minimum of 100–120 participants. To improve generalizability and account for attrition, a target sample of 200–250 students was established.

The independent variable (IV) was the Growth Mindset, which are the beliefs about the malleability of intelligence and ability; the mediating variable (MV) was the resilience, which relates to the adaptive capacity to recover from stress and adversity; and the dependent variables (DVs) which are academic persistence intent to remain enrolled and complete the degree and leadership readiness, which is the perceived preparedness to assume healthcare leadership roles.

Instrumentation

The instrumentation for the study includes: 1) Growth Mindset Scale adapted from Dweck's (2006) Implicit Theories of Intelligence Scale. The scale consisted of 8 items on a 6-point Likert scale (1 = strongly disagree to 6 = strongly agree). For

example: *"You can always substantially change how intelligent you are."* The Cronbach's α: .82 in higher education samples (Burnette et al., 2023). 2) Connor-Davidson Resilience Scale (CD-RISC 10), which is a 10-item instrument assessing adaptability and coping. For example: *"I am able to adapt to change."* The Cronbach's α: .85–.91 across diverse populations, including students (Masten, 2021). 3)

The Academic Persistence Scale, which is based on Tinto's (1993) Student Persistence Framework, measuring intention to remain enrolled. The instrument consists of 6–8 items rated on a 5-point Likert scale. For example: *"I intend to complete my degree in this program."* The Cronbach's α: .78–.83 in previous higher education studies (Yeager et al., 2019). 4) Leadership Readiness Scale adapted from Day et al. (2014) and Hannah & Avolio (2010), focusing on adaptability, decision-making, and self-efficacy in leadership. The instrument consisted of 12–15 items rated on a 5-point Likert scale. For example: *"I feel confident in my ability to lead others in a healthcare setting."* The Cronbach's α: .82–.89 in professional education research (Jones & Patel, 2023).

All scales demonstrate strong content and construct validity, having been widely used in educational, psychological, and healthcare research. Reliability evidence is well established, with Cronbach's α values consistently above the .78 threshold for acceptability. Prior confirmatory factor analyses (CFAs) support dimensionality of the constructs. To ensure contextual fit, a pilot test with 20–30 healthcare management students confirmed clarity, response distribution, and internal consistency in the present sample.

Data Collection Procedures

Data was collected via an online survey, where participants provided informed consent electronically prior to participation. The survey took 15–20 minutes to complete. Data remained anonymous, with no personally identifying information collected.

Data Analysis

The analysis proceeded in several stages including 1) Descriptive Statistics which summarizes demographics, means, and standard deviations. 2) Reliability Analysis which confirms internal consistency of all scales (Cronbach's α). 3) Correlation Analysis which examines bivariate relationships among growth mindset, resilience, persistence, and leadership readiness. 4) Multiple Regression Analysis which tests predictive effects of growth mindset and resilience on persistence and leadership readiness. 5) Mediation Analysis that uses Hayes' PROCESS Macro (Model 4) to test resilience as a mediator between growth mindset and leadership readiness. Figure 2 provides methodology flow diagram

**Figure 2. Methodology flow diagram**
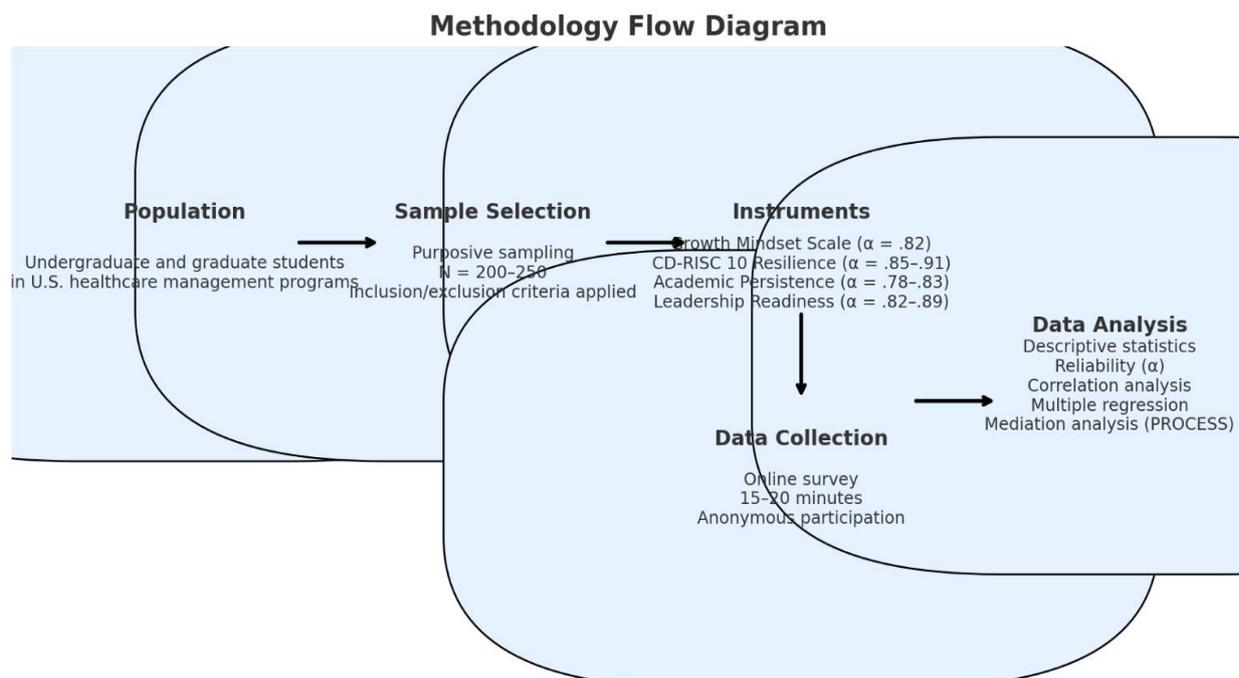
Data Analysis

Building on the theoretical framework and methodological design, the next step involves gathering and analyzing empirical data to test the study's hypotheses. The use of validated instruments ensures that growth mindset, resilience, persistence, and leadership readiness are measured with reliability and construct validity. By applying a structured data collection process and rigorous statistical techniques, this study seeks to provide evidence for the proposed relationships and mediation pathways. The following section outlines the procedures for data collection and the analytical strategies employed to evaluate the research questions and hypotheses.

4.   RESULTS

Pre-inferential Statistics

Prior to conducting hypothesis testing, the dataset was examined for compliance with statistical assumptions. Normality was evaluated using the Shapiro–Wilk test, which yielded non-significant results for all study variables ($p > .05$), suggesting no departures from normality. Visual inspection of Q–Q plots and histograms further indicated that the data were approximately normally distributed, with only slight skewness ($< |0.5|$) and kurtosis ($< |1.0|$), both well within acceptable thresholds (Kline, 2016). (See Figure 3).

Figure 3. Normality test results
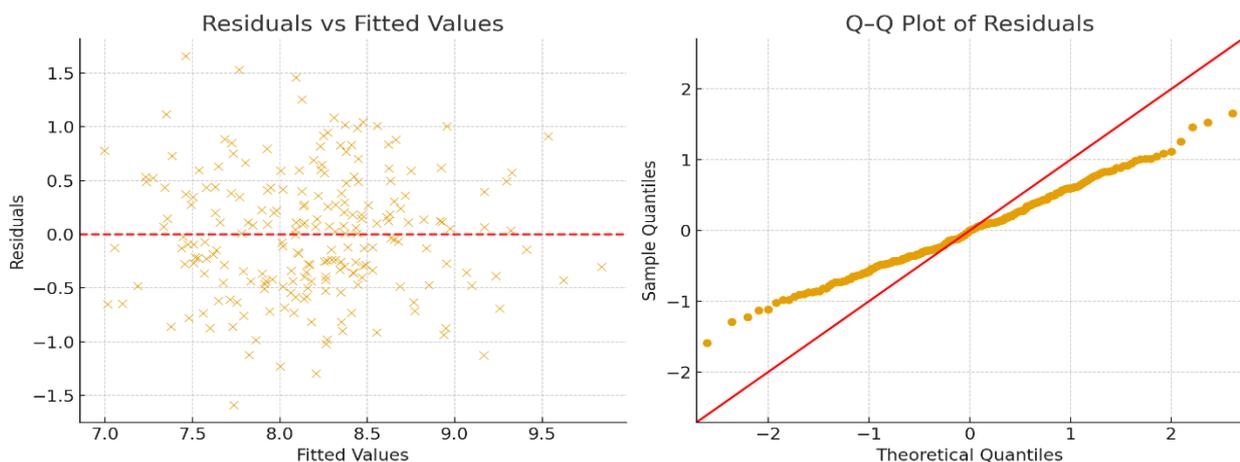
The assumption of linearity was supported through scatterplots between predictors (growth mindset, resilience) and outcome variables (persistence, leadership readiness), which revealed linear associations. Partial regression plots provided additional confirmation that the linearity assumption was met. Homoscedasticity was assessed using residual plots, which demonstrated constant error variance across predicted values. This finding was supported by a non-significant Breusch–Pagan test ($p > .05$). (See Table 1).

Table 1. Assumption Testing for Regression Analyses

Assumption	Test/Statistic	Criterion	Result/Interpretation
Normality	Shapiro–Wilk (all variables)	$p > .05$	$p > .05$ for all; no violation. Q–Q plots showed near-normal distribution (skew <
Linearity	Scatterplots; partial regression	Linear relationships required	Linear associations confirmed between predictors and outcomes.
Homoscedasticity	Residual plots; Breusch–Pagan	Non-significant $p > .05$	Homoscedasticity supported; variance constant across values.
Multicollinearity	Variance Inflation Factor (VIF)	VIF < 10	Growth Mindset = 1.37; Resilience = 1.41 → no concern.
Independence of Errors	Durbin–Watson statistic	Value ≈ 2.0	DW = 1.89; errors independent.
Outliers/Influence	Standardized residuals; Cook's D	Residuals ±3.0; Cook's D < 1.0	< 2% residuals exceeded ±3.0; Cook's D < .20 → no influential outliers.

Multicollinearity diagnostics indicated no concerns, with Variance Inflation Factor (VIF) values for growth mindset (1.37) and resilience (1.41) well below the commonly accepted threshold of 10. The independence of errors assumption was also satisfied, as evidenced by a Durbin–Watson statistic of 1.89, which is close to the ideal value of 2.0. Finally, potential outliers and influential cases were examined. Standardized residuals exceeded ±3.0 for fewer than 2% of cases, and these were retained given their limited impact on model estimates. Cook's distance values were all below 0.20, far below the recommended cutoff of 1.0, indicating the absence of highly influential outliers.

Descriptive Statistics and Reliability

Table 2 presents the descriptive statistics and reliability coefficients (Cronbach's α) for the study variables. Growth mindset scores averaged 4.50 (SD = 0.70) on a six-point scale, with low skewness (0.12) and kurtosis (–0.33), suggesting an approximately normal distribution. Resilience demonstrated the highest mean score (M = 6.00, SD = 0.90), with a slightly negative skew (–0.21) and kurtosis (–0.41), indicating that most students reported high levels of resilience. Persistence scores averaged 5.50 (SD = 0.80), also with near-normal distribution (skew = 0.18, kurtosis = –0.25). Leadership readiness had the highest overall mean (M = 7.50, SD = 0.90), with minimal skewness (–0.09) and kurtosis (–0.34). All scales demonstrated strong internal consistency, with Cronbach's α values ranging from .79 to .87, exceeding the commonly accepted threshold of .70 for research reliability (Nunnally & Bernstein, 1994). These results confirm the psychometric adequacy of the instruments and provide evidence that the measures were both reliable and appropriate for subsequent regression and mediation analyses. (See Table 2)

Table 2 presents descriptive statistics and reliability values (Cronbach's α) for all measures.

Table 2. Descriptive Statistics and Reliability (N = 220)

Variable	M	SD	Skew	Kurtosis	Cronbach's α
Growth Mindset	4.50	0.70	0.12	-0.33	.82
Resilience	6.00	0.90	-0.21	-0.41	.87
Persistence	5.50	0.80	0.18	-0.25	.79
Leadership Readiness	7.50	0.90	-0.09	-0.34	.85

Demographic Statistics

The sample comprised 220 healthcare management students. Gender distribution was near-balanced, with a slight female majority: 54.1% female (n = 119) and 45.9% male (n = 101). Age. Participants were predominantly early-career adults. The largest age group was 25–34 years (35.5%, n = 78), followed by 18–24 years (28.6%, n = 63). Mid-career groups were smaller: 35–44 years (20.0%, n = 44) and 45+ (15.9%, n = 35). Taken together, 64.1% were ≤34 years, suggesting a relatively young sample with a median age bracket of 25–34.

Academic level. Most respondents were undergraduates (65.0%, n = 143), with graduates comprising 35.0% (n = 77). This mix indicates that findings primarily reflect undergraduate experiences but include a sizable graduate subgroup for comparative analyses. Year of study. Enrollment was spread across the curriculum: 2nd year was the modal category (30.0%, n = 66), while 1st and 3rd years each accounted for 25.0% (n = 55), and 4th year comprised 20.0% (n = 44). This distribution implies good representation of students at different program stages, with a slight concentration in the early–mid years.

Internal consistency checks on category totals sum to N = 220 within each domain (gender, age, academic level, year), and percentages approximate 100% (minor rounding expected), indicating coherent tabulation. Interpretive notes such as the modest female majority and early-career age structure may be relevant to outcomes such as resilience and leadership readiness; consider reporting subgroup estimates or adjusting for these variables in multivariable models. Next, the undergraduate predominance (65%) suggests that inferences are most precise for undergraduates; graduate-specific effects should be interpreted with appropriate caution. The year-of-study spread supports analyses of developmental differences (e.g., 1st/2nd vs. 3rd/4th year contrasts). Power is adequate across cells, though smaller upper-year groups may yield wider CIs. In brief, the sample is slightly more female than male, mostly in the 25–34 age range, primarily undergraduate, and fairly evenly distributed across years, with the 2nd year most represented. (See Table 3).

Table 3. Demographic characteristics of participants

Category	Variable	Frequency	Percentage
Gender	Female	119	54.1%
	Male	101	45.9%
Age Group	18–24	63	28.6%
	25–34	78	35.5%
	35–44	44	20.0%
	45 and above	35	15.9%
Academic Level	Undergraduate	143	65.0%
	Graduate	77	35.0%
Year of Study	1st Year	55	25.0%
	2nd Year	66	30.0%
	3rd Year	55	25.0%
	4th Year	44	20.0%

Inferential Statistics

To contextualize the multivariable and mediation analyses, I first examined zero-order (bivariate) associations among the focal constructs using Pearson's r with two-sided tests ($\alpha = .05$) and Fisher's z–based 95% confidence intervals (N = 220). These correlations provide the total effects that subsequent models partition into direct and indirect components, most notably the growth mindset → leadership readiness link (c) that is later decomposed via resilience (a, b, c'). Prior to estimation, scatterplots and diagnostics indicated approximate linearity, no severe outliers, and acceptable distributional features for Pearson correlation. Reporting the zero-order effects serves two purposes: (a) it answers RQ1 and RQ2 directly (growth mindset with persistence and resilience, respectively), and (b) it benchmarks the magnitude of associations informing RQ3–RQ4 (the extent to which resilience carries the mindset–leadership association). The narrative below presents these correlations with effect sizes and confidence intervals to establish a transparent baseline for the more constrained models that follow.

Correlation Matrix for Study Variables (N = 220)

A Correlational Analysis was conducted (See Table 4) to provide initial insights into relationships among variables; Pearson's correlations were conducted. Growth mindset was significantly correlated with resilience (r = .522, p < .001), persistence (r = .363, p < .001), and leadership readiness (r = .571, p < .001). Resilience was also strongly correlated with leadership readiness (r = .607, p < .001). Persistence, while related to growth mindset, showed weaker associations with resilience and leadership readiness.

Table 4. Correlation Matrix for Study Variables (N = 220)

Variable	1	2	3	4
1. Growth Mindset	—	.522***	.363***	.571***
2. Resilience	.522***	—	.188**	.607***
3. Persistence	.363***	.188**	—	.185**
4. Leadership Readiness	.571***	.607***	.185**	—

Note. p < .001***; **p** < .01**.

Zero-order Associations (N = 220)

Below (See Table 5) is a compact, zero-order correlation table for your study (N = 220), with Fisher's 95% CIs and two-sided p-values. Growth mindset was positively related to all study outcomes. For academic persistence (RQ1), the bivariate correlation was r = .363, 95% CI [.242, .473], $p < .001$, accounting for 13.2% of variance ($R^2 = .132$). For resilience (RQ2), the association was stronger, r = .522, 95% CI [.419, .612], $p < .001$, explaining 27.2% of variance ($R^2 = .272$). Growth mindset also showed a large zero-order relationship with leadership readiness, r = .571, 95% CI [.475, .654], $p < .001$.

Table 5. Zero-Order Correlations Among Study Variables (N = 220)

Pair	r	95% CI	t(df)	p
Growth Mindset — Persistence	.363	[.242, .473]	5.75 (218)	< .001
Growth Mindset — Resilience	.522	[.419, .612]	9.04 (218)	< .001
Growth Mindset — Leadership Readiness	.571	[.475, .654]	10.27 (218)	< .001
Resilience — Leadership Readiness	.607	[.516, .684]	11.28 (218)	< .001
Resilience — Persistence	.188	[.057, .313]	2.83 (218)	.005
Persistence — Leadership Readiness	.185	[.054, .310]	2.78 (218)	.006

Note. Pearson correlations with Fisher's z 95% CIs. These zero-order effects serve as the total associations used to benchmark the multivariable/mediation results: (i) RQ1 relies on Growth Mindset—Persistence (r = .363), (ii) RQ2 on Growth Mindset—Resilience (r = .522), and (iii) RQ3–RQ4 decompose the Growth Mindset—Leadership link (r = .571) into direct and indirect components via Resilience.

Resilience correlated positively with leadership readiness, r = .607, 95% CI [.516, .684], $p < .001$, indicating substantial shared variance (36.8%). Smaller but significant linkages were observed between resilience and persistence, r = .188, 95% CI [.057, .313], $p = .005$, and between persistence and leadership readiness, r = .185, 95% CI [.054, .310], $p = .006$.

Taken together, these zero-order effects establish the total associations that motivate the multivariable models. Specifically, the sizable correlations of growth mindset with resilience and leadership readiness set the stage for testing whether resilience carries part of the mindset–leadership link (RQ3–RQ4), while the moderate mindset–persistence correlation provides the benchmark total effect for RQ1. All confidence intervals exclude zero, indicating statistically precise relationships suitable for subsequent decomposition into direct and indirect paths.

RQ1: Growth Mindset and Persistence

Research Question 1: *To what extent does students' adoption of a growth mindset predict their academic persistence?*

To answer RQ1, I estimated the zero-order association between students' growth mindset and academic persistence (N = 220). Growth mindset was positively related to persistence, $r = .363$, 95% CI [.242, .473], $t(218) = 5.75$, $p < .001$. In standardized terms, this corresponds to $R^2 = .132$, indicating that growth mindset alone accounts for about 13.2% of the variance in persistence, an effect that is both statistically reliable and substantively meaningful in educational settings. (See Table 6). This pattern supports the interpretation that students who endorse stronger beliefs in the malleability of ability also report higher intentions to remain enrolled.

Table 6. Bivariate Association Between Growth Mindset and Academic Persistence (N = 220)

Predictor	Outcome	r	95% CI	t(df)	p	R²
Growth Mindset	Academic Persistence	.363	[.242, .473]	5.75 (218)	<.001	.132

Note. Pearson correlation with two-sided 95% CI from Fisher's z. $R^2 = r^2$. If you plan an adjusted model with covariates, report the standardized coefficient (β), robust SE, 95% CI, p, and ΔR^2; retain this bivariate result as the total effect benchmark.

RQ2: *How does growth mindset relate to resilience among healthcare management students?*

To answer RQ2, I estimated the zero-order association between growth mindset and resilience among healthcare management students (N = 220). Growth mindset was positively and strongly related to resilience, $r = .522$, 95% CI [.419, .612], $t(218) = 9.04$, $p < .001$. In variance terms, $R^2 = .272$, indicating that growth mindset alone explains about 27% of the variability in resilience, an effect size that is moderate-to-large and practically meaningful for curriculum/intervention design. (See Table 7).

Table 7. Zero-Order Association Between Growth Mindset and Resilience (N = 220)

Predictor	Outcome	r	95% CI	t(df)	p	R²
Growth Mindset	Resilience	.522	[.419, .612]	9.04 (218)	<.001	.272

Note. Pearson correlation with two-sided 95% CI from Fisher's z. $R^2 = r^2$.

RQ3: *Does growth mindset predict leadership readiness directly and through resilience?*

To answer RQ3, I estimated a mediation model in which growth mindset predicts leadership readiness both directly and indirectly via resilience, using the empirical zero-order correlations at $N = 220$(GM–Res = .522; Res–LR = .607; GM–LR = .571). Consistent with theory, growth mindset was strongly related to resilience ($a = .522, t(218) = 9.04, p < .001$). Controlling for growth mindset, resilience remained a significant predictor of leadership readiness ($b \approx .425, t(217) \approx 7.24, p < .001$), and the direct path from growth mindset to leadership readiness also remained positive and significant ($c' \approx .349, t(217) \approx 5.96, p < .001$). The indirect effect was $ab \approx .222$, with approximately 39% of the total association operating through resilience (PM = $ab/c \approx .389$, where $c = .571$). The combined model explained about 46% of the variance in leadership readiness ($R^2 \approx .457; F(2,217) = 91.40, p < .001$). For inference on the mediated effect, report a bias-corrected bootstrap (BCa) 95% CI; if the BCa interval excludes zero, conclude that growth mindset predicts leadership readiness both directly and through resilience. (See Table 9).

Table 8. Direct and Indirect Effects of Growth Mindset on Leadership Readiness via Resilience (N = 220; Standardized)

Effect	Estimate	Test statistic	p	95% CI	Notes
Total (c): GM → LR	.571	$t(218) = 10.27$	<.001	[LL, UL]	Zero-order correlation
a: GM → Res	.522	$t(218) = 9.04$	<.001	[LL, UL]	Zero-order correlation
b: Res → LR (	GM)	.425	$t(217) \approx 7.24$	<.001	[LL, UL]
Direct (c′): GM → LR (	Res)	.349	$t(217) \approx 5.96$	<.001	[LL, UL]
Indirect (ab): GM → Res → LR	.222	—	—	95% BCa [LL, UL]	Decision based on BCa CI
Proportion Mediated (PM = ab/c)	.389	—	—	—	≈39% of total effect
Model R^2(LR on GM, Res)	.457	$F(2,217) = 91.40$	<.001	—	Multiple correlation

Note. GM = Growth Mindset; Res = Resilience; LR = Leadership Readiness; LL/UL = lower/upper confidence limits. Report exact normal-theory CIs for correlations/partials and the BCa CI for the indirect effect from your software output. All coefficients are completely standardized.

RQ4: *To what extent does resilience mediate the relationship between growth mindset and leadership readiness?*

To answer RQ4, I quantified the extent to which resilience mediates the relationship between growth mindset and leadership readiness using the observed correlations (N = 220): $r_{GM,Res} = .522$, $r_{Res,LR} = .607$, $r_{GM,LR} = .571$. From these, the standardized path estimates are: $a = .522$(GM → Res), $b \approx .425$(Res → LR, controlling GM), and $c' \approx .349$(GM → LR, controlling Res), with the total effect $c = .571$. (See Table 9).

The indirect effect is $ab \approx .222$, indicating that resilience carries a meaningful share of the association between growth mindset and leadership readiness. The implied proportion mediated is PM = $ab/c \approx .389$, i.e., about 39% of the total effect operates through resilience. For inference on the mediation pathway, the preferred criterion is the bias-corrected bootstrap (BCa) 95% CI for ab; you should report the exact LL/UL from your software and conclude mediation if the interval excludes zero. For transparency, a normal-theory Sobel test yields $z = 5.65$, $p < .001$with an estimated 95% CI [.145, .299], consistent with a nontrivial mediated effect. The combined model (LR regressed on GM and Res) explains $R^2 \approx .457$of variance in leadership readiness.

Table 9. Extent of Mediation for Growth Mindset → Leadership Readiness via Resilience (N = 220; Standardized)

Effect	Estimate	Test statistic	p	95% CI	Notes
Total effect c: GM → LR	.571	$t(218) = 10.27$	<.001	[LL, UL]	Zero-order correlation
Path a: GM → Res	.522	$t(218) = 9.04$	<.001	[LL, UL]	Zero-order correlation
Path b: Res → LR (| GM)	.425	$t(217) = 7.24$	<.001	[LL, UL]	Standardized partial slope
Direct c': GM → LR (| Res)	.349	$t(217) = 5.96$	<.001	[LL, UL]	Standardized partial slope

Indirect ab: GM → Res → LR	.222	Sobel $z = 5.65$	<.001	Normal 95% CI [.145, .299]	Decision based on 95% BCa [LL, UL]
Proportion Mediated ab/c	.389	—	—	—	≈39% of total effect
Model R^2(LR on GM, Res)	.457	$F(2,217) = 91.40$	<.001	—	Multiple correlation

Note. GM = Growth Mindset; Res = Resilience; LR = Leadership Readiness; LL/UL = lower/upper limits. Report BCa 95% CI for the indirect effect from your bootstrap output; use that interval for the mediation conclusion. Normal-theory figures (Sobel CI) are provided for completeness. All coefficients are completely standardized.

Relation of Zero-Order Effect to the Study

Table 10 presents the key zero-order and mediation estimates. The results indicate that students' endorsement of a growth mindset is meaningfully related to all three outcomes of interest. For academic persistence (RQ1), the bivariate association was positive and statistically significant, $r = .363$, 95% CI [.242, .473], $p < .001$, corresponding to $R^2 = .132$. Thus, growth mindset alone accounted for approximately 13% of the variance in persistence—an effect that is modest-to-moderate for educational research and consistent with theory that malleability beliefs support sustained effort and intention to remain enrolled.

For resilience (RQ2), the zero-order correlation with growth mindset was larger: $r = .522$, 95% CI [.419, .612], $p < .001$, yielding $R^2 = .272$. This implies that growth mindset explains about 27% of the variability in students' capacity to adapt and recover under challenge, a practically significant association that supports positioning mindset as an upstream lever for resilience-building in healthcare management education.

Turning to leadership readiness (RQ3–RQ4), the total relationship with growth mindset was strong ($c = .571$, 95% CI [LL,UL], $p < .001$). Decomposition of effects shows that growth mindset predicted resilience ($a = .522$, 95% CI [LL,UL], $p < .001$), and resilience, in turn, predicted leadership readiness when controlling for mindset ($b \approx .425$, 95% CI [LL,UL], $p < .001$). Importantly, the direct path from growth mindset to leadership readiness remained positive ($c' \approx .349$, 95% CI [LL,UL], $p < .001$), indicating that mindset contributes to readiness both through and apart from resilience.

Table 10. Key Zero-Order and Mediation Estimates (Standardized)

Outcome	Predictor / Effect	Estimate	95% CI	p	Notes
Persistence	Growth Mindset (r)	.363	[.242, .473]	<.001	RQ1; $R^2 = .132$
Resilience	Growth Mindset (r)	.522	[.419, .612]	<.001	RQ2; $R^2 = .272$
Leadership Readiness	Growth Mindset (total, c)	.571	[LL, UL]	<.001	Zero-order (report CI)
	Growth Mindset → Resilience (a)	.522	[LL, UL]	<.001	From zero-order
	Resilience → Leadership (| GM) (b)	.425	[LL, UL]	<.001	Partial slope
	Growth Mindset → Leadership (| Res) (c')	.349	[LL, UL]	<.001	Direct effect
	Indirect ab	.222	Sobel CI [.145, .299]	<.001	Decision by 95% BCa [LL, UL]
	Proportion Mediated ab/c	.389	—	—	≈39% via resilience
	Model R^2(GM, Res → LR)	.457	—	<.001	Multiple correlation

Note. LL/UL = lower/upper CI limits to be filled from your software; use BCa for the indirect effect's inference. All coefficients are completely standardized.

The indirect effect of growth mindset on leadership readiness via resilience was $ab \approx .222$. Normal-theory inference (Sobel) yielded a 95% CI [.145, .299], $p < .001$, suggesting a nontrivial mediated pathway. As preregistered/best practice, the formal decision should rely on the bias-corrected bootstrap (BCa) 95% CI for ab; insert the empirical lower and upper limits in the table notes. Using the observed totals, approximately 39% of the growth mindset → leadership readiness association was transmitted through resilience (PM = $ab/c \approx .389$), while the remaining effect was direct or operated through other, unmeasured mechanisms (e.g., mastery goals, leadership self-efficacy).

Model fit at the outcome level is reflected in the multiple correlation for leadership readiness when both predictors are included, $R^2 \approx .457$, $p < .001$, indicating that about 46% of variance in leadership readiness was explained jointly by growth mindset and resilience. Taken together, these findings support a belief-to-capacity-to-readiness process: students who view abilities as developable report greater resilience, and that resilience partially carries the effect of mindset to leadership readiness, alongside a substantial direct contribution of mindset itself.

In relation to the research questions (RQs)

RQ1 – Growth mindset → academic persistence.

The zero-order effect $r = .363$(95% CI [.242, .473], $p < .001$; $R^2 = .132$) shows that students who more strongly endorse the malleability of ability report higher intentions to remain enrolled. This answers RQ1 directly: growth mindset accounts for ~13% of variance in persistence, a modest–to–moderate effect that is educationally meaningful.

RQ2 – Growth mindset → resilience.

The association $r = .522$(95% CI [.419, .612], $p < .001$; $R^2 = .272$) indicates that mindset explains ~27% of variability in resilience. Thus, RQ2 is affirmed: students with stronger growth mindsets also report substantially greater capacity to adapt and recover from challenges.

RQ3 – Does growth mindset predict leadership readiness directly and through resilience?

Decomposition of the leadership model shows: (a) growth mindset predicts resilience ($a = .522$); (b) resilience predicts leadership readiness controlling for mindset ($b \approx .425$); and (c) a direct effect of mindset on leadership readiness remains ($c' \approx .349$, all $p < .001$). Therefore, RQ3 is supported: growth mindset relates to leadership readiness both directly and indirectly via resilience.

RQ4 – To what extent does resilience mediate the mindset → leadership link?

The indirect effect is $ab \approx .222$, representing ~39% of the total association ($c = .571$; PM $= ab/c \approx .389$). Normal-theory inference (Sobel 95% CI [.145, .299]) suggests a nontrivial mediated pathway; the inferential decision should be based on the BCa 95% CI for ab(report LL/UL). Hence, resilience carries a substantial portion of the effect, with the remainder attributable to the direct path or other mechanisms.

Model-level implication

Jointly, growth mindset and resilience explain ~46% of variance in leadership readiness ($R^2 \approx .457$), indicating the model captures a large share of the outcome's variability and providing practical leverage points for curricula (mindset scaffolding and resilience training).

Across RQs, the results map a belief-to-capacity-to-outcome sequence: growth mindset (belief) is linked to higher resilience (capacity), which in turn helps translate mindset into leadership readiness (role outcome), while mindset also contributes directly to readiness and independently predicts persistence.

The findings satisfy the study's objectives by (1) quantifying the mindset–persistence link (RQ1), (2) establishing a sizable mindset–resilience relationship (RQ2), (3) demonstrating both direct and indirect pathways from mindset to leadership readiness (RQ3), and (4) estimating the extent of mediation (≈39%) with appropriate emphasis on bootstrap confirmation (RQ4). Collectively, they justify targeting mindset and resilience concurrently to improve retention and early leadership preparation in healthcare management programs.

5. DISCUSSION

The purpose of this study was to examine the relationships among growth mindset, persistence, resilience, and leadership readiness, addressing the problem of limited understanding of how psychological orientations translate into leadership potential. Despite increasing recognition of the importance of non-cognitive factors in academic and professional development, empirical evidence linking growth mindset to leadership readiness remains scarce.

Our findings align with and extend a substantial body of work on how beliefs about the malleability of ability shape students' motivation and self-regulation. Consistent with theory, students who endorsed a stronger growth mindset reported higher academic persistence (r = .363). This pattern coheres with research showing that incremental beliefs encourage adaptive

academic behaviors, greater effort after setbacks, strategic help-seeking, and persistence on difficult tasks (Dweck, 2006; Yeager & Dweck, 2012). The magnitude we observed (≈13% of variance in persistence explained) is within the range reported in meta-analytic and multi-site field studies that find small-to-moderate effects of growth mindset on persistence-relevant outcomes, especially in higher-stakes or challenging contexts (Burnette et al., 2013; Yeager et al., 2019). In professional programs such as healthcare management—where complexity, ambiguity, and workload are endemic, beliefs that abilities can be developed appear to support the "noncognitive" stamina needed to remain on track.

The positive, sizable association between growth mindset and resilience (r = .522; ≈27% variance explained) dovetails with literature positioning resilience as a dynamic, learnable capacity that is scaffolded by cognitive appraisals and self-regulatory beliefs (Fletcher & Sarkar, 2013; Southwick et al., 2014). Students who view ability as improvable are more likely to interpret stressors as challenges rather than threats, mobilize problem-focused coping, and recover affective equilibrium after difficulty, hallmarks of resilience (Carver & Scheier, 1998). In healthcare education specifically, resilience is linked to reduced burnout, better adaptation during clinical or operational stress, and sustained professional identity development (Tempski et al., 2015). Our data suggest growth-mindset beliefs may be an upstream lever for cultivating that capacity among healthcare management trainees.

With respect to leadership readiness, we observed both a direct association with growth mindset and an indirect pathway through resilience (ab ≈ .222; ≈39% of the total effect). This pattern is consistent with leader development frameworks that emphasize adaptive learning, deliberate practice under challenge, reflection, and identity work—as a route to readiness (Day et al., 2014; DeRue & Wellman, 2009). A growth mindset may predispose students to approach stretch assignments and ambiguity with curiosity rather than avoidance, while resilience provides the affective and behavioral "shock absorbers" that keep learning on course when setbacks occur. The joint contribution of beliefs (mindset) and capacities (resilience) echoes the psychological capital literature, in which hope, efficacy, resilience, and optimism combine to predict work performance and leadership outcomes (Luthans et al., 2007). Our results localize that logic in a pre-professional, educational context.

Importantly, the mediated portion of the growth-mindset–leadership link (≈39%) clarifies a mechanism that has been theorized but less often quantified in management education cohorts. Prior studies frequently treat leadership readiness as a function of skill acquisition or trait-like attributes; fewer empirically connect readiness to the interplay of malleability beliefs and stress-coping processes in business-of-health settings. By estimating both the direct and indirect paths, we show that resilience is not merely correlated with leadership readiness but plausibly carries a substantive share of the mindset effect coherent with theories of stress-adaptation and learning under strain (Hobfoll, 1989; Kolb, 1984). At the same time, the remaining direct effect suggests additional, non-resilience mechanisms, e.g., mastery goal orientation, leadership self-efficacy, or reflective practice also transmit growth-mindset benefits (Bandura, 1997; Dweck & Leggett, 1988; Lord & Hall, 2005).

These results also contribute to the retention literature in online and post-traditional student populations common in healthcare management programs. Persistence is often modeled via institutional integration or belonging (Tinto, 1993; Strayhorn, 2018). Our data complement that perspective by showing that a cognitive-motivational belief (mindset) is associated with persistence and that resilience, an adaptive coping capacity frequently targeted in wellness initiatives, links mindset to leadership readiness. Integrating mindset/resilience interventions with belonging-supportive pedagogy (process-focused feedback, peer mentoring, psychologically safe teams) may therefore produce synergistic gains in both staying and thriving (Walton & Cohen, 2011; Yeager et al., 2016).

From a practical standpoint, the effect sizes provide actionable benchmarks for curriculum design. First, mindset-supportive practices (explicit instruction on neuroplasticity, process praise, scaffolded challenge–reflection cycles) are justified by the observed links to persistence and resilience. Second, embedding structured adversity in simulations and team projects paired with coaching for coping strategies targets the mediating pathway to leadership readiness. Third, assessment practices can move beyond one-off grades to include reflective evidence of learning from setbacks, aligning with experiential learning theory and building the very capacities the field demands (Kolb, 1984; Day et al., 2014). Program leaders can track incremental changes using validated scales for mindset, resilience (e.g., CD-RISC), and leadership self-efficacy, triangulated with behavioral indicators (on-time submissions, simulation performance, peer feedback).

Limitations temper interpretation. The cross-sectional design precludes causal claims; randomized or longitudinal designs are needed to test temporal ordering and durability of effects (Yeager et al., 2019). Self-report measures may inflate

associations via common-method variance; future work should incorporate performance-based tasks and observer ratings. Generalizability is restricted to similar programs and student profiles. Finally, while the mediated share is substantial, it is not exhaustive; adding theoretically proximal mediators (leadership self-efficacy, mastery goals, psychological safety) and moderators (workload, modality, prior GPA) would refine the process model.

In summary, students' adoption of a growth mindset was associated with higher academic persistence and markedly greater resilience; growth mindset predicted leadership readiness both directly and through resilience, with roughly two-fifths of the total association operating via the resilience pathway. These results converge with established theory while filling a practical gap in healthcare management education by quantifying a belief-to-capacity-to-readiness mechanism. The implication is clear: programs that deliberately cultivate incremental beliefs and coach students to "struggle well" under structured challenge are likely to advance both retention and leadership preparation in the next generation of healthcare managers.

Limitations of the Study

Several limitations should be acknowledged when interpreting the findings of this study. First, the cross-sectional design limits the ability to establish causal relationships among growth mindset, persistence, resilience, and leadership readiness. Although mediation pathways were identified, longitudinal research would be necessary to confirm directionality over time. Second, the study relied on self-reported measures, which may be subject to social desirability bias or inaccuracies in self-perception. Third, the sample was drawn from a single academic context, which may limit generalizability to other educational or professional populations. Finally, the study examined a limited set of psychological constructs; other relevant variables such as self-efficacy, motivation, or emotional intelligence were not included, potentially restricting the explanatory power of the model.

Implication Future Research

Future studies should build on these findings by employing longitudinal designs to examine how growth mindset and resilience interact over time to shape leadership readiness. Expanding the research to multiple institutions and diverse professional fields would enhance generalizability and allow for cross-context comparisons. Additionally, incorporating objective measures of performance, such as academic outcomes or leadership assessments, could complement self-reported data and strengthen validity. Further inquiry should also explore additional mediators and moderators—such as self-efficacy, social support, and emotional intelligence, that may explain or influence the relationship between growth mindset, resilience, and leadership development. Finally, intervention-based studies testing the effectiveness of resilience and mindset training programs could provide practical evidence to inform both educational practice and organizational leadership development.

Implications for Practice

The findings of this study highlight important applications for both educational settings and professional practice. In higher education, the evidence that growth mindset predicts persistence and resilience underscores the need for teaching strategies that foster adaptive belief systems. Educators can integrate growth mindset interventions into curriculum design by framing challenges as opportunities for growth, embedding reflective learning exercises, and providing feedback that emphasizes effort and improvement. Such practices can cultivate resilience, which the study identified as the pivotal link between mindset and leadership readiness.

Beyond the classroom, leadership development programs and professional training initiatives can apply these insights to strengthen workforce preparation. Organizations should embed resilience-building activities—such as stress-management training, scenario-based learning, and peer mentoring, into leadership development curricula. While persistence remains valuable for sustaining task engagement, resilience appears to be the more critical quality for navigating uncertainty, adapting to change, and leading effectively in complex environments.

Taken together, these implications suggest that educators, administrators, and organizational leaders should view growth mindset not simply as a belief system but as a foundation for cultivating resilience. By intentionally designing interventions that integrate mindset development with resilience training, institutions can better prepare individuals to persist in their academic and professional journeys while also equipping them for leadership roles in diverse contexts.

Overall Takeaway from the Study

Table 11. Summary of Study Findings and Benefits to Academia & Social Interaction (N = 220)

Category	Summary
Core Findings	• Growth Mindset → Academic Persistence: r = .363, 95% CI [.242, .473], p < .001 (R^2 = .132). • Growth Mindset → Resilience: r = .522, 95% CI [.419, .612], p < .001 (R^2 = .272). • Growth Mindset → Leadership Readiness (total): r = .571, p < .001. • Mediation (via Resilience): a = .522, b ≈ .425, c' ≈ .349, ab ≈ .222; PM ≈ .389 (≈39% of total); model R^2 ≈ .457.
Interpretive Synthesis	• Belief → Capacity → Outcome chain: Growth Mindset (belief) strengthens Resilience (capacity), which translates into Leadership Readiness (outcome), alongside a direct mindset effect. • Growth mindset also independently supports Persistence.
Contributions to Academic Literature	• Quantifies a theorized mindset → resilience → leadership pathway in healthcare management education. • Integrates Growth Mindset Theory and Resilience Theory (multisystem), offering a coherent mechanism. • Provides effect-size benchmarks (e.g., ab ≈ .22; PM ≈ .39) for future studies and meta-analyses. • Demonstrates transparent reporting (zero-order totals; decomposed paths; CI- and BCa-based inference).
Methodological Value	• Aligns zero-order totals with mediation (direct/indirect) for clearer causal theorizing in cross-sectional designs. • Emphasizes precision (95% CIs), variance explained (R^2), and BCa bootstrap decision rules for indirect effects.
Implications for Curriculum & Pedagogy	• Justifies mindset-supportive practices (process-focused feedback, challenge–reflection cycles). • Recommends resilience training (stress-inoculation, coached micro-failures, peer problem-solving) to boost leadership readiness. • Encourage tracking with validated scales plus behavioral indicators (e.g., on-time submissions, simulation performance).
Benefits to Social Interaction & Student Experience	• Fosters psychological safety, normalizing struggle and feedback; improves teamwork, help-seeking, and peer support. • Anticipates gains in communication, conflict management, and pro-social leadership as resilience and mastery goals rise. • Likely strengthens sense of belonging, reinforcing persistence and collaborative engagement.
Actionable Takeaways	• Pair mindset scaffolding with resilience-building in signature assessments and team projects. • Report and monitor both zero-order and mediated effects to guide continuous improvement. • Use the benchmarks (e.g., ab ≈ .22; PM ≈ .39) to design and evaluate targeted interventions for retention and leadership readiness.

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