

Mapping the Evidence on Psychological Capital Among Doctoral Students: A Scoping Review

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Doctoral education places significant psychological demands on students. Psychological Capital (PsyCap) has emerged as a relevant resource in this context. However, existing studies remain fragmented across disciplines, geographic contexts, and theoretical frameworks. To the authors' knowledge, this scoping review is the first to focus specifically on PsyCap among doctoral students. It mapped the available evidence addressing four research questions concerning the current state of research, associated outcomes, theoretical positioning, and remaining gaps. Five databases were searched systematically following PRISMA-ScR guidelines. Twenty studies met the inclusion criteria. PsyCap was consistently associated with key doctoral outcomes including academic performance, engagement, creativity, research productivity, and psychological well-being. PsyCap functioned most commonly as a predictor, followed by mediator, and least commonly as an outcome. The supervisory relationship emerged as the most consistently identified correlate of PsyCap levels. Geographic concentration in China, dominance of cross-sectional designs, and limited intervention-based research represent the most significant gaps. These findings suggest PsyCap is a meaningful psychological resource across diverse doctoral contexts. Supervisors, graduate schools, and doctoral support units can draw on this evidence to design support that attends to the psychological dimensions of doctoral education.

INTRODUCTION

Doctoral education is a uniquely demanding academic journey. Candidates face prolonged uncertainty, intellectual isolation, and high-stakes performance expectations over extended periods (Pretorius, 2024; Sibomana, 2021). These conditions take a measurable psychological toll. Doctoral students report significantly higher rates of anxiety and

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depression compared to the general population (Barry et al., 2018; Solms et al., 2024). Completion rates also remain a persistent concern worldwide. Structural barriers, supervisory challenges, and psychological distress are among the most commonly cited contributors to attrition and delayed completion (Amani et al., 2022; Mkhai, 2023; Waswa et al., 2020).

Interest in positive psychological resources has grown in response to these challenges. One such resource is Psychological Capital (PsyCap), a higher-order construct built on four dimensions: hope, efficacy, resilience, and optimism, collectively referred to by the acronym HERO (Luthans & Avolio, 2014; Luthans & Youssef-Morgan, 2017). PsyCap reflects an individual's positive psychological state of development. Crucially, it is treated as a state-like and malleable resource rather than a fixed personality trait (Luthans, 2012; Youssef-Morgan, 2024). This means PsyCap can be cultivated through targeted interventions, which makes it especially relevant for educational support design (Meyers et al., 2015; Solms et al., 2025).

Empirical evidence on PsyCap in higher education has grown substantially. A systematic review of 43 studies confirmed that PsyCap is positively associated with key academic outcomes among university students, including performance, engagement, and well-being (Li et al., 2023). A bibliometric analysis of 412 publications further documented the growing scholarly attention to PsyCap within higher education institutions, identifying research clusters around mental health, academic achievement, and career transitions (Zhang et al., 2024). PsyCap has been linked to academic engagement (Gomez-Borges et al., 2023; K. W. Luthans et al., 2016; Siu et al., 2014), academic achievement (Carmona-Halty et al., 2019; Datu et al., 2018), and subjective well-being (Cao, Zhang, et al., 2024; Datu & Valdez, 2019). It also functions as a mediating resource between institutional support and student outcomes (Nielsen et al., 2017). Students with higher PsyCap tend to manage academic stress more effectively and sustain motivation under pressure (Ortega-Maldonado & Salanova, 2018). However, these reviews treat university students as a homogeneous group. Doctoral students are not examined as a distinct population, which limits the applicability of existing findings to the doctoral context.

Doctoral students represent a distinct population that warrants dedicated investigation. Unlike undergraduate or taught postgraduate students, doctoral candidates are expected to produce an original contribution to knowledge, a demand that fundamentally shapes their psychological experience (Sibomana, 2021). They operate with considerable autonomy yet within a structure of singular supervisory dependency, where the quality of one relationship can determine the trajectory of years of work (Amani et al., 2022; Mkhai, 2023). Extended timelines and ambiguous milestones create conditions of prolonged uncertainty that are qualitatively different from those faced in coursework-based programs (Pretorius, 2024; Waswa et al., 2020). Doctoral study also involves a fundamental identity transition – from student to emerging scholar – that carries its own psychological weight (Sibomana, 2021). These distinctive features suggest that findings from general student populations may not transfer directly to doctoral contexts, and that PsyCap research in this population merits its own synthesis.

While a growing body of work has begun to examine PsyCap specifically in doctoral contexts, these studies remain scattered across disciplines, geographic settings, and theoretical frameworks, with no consolidated synthesis of what is known. A scoping review is well-suited to address this gap. It is designed to map the breadth of an emerging literature, clarify key concepts, and surface areas for further inquiry (Arksey & O'Malley, 2005; Peters et al., 2021). To the authors' knowledge, no prior scoping review has synthesized PsyCap research specifically among doctoral students.

This review is guided by four research questions. RQ1: What is the current state of research on PsyCap among doctoral students? RQ2: What outcomes are associated with PsyCap in doctoral education? RQ3: What is the theoretical positioning of PsyCap in doctoral education research — as a predictor, mediator, or outcome? RQ4: What gaps remain in the literature on PsyCap among doctoral students? Together, these questions aim to produce a structured synthesis of available evidence and to identify directions for future research.

This review carries both theoretical and practical significance. Theoretically, it extends the application of positive organizational behavior beyond its original workforce context and deepens understanding of psychological resources in high-demand academic settings. Practically, the findings can inform intervention design for doctoral programs. Examples include progress-oriented workshops (Prieto et al., 2022) and PsyCap-based training programs (Solms et al., 2025). At a time when doctoral attrition and student mental health are receiving unprecedented institutional attention (Ganesh et al., 2024; Hermana et al., 2025), a strengths-based lens grounded in PsyCap offers a constructive framework for supporting doctoral candidate success.

Psychological Capital

PsyCap emerged from the field of Positive Organizational Behavior (POB), a framework that studies positively oriented psychological capacities that are measurable, developable, and manageable for performance improvement (Luthans & Youssef-Morgan, 2017). PsyCap represents the fourth generation of capital structures, extending beyond economic, human, and social capital to capture who a person is in terms of their psychological state and development potential (Luthans & Avolio, 2014; Nguyen et al., 2024). The construct integrates four psychological resources — hope, efficacy, resilience, and optimism — that individually have strong theoretical and empirical foundations, and that together form a higher-order composite with synergistic effects on performance and well-being.

The four dimensions are collectively referred to by the acronym HERO. Each contributes distinctly to the composite. Hope involves both goal-directed energy and the ability to generate alternative pathways when obstacles arise. Efficacy, or self-efficacy, reflects an individual's confidence in their ability to mobilize resources and take the actions needed to succeed at specific tasks. Resilience captures the capacity to bounce back from setbacks and challenges. Optimism reflects a tendency to attribute positive outcomes to stable internal causes and negative outcomes to temporary external ones (Luthans et al., 2007; Stange, 2020).

When combined, these four dimensions produce effects that exceed what any single dimension predicts alone (Cao, Li, et al., 2024; Jaffu et al., 2024). This synergistic quality arises because each HERO dimension addresses a different psychological demand – hope sustains goal pursuit, efficacy drives task engagement, resilience enables recovery from setbacks, and optimism maintains positive expectancy – such that the composite captures a breadth of psychological functioning that no single dimension achieves in isolation (Luthans et al., 2007; Luthans & Youssef-Morgan, 2017). Understanding how PsyCap is conceptualized theoretically also requires attention to how it is measured in practice.

The measurement of PsyCap has been primarily operationalized through the Psychological Capital Questionnaire (PCQ-24), developed and validated by Luthans et al. (2007). Academic adaptations of the PCQ have also been developed to better reflect the educational context, adjusting item language to suit academic rather than workplace settings while retaining the same four-factor structure (Li et al., 2023). Nguyen et al. (2024) note that while the PCQ remains the dominant measurement tool, researchers have raised concerns about common method variance in single-source, cross-sectional data, and have called for alternative measurement approaches including other-rated and longitudinal designs. These methodological debates remain unresolved and represent an important consideration for interpreting findings across studies in this review.

METHOD

This scoping review was conducted following the methodological framework outlined by Arksey & O'Malley (2005), and enhanced by subsequent guidelines provided by Levac et al. (2010) and the PRISMA extension for Scoping Reviews (Tricco et al., 2018). The aim was to systematically map the available literature on PsyCap among doctoral students and to identify key concepts, knowledge gaps, and future research opportunities.

Eligibility Criteria

The inclusion criteria were structured around the Population–Concept–Context (PCC) framework. Eligible studies included: (1) participants who were doctoral students (PhD or equivalent) or postgraduate students enrolled in research-oriented degree programs; (2) a primary focus on PsyCap; and (3) a context relevant to academic, educational, or psychological experiences in doctoral or postgraduate education. The inclusion of postgraduate students beyond the doctoral level was intentional, given the structural similarities in research demands, supervisor dependency, and extended academic timelines that characterize research-oriented postgraduate programs. Where studies sampled mixed postgraduate populations without isolating doctoral students, findings were interpreted with appropriate caution and the sample composition is noted in Table 2. Empirical studies employing quantitative, qualitative, or mixed-methods approaches were included. Only studies published in English were considered, with no time restriction.

Information Sources and Search Strategy

The following electronic databases were searched: Scopus, Web of Science, PsycINFO, ERIC, and ProQuest Dissertations & Theses Global. In addition, Google Scholar and backward citation tracking of included studies were used to identify grey literature and additional sources. Grey literature was identified opportunistically through Google Scholar, with the first 10 pages of results screened. This cutoff was applied based on the observed decline in result relevance beyond this threshold, which is consistent with common practice in scoping review methodology. Additional sources were identified through backward citation tracking of included studies.

The search terms included combinations of the following keywords: ("psychological capital" OR "PsyCap") AND ("doctoral student*" OR "PhD student*" OR "postgraduate student*" OR "doctoral program*" OR "PhD program*"). The inclusion of "postgraduate student*" was deliberate, as research-oriented postgraduate programs share core structural features with doctoral education—including supervisor dependency, self-directed inquiry, and extended academic timelines—that make PsyCap particularly relevant as a psychological resource. Search strategies were customized for each database and applied systematically using Boolean operators (AND, OR), with field codes adapted to each database's requirements. Database searches were conducted between August and December 2025. The complete search strings and the number of records retrieved from each source are presented in Table 1.

Table 1 Search Strings and Records Retrieved by Database

Database	n	Search String	Notes / Limiters
Scopus	38	("psychological capital" OR "PsyCap") AND ("doctoral student*" OR "PhD student*" OR "postgraduate student*" OR "doctoral program*" OR "PhD program*"))	Document Type: Article
Web of Science	21	("psychological capital" OR "PsyCap") AND ("doctoral student*" OR "PhD student*" OR "postgraduate student*" OR "doctoral program*" OR "PhD program*"))	Document Type: Article
EBSCO (PsycINFO)	6	("psychological capital" OR "PsyCap") AND ("doctoral student*" OR "PhD student*" OR "postgraduate student*" OR "doctoral program*" OR "PhD program*"))	Source Type: Academic Journal
ERIC	18	("psychological capital" OR "PsyCap") AND ("doctoral student*" OR "PhD student*" OR "postgraduate student*" OR	Article Type: Research Article

Database	n	Search String	Notes / Limiters
Google Scholar	22	"doctoral program*" OR "PhD program*") ("psychological capital" OR "PsyCap") AND ("doctoral students" OR "PhD students" OR "postgraduate student" OR "doctoral program" OR "PhD program")	Iterative search; first 10 pages screened

Selection of Sources of Evidence

Prior to independent screening, the two reviewers conducted a calibration exercise to align interpretation of the eligibility criteria. All records retrieved from the databases were imported into Zotero for de-duplication, and then uploaded to Rayyan for screening. Two reviewers independently screened titles and abstracts according to the predefined inclusion criteria, recording their decisions and notes within Rayyan. Full-text screening was also conducted independently by both reviewers. Disagreements were resolved through consensus discussion between the two reviewers, with escalation to a third reviewer in unresolved cases.

A total of 105 records were identified from five databases (Scopus, $n = 38$; Web of Science, $n = 21$; EBSCO, $n = 6$; ERIC, $n = 18$; Google Scholar, $n = 22$). Following importation into Zotero, 30 duplicate records were removed (28 by human review and 2 by automated tools), yielding 75 records for screening. Title and abstract screening excluded 11 records as irrelevant, leaving 64 reports sought for retrieval. Of these, 23 reports were not retrieved as their focus was not on PsyCap, leaving 41 reports assessed for full-text eligibility. Following full-text review, 21 reports were excluded as research participants were not doctoral students. A final set of 20 studies met the inclusion criteria and were included in this review. The complete selection process is illustrated in Figure 1 (PRISMA-ScR flow diagram).

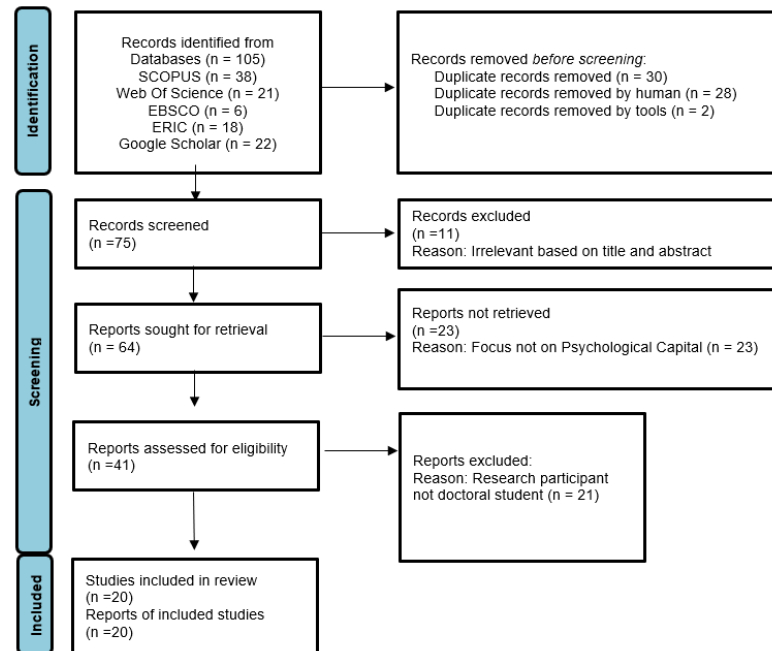


Figure 1. PRISMA-ScR flow diagram

Data Charting Process

A standardized data extraction form was developed to guide the charting of information from each included study. The form was refined iteratively during the initial review of a subset of articles to ensure it adequately captured the information needed to address the research questions. The final form extracted the following information from each study: authors and year of publication, title, country, participant characteristics and sample size, role of PsyCap (as predictor, mediator, or outcome), associated variables, key findings, and research gaps. Data were extracted by the primary reviewer and cross-checked by the second reviewer to ensure accuracy and consistency.

Synthesis of Results

The data were synthesized narratively. Descriptive counting was used to summarize the distribution of studies by geographic context, methodological design, and theoretical positioning of PsyCap. Thematic analysis was conducted to identify common patterns across outcomes, associated variables, and research gaps. The findings were organized according to the four research questions. A PRISMA-ScR flow diagram was used to illustrate the study selection process.

RESULTS

A total of 20 studies met the inclusion criteria and were included in this scoping review. The studies spanned multiple geographic contexts, methodological designs, and disciplinary backgrounds. The characteristics of all included studies are presented in Table 2.

Table 2 Characteristics of Included Studies

No.	Author (Year) Title	Country	Sample (N)	Role of PsyCap	IV/ Antecedent	DV/ Outcome	Key Finding
1	Deroncel e-Acosta et al. (2025) Women's mental health in the doctoral context: Protective function of PsyCap and academic motivation	Peru	108 female doctoral students	Predict or	PsyCap, academic motivation	Academic performance, well-being	PsyCap predicted academic performance; intrinsic motivation was a key protective factor
2	Cao et al. (2024) What Matters in PhD Students' Creativity ? The Roles of Academic PsyCap and Academic Engagement	China	376 PhD students	Predict or	Academic PsyCap, academic engagement	Creativity (novelty, usefulness)	Self-efficacy, resilience, optimism predicted creativity novelty; all HERO dimensions predicted usefulness
3	Liu et al. (2020) What affects PhD student creativity in China? A case study from the Joint Training Pilot Project	China	201 PhD students	Mediator	University social capital	Creativity	PsyCap partially mediated social capital and doctoral creativity; industry social capital had no direct effect
4	Hermana et al. (2025) The Ripple Effects of Toxic Supervision on Academic	Indonesia	221 doctoral students	Predict or	Toxic supervision, burnout	Academic performance	Higher PsyCap was associated with lower burnout and buffered negative effects of toxic supervision on performance

	Performance in Doctoral Programs						
5	Nielsen et al. (2017) The influence of instructor support, family support and PsyCap on well-being of postgraduate students	Australia	143 postgraduate students	Mediator	Instructor support, family support	Subjective well-being	PsyCap mediated instructor support and student well-being; family support moderated this effect
6	Jaffu et al. (2024) The capital for students' academic success in a PhD journey: The HERO within	Tanzania	200 PhD students	Predictor	PsyCap (HERO dimensions)	Academic success (satisfaction, persistence, performance)	PsyCap significantly predicted academic success across all three outcome dimensions
7	Yang et al. (2022) Supervisory styles and graduate student innovation performance: Mediating role of PsyCap	China	400 graduate students	Mediator	Supervisory styles (supportive, directive)	Innovation performance	PsyCap fully mediated supportive supervisory styles and innovation performance; harmonious passion moderated this
8	Cao et al. (2024) Subjective well-being among PhD students in mainland China: Roles of	China	376 PhD students	Predictor	PsyCap, academic engagement	Subjective well-being	Self-efficacy predicted life satisfaction; hope predicted positive affect; resilience predicted lower negative affect

	PsyCap and academic engagement						
9	Nambudiri et al. (2020) Student personality and academic achievement: Mediating role of PsyCap	India	307 postgraduate students	Mediator	Personality traits (Big Five)	Academic achievement (CGPA)	PsyCap mediated openness, conscientiousness, and agreeableness with academic achievement
10	Deroncel e-Acosta & Norabuen a-Figueroa (2025) Psychological Dynamics Underlying Academic Performance in Doctoral Students	Peru	190 doctoral students	Predictor	PsyCap	Academic performance, academic motivation	PsyCap significantly predicted academic performance and satisfaction; cycle-based differences noted
11	Khuram et al. (2023) Impact of Supportive Supervisor on Doctoral Students' Research Productivity	China	470 international doctoral students	Mediator	Supervisor support	Research productivity	Academic PsyCap and engagement serially mediated supervisor support and research productivity
12	Saleem et al. (2022) Fostering Academic Engagement in Post-graduate Students: Role of Positive Emotions, PsyCap,	Malaysia	373 postgraduate students	Mediator	Positive emotions	Academic engagement	Positive emotions predicted PsyCap; PsyCap mediated positive emotions and academic engagement

	and Stress						
13	Shamsi & Nastiezai (2019) Mediating Role of Spiritual Intelligence in the Relationship between Social Capital and PsyCap	Iran	342 postgraduate students	Outcome	Social capital, spiritual intelligence	PsyCap	Social capital positively predicted PsyCap; spiritual intelligence mediated this relationship
14	Ahmed et al. (2017) Engaging Ph.D. Students: Investigating the Role of Supervisor Support and PsyCap	Bahrain	125 PhD students	Mediator	Supervisor support	PhD student engagement	Supervisor support positively enhanced PsyCap; PsyCap in turn predicted doctoral engagement
15	Liu et al. (2023) Effects of interpersonal sensitivity on depressive symptoms in postgraduate students	China	2,554 postgraduate students	Mediator	Interpersonal sensitivity	Depressive symptoms	PsyCap and sleep quality mediated interpersonal sensitivity and depression among postgraduate students
16	Solms et al. (2025) Be a hero, be your own best friend: A self-compassion-based PsyCap intervention	Netherlands	175 PhD students	Predictor	PsyCap intervention (self-compassion vs. standard)	Well-being (positive affect, work pressure)	Self-compassion-based PsyCap intervention improved positive affect and reduced work pressure short-term

17	Barry et al. (2019) A randomized controlled trial of the effects of mindfulness practice on doctoral candidate psychological status	Australia	82 doctoral candidates	Predictor	Mindfulness intervention	Psychological distress (depression, anxiety)	Mindfulness practice significantly reduced depression; PsyCap as theoretical resilience framework
18	Pretorius (2024) I realised that, if I am dead, I cannot finish my PhD: A narrative ethnography of PsyCap in academia	South Africa	1 focal participant	Predictor	Not formally specified	Doctoral persistence, psychological distress	PsyCap resources (hope, resilience) sustained doctoral persistence through severe mental health crisis
19	Stange (2020) The HERO within: An examination of PsyCap and intent to graduate among doctoral students	USA	92 PhD students	Predictor	PsyCap (HERO dimensions)	Intent to graduate	PsyCap associated with persistence factors including degree commitment and institutional commitment
20	Bode et al. (2017) Discovering Psychological Components of a Ph.D.: The Road to Success	USA	23 PhD students	Predictor	Not specified	Doctoral success, well-being	Participants showed moderately high PsyCap; no significant difference based on years to graduation

The findings addressing each research question are presented below.

RQ1: Current State of Research on PsyCap Among Doctoral Students

This scoping review identified 20 studies that examined PsyCap in the context of doctoral and postgraduate education. The studies varied considerably in their geographic origins, methodological designs, sample sizes, and disciplinary focus, reflecting the growing but still fragmented nature of this literature. The annual distribution of publications is presented in Figure 2, illustrating the accelerating growth of this literature over time.

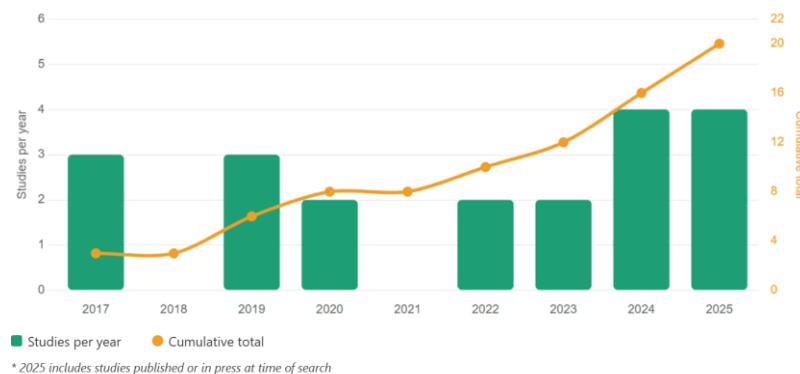


Figure 2. Annual distribution of included studies by year of publication (N = 20)

In terms of geographic distribution, Asian contexts produced the largest concentration of studies. China contributed the most publications, including studies by Cao, Li, et al. (2024), Cao, Zhang, et al. (2024), Liu et al. (2020), Khuram et al. (2023), Yang et al. (2022), and Liu et al. (2023). Iran was represented by Shamsi & Nastiezaie (2019) and Malaysia by Saleem et al. (2022). Studies from Western contexts included Australia (Barry et al., 2019; Nielsen et al., 2017), the Netherlands Solms et al. (2025), and the United States (Bode, 2017; Stange, 2020). Latin America was represented by Peru through two studies (Deroncele-Acosta et al., 2025; Deroncele-Acosta & Pedro Norabuena-Figueroa, 2025). Africa contributed one study from Tanzania (Jaffu et al., 2024). Overall, Asian contexts accounted for the majority of studies, followed by Western contexts, with Latin America and Africa remaining notably underrepresented. This geographic imbalance is itself a significant observation about the current state of the field. The concentration of studies from China may reflect the rapid expansion of doctoral education in that country over the past two decades, accompanied by strong institutional incentives for research productivity and publication, as well as the dominance of Chinese institutions in international academic databases (Khuram et al., 2023; Liu et al., 2020). The geographic distribution of included studies is illustrated in Figure 3.

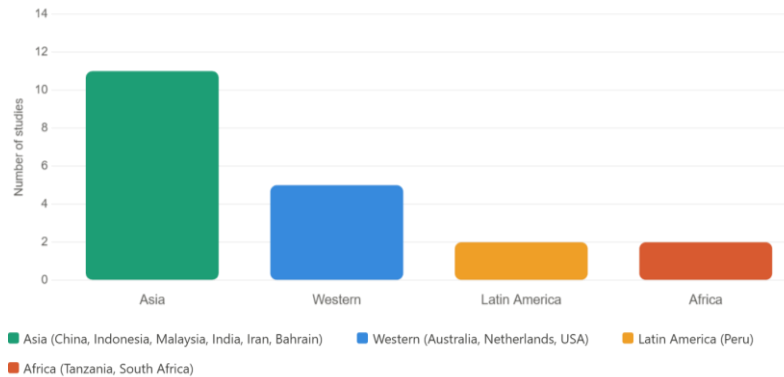


Figure 3. Geographic distribution of included studies (N = 20)

Methodologically, quantitative approaches dominated the literature. Cross-sectional survey designs with structural equation modelling or regression analysis were the most common approach (Ahmed et al., 2017; Cao, Li, et al., 2024; Cao, Zhang, et al., 2024; Deroncelle-Acosta & Pedro Norabuena-Figueroa, 2025; Khuram et al., 2023; Liu et al., 2020). Two studies used experimental or quasi-experimental designs. Solms et al. (2025) tested a PsyCap-based intervention through a randomized controlled trial. Barry et al. (2019) used a similar design to test mindfulness effects on doctoral wellbeing. Qualitative approaches were rare. Pretorius (2024) used narrative ethnography. Bode (2017) employed a phenomenological method. Mixed-methods designs were also limited, with only Deroncelle-Acosta & Pedro Norabuena-Figueroa (2025) combining quantitative and qualitative data.

Regarding PsyCap measurement, most studies used validated instruments derived from Luthans et al.'s (2007) PCQ framework, either the PCQ-24 or adapted academic versions. The HERO dimensions, namely hope, efficacy, resilience, and optimism, were consistently operationalized across studies. Some researchers measured each dimension independently before aggregating into a composite score (Cao, Li, et al., 2024; Deroncelle-Acosta & Pedro Norabuena-Figueroa, 2025), while others used the composite directly. This distinction is relevant for interpreting findings, as studies using composite scores capture overall PsyCap, while those analyzing individual dimensions reveal which specific HERO components drive particular outcomes.

RQ2: Outcomes Associated with PsyCap in Doctoral Education

The reviewed studies identified a range of outcomes associated with PsyCap. These outcomes fall into three broad categories: academic outcomes, psychological well-being outcomes, and social and relational outcomes.

Academic Outcomes

Academic performance was the most frequently examined outcome. PsyCap consistently emerged as a positive predictor across multiple studies. Deroncelle-Acosta & Pedro Norabuena-Figueroa (2025) demonstrated that PsyCap significantly predicted academic performance and satisfaction among 190 doctoral students in Peru. Jaffu et al. (2024)

reported similar findings among 200 PhD students in Tanzania, where PsyCap predicted academic success across satisfaction, persistence, and performance. Stange (2020) established PsyCap to be a meaningful predictor of intent to graduate among doctoral students in the United States. Creativity was another notable academic outcome. Cao, Li, et al. (2024) reported that self-efficacy, resilience, and optimism positively predicted novelty in PhD students' creative output among 376 students in China. Liu et al. (2020) showed PsyCap to mediate the relationship between social capital and creativity in PhD students enrolled in a Joint Training Pilot Project. Research productivity was examined by Khuram et al. (2023) among 470 international doctoral students in China. Academic PsyCap mediated the relationship between supportive supervisors and doctoral research productivity, positioning PsyCap as the psychological mechanism through which supervisory quality translates into measurable academic output. Academic engagement also emerged as a consistent outcome. Ahmed et al. (2017) documented PsyCap predicted engagement among 125 PhD students from 11 nationalities. Saleem et al. (2022) identified PsyCap to be a predictor of academic engagement among 373 postgraduate students in Malaysia.

Psychological Well-being Outcomes

Well-being was the second most prominent outcome category. Cao, Zhang, et al. (2024) reported PsyCap predicted subjective well-being among 376 PhD students in China, with specific HERO dimensions linking to distinct well-being components. Solms et al. (2025) tested a self-compassion-based PsyCap intervention among 175 PhD students in the Netherlands and found it improved positive affect and reduced work pressure in the short term. Mental health outcomes were also examined. Barry et al. (2019) observed that mindfulness practice was associated with reduced depression. Liu et al. (2023) demonstrated PsyCap mediated the relationship between interpersonal sensitivity and depressive symptoms among 2,554 postgraduate students in China. Hermana et al. (2025) demonstrated that higher PsyCap was associated with lower burnout among doctoral students experiencing toxic supervision. Deroncelle-Acosta et al. (2025) reported PsyCap served as a protective factor for 108 female doctoral students, with higher PsyCap associated with stronger academic motivation and reduced psychological distress. Pretorius (2024) provided a qualitative perspective, illustrating through narrative ethnography how PsyCap resources sustained doctoral persistence even through severe psychological crisis.

Social and Relational Outcomes

Several studies examined outcomes connected to supervisory and peer relationships. Nielsen et al. (2017) found PsyCap mediated the relationship between instructor and family support and student well-being among postgraduate students in Australia. Yang et al. (2022) found PsyCap fully mediated the relationship between supervisory styles and innovation performance among 400 graduate students in China. Nambudiri et al. (2020) found PsyCap mediated the relationship between personality and academic achievement, suggesting PsyCap amplifies the effect of individual traits on performance.

RQ3: Theoretical Positioning of PsyCap as Predictor, Mediator, or Outcome

One of the central analytical contributions of this scoping review is the mapping of how PsyCap is theoretically positioned across studies. Three distinct roles emerged: PsyCap as a predictor, PsyCap as a mediator, and PsyCap as an outcome. Importantly, several studies examined PsyCap in more than one role within the same theoretical framework. The counts reported below therefore reflect the number of *role-instances* across studies, not the number of studies per category, and the total exceeds $N = 20$ accordingly. PsyCap was most commonly positioned as a predictor or independent variable, appearing in this role across twelve studies. Outcomes predicted by PsyCap included academic performance (Deroncele-Acosta & Pedro Norabuena-Figueroa, 2025; Hermana et al., 2025; Jaffu et al., 2024), subjective well-being (Cao, Zhang, et al., 2024; Solms et al., 2025), creativity (Cao, Li, et al., 2024), engagement (Ahmed et al., 2017; Saleem et al., 2022), intent to graduate (Stange, 2020), and psychological distress (Barry et al., 2019; Pretorius, 2024). Across these studies, higher PsyCap consistently predicted more favorable outcomes, regardless of cultural or institutional context.

PsyCap was positioned as a mediator in eight role-instances across the reviewed studies. In this role, PsyCap served as the psychological mechanism explaining how an external input produced a student outcome. Liu et al. (2020) found PsyCap mediated the relationship between social capital and creativity. Nielsen et al. (2017) found PsyCap mediated the link between instructor and family support and student well-being. Yang et al. (2022) found PsyCap fully mediated supervisory styles and innovation performance. Khuram et al. (2023) demonstrated PsyCap mediated supervisor support and research productivity. Liu et al. (2023) found PsyCap mediated interpersonal sensitivity and depression. Nambudiri et al. (2020) found PsyCap mediated personality and academic achievement. Saleem et al. (2022) found PsyCap mediated the relationship between positive emotions and academic engagement, while also functioning as a predictor of engagement—illustrating how a single study can position PsyCap in multiple theoretical roles simultaneously. Taken together, these findings suggest PsyCap functions as a critical internal resource that channels the influence of contextual factors into student outcomes.

PsyCap was positioned as an outcome or dependent variable in three role-instances. Shamsi & Nastiezaie (2019) found PsyCap was shaped by social capital and spiritual intelligence. Saleem et al. (2022) found positive emotions significantly predicted PsyCap levels. Ahmed et al. (2017) found that supervisor support positively enhanced doctoral students' PsyCap levels, which in turn predicted engagement. This sequential model illustrates how PsyCap can simultaneously occupy the outcome and predictor roles across different paths within a single study. This perspective aligns with the original theoretical conception of PsyCap as a state-like and malleable resource rather than a fixed trait (Luthans & Youssef-Morgan, 2017). Studies treating PsyCap as an outcome remain the least common in the doctoral literature, despite having the strongest implications for intervention design.

RQ4: Gaps Remaining in the Literature

Despite the growing evidence base, six significant gaps emerge from this review. The first gap is geographic concentration. The majority of quantitative studies were conducted in China, with limited representation from Latin America, Africa, and Southeast Asia. Cross-cultural validation of PsyCap constructs and interventions in doctoral settings remains inadequate. Findings from Chinese institutional contexts may not translate directly to doctoral environments with different supervisory cultures, funding structures, or academic norms. The second gap is methodological. Nearly all studies used cross-sectional designs, which cannot establish causal direction. It remains unclear whether PsyCap leads to better outcomes or whether students who are already thriving develop higher PsyCap over time. Longitudinal studies are almost entirely absent from this literature, and this is a serious limitation given that doctoral education spans multiple years.

The third gap concerns study design diversity. Qualitative and intervention-based studies are scarce. Only two studies used experimental designs (Barry et al., 2019; Solms et al., 2025) and only one used narrative methods (Pretorius, 2024). This limit understanding of how PsyCap develops, how it is subjectively experienced, and how it can be systematically cultivated through structured institutional programs. The fourth gap involves demographic subgroups. Gender differences in PsyCap among doctoral students also remain underexplored. Only Deroncelle-Acosta et al. (2025) focused specifically on women doctoral students. How PsyCap functions across gender, discipline, or career stage within doctoral education has not been systematically examined. The fifth and perhaps most practically significant gap concerns the antecedents of PsyCap in doctoral contexts. Most studies treated PsyCap as a predictor rather than as something that needs to be built. Shamsi & Nastiezaie (2019) and Saleem et al. (2022) were notable exceptions. Understanding what builds PsyCap among doctoral students, whether through supervision quality, institutional support, peer networks, or structured interventions, remains an open question with direct relevance for universities seeking to improve doctoral student outcomes.

DISCUSSION

This scoping review mapped 20 studies on PsyCap among doctoral students, addressing four research questions about the current state of the field, associated outcomes, theoretical positioning, and remaining gaps. The findings reveal a literature that is growing in volume but geographically uneven, methodologically constrained, and theoretically fragmented.

Geographic Distribution and Its Implications

Asian contexts, particularly China, contributed the largest share of studies, followed by Western contexts including Australia, the Netherlands, and the United States. This pattern may reflect the actual concentration of doctoral PsyCap research in these settings. It is equally possible that studies from other regions exist but were not captured due to the restriction to English-language publications or the databases selected.

The evidence base for PsyCap in doctoral education cannot yet be treated as globally representative. Doctoral education in China operates within a specific institutional culture characterized by hierarchical supervision, collective academic values, and distinct publication pressures, which may shape how PsyCap operates in ways that are context-specific (Khuram et al., 2023; Liu et al., 2020). Findings from these settings cannot be assumed to transfer directly to doctoral environments with fundamentally different supervisory norms, funding structures, or cultural values. The studies from Tanzania (Jaffu et al., 2024) and Peru (Deroncele-Acosta et al., 2025; Deroncele-Acosta & Pedro Norabuena-Figueroa, 2025) are therefore particularly valuable. Despite their different national contexts, both confirmed that PsyCap was meaningfully associated with doctoral outcomes. This cross-contextual consistency suggests PsyCap has genuine relevance beyond the settings where it has been most studied. However, two studies from Africa and three from Latin America are insufficient for firm conclusions. More geographically diverse research is needed before the field can speak with confidence about PsyCap's role across different national and institutional contexts.

PsyCap as a Broad Resource for Doctoral Success

The range of outcomes associated with PsyCap in this review is striking. PsyCap was linked to academic performance, creativity, research productivity, engagement, intent to graduate, subjective well-being, and reduced psychological distress. This breadth suggests PsyCap functions as a general-purpose psychological resource in doctoral education, one that supports students across the cognitive, motivational, and emotional demands of doctoral study simultaneously. This finding aligns with Luthans & Youssef-Morgan (2017) theoretical argument that PsyCap's value lies in its synergistic, higher-order nature.

Individual HERO dimensions contribute differently to different outcomes. Cao, Zhang, et al. (2024) found self-efficacy was associated with life satisfaction, hope with positive affect, and resilience with lower negative affect. Yet the composite construct captures a general capacity for positive psychological functioning that no single dimension achieves alone. For doctoral programs, this suggests that support should attend to the integrated psychological state of doctoral candidates rather than targeting isolated deficits such as low confidence or poor stress management. The emergence of creativity and research productivity as PsyCap outcomes is particularly noteworthy. These outcomes are uniquely relevant to doctoral education and largely absent from the broader PsyCap in higher education literature, which has focused predominantly on undergraduate performance and engagement (Li et al., 2023).

Cao, Li, et al. (2024); Liu et al. (2020) demonstrate that PsyCap shapes not just whether doctoral students persist, but the quality and originality of the intellectual work they produce. This extends the theoretical scope of PsyCap beyond the motivational and emotional domains into the cognitive and creative dimensions of doctoral experience. The qualitative evidence from Pretorius (2024) adds a dimension that quantitative studies cannot provide. The narrative of a doctoral student who drew on hope and resilience to persist through a severe mental health crisis illustrates that

PsyCap is not merely a statistical predictor but a lived psychological reality, consistent with the broader literature on doctoral mental health.

The doctoral context may also shape how PsyCap functions in ways that differ from undergraduate settings. In undergraduate education, PsyCap has been most consistently linked to academic performance and engagement within structured, semester-based curricula (Li et al., 2023; Ortega-Maldonado & Salanova, 2018). The doctoral context introduces qualitatively different demands – including original knowledge production, singular supervisory dependency, and extended timelines without structured milestones – that place greater and more sustained pressure on psychological resources (Barry et al., 2018; Pretorius, 2024). Under these conditions, PsyCap may function not merely as a performance enhancer but as a survival resource: sustaining motivation, enabling recovery from setbacks, and supporting identity development over years rather than semesters. The emergence of creativity and research productivity as PsyCap outcomes in this review – outcomes largely absent from undergraduate PsyCap literature – support this interpretation (Cao, Li, et al., 2024; Khuram et al., 2023).

Theoretical Fragmentation and the Need for Integration

The mapping of PsyCap's theoretical positioning revealed a meaningful imbalance. Twelve studies treated PsyCap as a predictor, eight as a mediator, and only two positioned it as an outcome shaped by antecedents. This distribution reflects a broader tendency in positive psychology research to study psychological resources as drivers of outcomes rather than as resources that require cultivation. The mediator studies provide some of the most theoretically rich findings in this review. When PsyCap mediates the relationship between supervisor support and research productivity (Khuram et al., 2023), or between supervisory styles and innovation performance (Yang et al., 2022), it reveals that supervisory quality does not directly determine student outcomes. It does so by shaping the psychological resources students bring to their work.

Therefore, improving doctoral outcomes requires not just changing supervisory behavior, but understanding how that behavior builds or depletes students' internal resources. The small number of studies treating PsyCap as an outcome is the most practically significant gap in this literature. If PsyCap is malleable, as Luthans & Youssef-Morgan (2017) and the intervention studies by Solms et al. (2025) and Barry et al. (2019) suggest, then understanding what builds it among doctoral students is critical for institutional action. The studies that do examine PsyCap as an outcome identify supervisor support (Ahmed et al., 2017), positive emotions (Saleem et al., 2022), and social capital (Shamsi & Nastiezaie, 2019) as associated variables. These findings, however, are fragmented and mostly incidental to the primary focus of the studies in question. A comprehensive model of PsyCap in doctoral education would need to capture how relational and institutional inputs build PsyCap, how PsyCap mediates the effects of the doctoral environment on student outcomes, and how PsyCap directly predicts performance and well-being. Developing such a model is a meaningful agenda for future theoretical work.

Implications of the Identified Gaps

The dominance of cross-sectional designs means the field cannot yet answer causal questions about PsyCap development or its long-term effects on doctoral trajectories. Longitudinal studies tracking PsyCap from admission through completion are needed to capture how psychological resources fluctuate in response to supervisory quality, research milestones, and career uncertainty. The scarcity of intervention studies is a related gap with direct practical relevance. Solms et al. (2025) demonstrated that a structured self-compassion-based PsyCap intervention improved doctoral student well-being. Barry et al. (2019) found mindfulness practice reduced depression among doctoral candidates. These findings are promising but remain isolated. Systematic development and evaluation of PsyCap-enhancing programs specifically designed for doctoral students is a priority for both researchers and institutions.

Several studies included postgraduate students broadly without distinguishing doctoral from master's level candidates. The doctoral experience is qualitatively different, characterized by self-directed research, extended timelines, and the singular pressure of original contribution. The inclusion of studies sampling broader postgraduate populations – where doctoral and master's level students may not have been distinguished – introduces an element of conceptual heterogeneity. Findings from such studies were interpreted with appropriate caution throughout, and the sample composition of each study is documented in Table 2. However, readers should note that some findings may reflect dynamics applicable to postgraduate education broadly rather than the doctoral experience specifically, and future reviews should where possible restrict inclusion to doctoral-only samples to enable more precise conclusions.

Future theoretical work should develop doctoral-specific conceptualizations that reflect these distinctive demands. The gender gap identified in this review also deserves attention. Deroncelle-Acosta et al. (2025) found that female doctoral students experience distinct psychological pressures and that PsyCap functions as a protective factor in this population. Yet this remains the only study in the review to examine gender as a focal concern. Given documented gender disparities in doctoral completion rates and mental health outcomes across many national contexts, this represents both a research and equity imperative.

Taken together, these gaps point to a literature still in early formation. The consistent association between PsyCap and doctoral outcomes across diverse settings suggests the construct has genuine cross-contextual relevance. At the same time, doctoral programs can already act on the available evidence. Supervision quality initiatives, peer support structures, and brief PsyCap-based interventions offer practical starting points. Framing these efforts through a PsyCap lens, attending explicitly to hope, efficacy, resilience, and optimism as core psychological resources rather than soft skills, may strengthen both their design and their evaluation.

PsyCap's state-like and malleable nature (Luthans & Youssef-Morgan, 2017) positions it as a resource that institutions can actively cultivate rather than simply assume. At the individual level, structured PsyCap interventions – such as the self-compassion-based program tested by Solms et al. (2025) – offer a promising starting point. At the supervisory

level, training programs that equip supervisors to provide consistent, growth-oriented support may build doctoral students' efficacy and resilience over time, as suggested by the mediating role of PsyCap between supervisor support and student outcomes (Ahmed et al., 2017; Khuram et al., 2023). At the institutional level, embedding PsyCap-informed frameworks into doctoral induction programs, progress review processes, and peer mentoring structures may provide more systematic support. Peer support systems, in particular, remain underexplored as a vehicle for PsyCap development in doctoral contexts.

Limitations of the Study

This review has several limitations. The search was restricted to English-language publications, which may have excluded relevant studies from non-English-speaking contexts. Several included studies sampled postgraduate students broadly without isolating doctoral candidates. Findings from these studies were interpreted with appropriate caution given the resulting heterogeneity in population characteristics. This conceptual heterogeneity represents a meaningful limitation, as the psychological demands and institutional contexts of doctoral and broader postgraduate education differ in important ways. Conclusions drawn from mixed postgraduate samples should therefore be interpreted with caution when applied specifically to doctoral contexts.

Only five databases were searched, which may have limited the number of studies identified. Additionally, the restriction to English-language publications and the selection of specific databases introduces the possibility of both publication bias and indexing bias. Studies conducted in non-English-speaking contexts, particularly those published in local or regional journals, may not have been captured. This is especially relevant given the geographic concentration of included studies in Asian and Western contexts.

The inclusion of dissertations and grey literature introduces variability in methodological rigor across included studies. While the inclusion of such sources broadens the evidence base, it also means that methodological standards vary across included studies in ways that may affect the comparability of findings. Formal quality appraisal was not conducted, consistent with scoping review methodology (Arksey & O'Malley, 2005).

Finally, the small number of included studies ($N = 20$) reflects the nascent state of this literature. Furthermore, the majority of included studies relied on self-report survey measures of PsyCap, which introduces the possibility of common method variance and social desirability bias. Future research would benefit from incorporating multi-source and longitudinal measurement approaches (Nguyen et al., 2024).

Recommendations for Future Research

Future reviews on this topic should expand the search to include non-English publications and additional databases to capture a more complete picture of the literature. As the number of primary studies grows, a systematic review with formal quality appraisal would be a meaningful next step. Reviews that focus specifically on underrepresented geographic

contexts, particularly Africa, Latin America, and Southeast Asia, would also strengthen the evidence base.

At the theoretical level, future research should work toward developing doctoral-specific PsyCap frameworks that reflect the distinctive demands of doctoral education, including original knowledge production, supervisory dependency, and identity transition into researcher roles. The existing PsyCap literature has largely been developed in organizational and general educational contexts; doctoral education warrants its own theoretical elaboration.

Empirically, future studies should examine how PsyCap functions across discipline-specific contexts, given that the psychological demands of doctoral study may differ considerably between STEM, social science, and humanities programs. Gender differences in PsyCap among doctoral students also remain, as do career-stage differences – whether PsyCap fluctuates across early, mid, and late doctoral phases – and the experiences of international doctoral students navigating additional cultural and linguistic pressures.

Longitudinal research designs are a priority. The dominance of cross-sectional studies means the field cannot yet establish whether PsyCap predicts doctoral outcomes over time or whether successful doctoral trajectories build PsyCap. Tracking PsyCap from doctoral admission through completion would provide insight into how psychological resources develop, fluctuate, and respond to key milestones such as confirmation of candidature, thesis submission, and viva examination.

Intervention research is equally urgent. Barry et al. (2019) and Solms et al. (2025) demonstrate that structured programs can meaningfully support doctoral student well-being, but these studies remain isolated. Future intervention studies should examine the comparative effectiveness of supervisory training programs, peer mentoring schemes, institutional well-being initiatives, and dedicated PsyCap development workshops. Evaluating which intervention targets – individual, supervisory, or institutional – produce the most sustained effects on doctoral PsyCap would have direct practical relevance for universities.

Finally, mixed-methods and qualitative research designs are needed to capture the lived experience of PsyCap development during doctoral study. Quantitative studies can establish associations, but the subjective processes through which doctoral students build hope, efficacy, resilience, and optimism under prolonged uncertainty remain largely unexplored (Pretorius, 2024).

In conclusion, to the authors' knowledge, this is the first scoping review to synthesize evidence on PsyCap specifically among doctoral students. PsyCap emerged as a consistent and meaningful psychological resource across diverse doctoral contexts, associated with academic performance, engagement, creativity, research productivity, and well-being. The supervisory relationship was the most consistently identified correlate of PsyCap levels, and studies positioning PsyCap as an outcome remained the least common despite having the strongest implications for intervention design. Supporting doctoral students effectively requires deliberate attention to the psychological resources they bring to and develop through the doctoral journey. Doctoral education systems that treat PsyCap as a core institutional concern – rather than a peripheral one

– are better positioned to support completion, well-being, and scholarly excellence.

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