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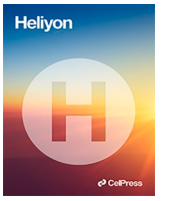

Research article

Relationship between psychological capital and mental health at higher education: Role of perceived social support as a mediator

Aashiq Khan [a], Irum Zeb [a], Yan Zhang [a,1], Shawana Fazal [b], Jie Ding [c,*]

[a] School of Education, Huazhong University of Science and Technology, Wuhan, China
[b] Department of Education, Hazara University, Mansehra, Pakistan
[c] School of Journalism and Information Communication, Huazhong University of Science and Technology, Wuhan, China

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ABSTRACT

Research in Positive Psychology has indicated a correlation between Psychological Capital (PsyCap) and Mental health (MH). However, the specific contribution of Perceived Social Support (PSS) in the connection between PsyCap and MH, particularly within higher education, remains uninvestigated. This study investigated how PSS could mediate the effect of PsyCap on students' MH using a cross-sectional research design. The sample encompassed 443 undergraduate graduate students at Huazhong University of Science and Technology in Wuhan, China. Results from Partial Least Squares Structural Equation Modeling (PLS-SEM) showed that both PsyCap ($\beta = 0.815$, $t = 31.074$, $p < 0.000$) and PSS ($\beta = 0.405$, $t = 28.051$, $p < 0.000$) have a positive impact on students' MH. Additionally, PSS was identified as a significant mediator in relation to students' MH ($b = 0.080$, $t = 2.319$, $p < 0.020$). This study emphasizes the importance of developing these factors in educational and support programs to enhance students' well-being. Moreover, the results offer significant conceptual and practical insights for higher education faculty, psychologists, and curriculum designers.

1. Introduction

Mental health (MH) is essential to students' well-being and health. In a changing environment, students with positive MH can significantly improve their overall well-being and quality of life [1]. The World Health Organization (WHO) defines MH as total well-being in which people identify their abilities, efficiently cope with daily stressors, maintain productive and fulfilling work, and contribute positively to their communities [2].

MH embraces psychological, emotional, and social well-being, considerably impacting our thoughts, feelings, and behaviors. According to WHO, around 25% of the world population experience mental disorders at some point in life. This statistic highlights the extensive reach and influence of these health conditions [3]. The complexity of MH issues is further compounded by the fact that around 67 % of individuals diagnosed with recognized mental conditions do not actively seek professional help, often due to the presence of stigma, indifference, neglect, and discrimination [4]. The Global Burden of Disease (GBD) study reported about (01) billion people had a mental disorder in 2016, demonstrating the wide-ranging and profound impact of MH concerns [5].

China, the world's most populous nation, faced significant MH challenges during COVID-19 [6]. Despite recent efforts to promote

* Corresponding author.
E-mail address: jieding@hust.edu.cn (J. Ding).
[1] Yan Zhang has contributed equally to the article.

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MH, the lack of resources continues to pose barriers to effective MH care in the country [7]. According to a study [8], students at Chinese higher education institutions had a higher occurrence of common MH problems, such as depression and anxiety. Research conducted among youth suggests that university students experience a greater prevalence of MH problems than their peers [9]. Factors such as stressful life events, daily issues, and academic-related pressures impact the mental well-being of higher education students [10]. MH and mental illnesses typically emerge in the early stages of life [11], which means that higher education students are more susceptible to developing MH concerns. Therefore, it is essential to understand and advocate for mental well-being within this possibly vulnerable group.

The MH continuum encompasses two opposite ends: positive MH, representing sound mental well-being, and adverse MH, representing mental illness [12]. WHO places great importance on promoting positive MH. MH is the ability of the individual to be productive and successful in their professions and make significant contributions to their society [13]. Prior research has predominantly investigated adverse MH outcomes, namely examining mental disorders, mental diseases, and behavioral problems [14]. Nevertheless, the potential of emphasizing positive MH to promote and enhance overall mental well-being remains unexplored [7,15]. This is like not just concentrating on curing a sickness but also making sure to eat healthy and exercise to prevent getting sick in the first place. The WHO pointed this out in 2005. They believe it's time to shift our attention towards understanding and researching how we can improve MH, not just treat mental illnesses.

Through referencing the positive psychology literature, it has been found that adopting a positive psychological approach can improve MH and overall well-being [16]. Based on positive psychology principles, PsyCap can be an individual asset that enhances mental well-being. PsyCap is an individual's current state of being and potential for personal growth and development. The term is an abstract idea that includes four separate psychological assets. The term "HERO within" represents a collection of psychological assets: hope, self-efficacy, resilience, and optimism. These resources are commonly known as PsyCap [17]. Hope motivates individuals to strive for success in following their goals and being open to altering pathways to achieve them if necessary [18]. Resilience indicates an individual's capacity to recover or rebound from challenging circumstances [19]. Students' feelings characterize optimism to anticipate positive outcomes in their lives [20]. Self-efficacy signifies students' belief in their abilities to do a specific task within a given setting successfully [21]. Every component of PsyCap has the capacity to favorably impact individual, team, and organizational results. However, combining the four PsyCap sub-constructs, the impact is greater than that of the individual sub-constructs alone [22].

Previous meta-analyses and reviews have indicated a significant correlation between PsyCap and various individual and organizational variables [23]. Fred Luthans, a pioneer in PsyCap research, made predictions about the agentic nature of PsyCap and its impact on MH [24]. Research on student populations has consistently revealed that PsyCap positively influences academic performance [25]. Researchers have identified a correlation between PsyCap and MH in college students [14]. A recent study [26] revealed a correlation between high levels of PsyCap and reduced occurrences of sadness and stress among university students during the COVID-19 pandemic. These findings suggest that boosting PsyCap could be a valuable approach for improving the MH of university students.

Furthermore, in a study [27], a group intervention focused on boosting PsyCap caused significant improvements in mental well-being and reductions in depression among Chinese university students. These findings emphasize the potential benefits of integrating PsyCap development into higher education MH strategies in China. PSS has a central role in the overall well-being of individuals and is a critical buffer against various stressors and life challenges, helping individuals maintain good mental and physical health [28]. Notably, the study [29] found that strong social support could reduce the risks of health problems, including cardiovascular diseases and depression. Moreover, the study [30] suggests that social support mitigates adverse effects and fosters resilience, enhancing an individual's PsyCap.

PSS is characterized as an individual's perception of the quantity and caliber of assistance they obtain from their social network, whereas received social support is objectively measured as the quantification of help and aid from the social network [31]. The most frequently assessed aspect of social support is PSS, which has been shown to help individuals mitigate perceived stress [32]. The correlation between PSS and MH has undergone extensive examination in different studies [33,34]. Social support may positively impact mental health, particularly in high-stress individuals [35]. Numerous studies have discovered associations among self-efficacy, MH, and social support. Self-efficacy predicts happiness through perceived MH moderated by social support and optimism [36]. Furthermore, results indicated the relationship between these factors in shaping the well-being of the individuals [37] PSS can improve the mental well-being of older caregivers [38]. The study has indicated that social support positively impacts an individual Field's health and well-being [39]. Social support plays a significant role in maintaining the mental well-being of adolescent students [40]. The presence of both formal and informal social ties and the level of trust within these relationships significantly impact MH during adolescence and in later stages of life [14]. This evidence corroborates the current corpus of research that emphasizes the correlation between an individual's social support and mental well-being.

Social support may perform as a buffering factor regarding the impact of traumatic incidents on MH [41]. Another study [42] found solid evidence that social support has a buffering role in connecting PsyCap and overall well-being. Social support combines interpersonal interactions with social networks that foster confidence, shared values, collaboration, and belongingness. It has been mentioned that PsyCap has a significant relationship with MH [35,43]. PsyCap, as a buffering factor against student stress, indicates that it reduces the association between stress and adverse consequences among students [44]. A study [45] discovered connections between PsyCap and the MH status of students, suggesting that higher levels of PsyCap were positively connected with improved MH. Moreover, it is crucial not to overlook the detrimental effects of poor MH on students' overall well-being and lifestyles. The limited number of studies addressing MH hinders our insights regarding the effect of MH in different populations. It restricts our ability to fully evaluate the impact of policies and practices promoting mental well-being.

PsyCap is a relatively new and emerging field investigating using similar sample types [46]. The limited research has explored PSS's

mediating role in the relationship between PsyCap and MH, specifically among higher education students in China. The existing literature also highlights a lack of studies on the effect of PsyCap on MH, particularly in the context of Chinese higher education. Specifically, the social support as a mediator in the relationship between PsyCap and MH has not been directly addressed. Therefore, conducting a study on the impact of PsyCap on MH is crucial and relevant in China. This study's uniqueness lies in including PSS as a crucial mediating variable. Earlier research mainly aimed to determine the direct relationship between PsyCap and MH. This research recognizes the fundamental part of social support in influencing mental well-being, particularly in the demanding environment of higher education. This addition enriches understanding of the nuanced pathways through which psychological resources impact MH outcomes.

Our study makes several theoretical contributions. First, we aim to examine how PsyCap influences the MH of higher education students. Second, the present study contributes to the PsyCap literature by exploring the boundary conditions of its relationship with MH. Third, we extend the research framework on PsyCap and MH by considering the mediating role of social support. Lastly, our study adds to the limited research on these variables, specifically within higher education students.

2. Methods

2.1. Conceptual model and hypotheses

Several research studies have shown that PsyCap positively impacts mental well-being, including university students [30]. This notion aligns with the Conservation of Resources theory (COR) [47], stipulating that individuals with more of one resource, like PsyCap, are also likely to have more other resources, like MH. However, it is essential to know what factors might affect the link between PsyCap and MH [48]. Research highlights that strong social support from friends, family, and community can help maintain MH in all age groups [49]. A study [50] with teenagers discovered that social support from family, friends, and neighbors led to fewer MH problems. Similarly, another study [51] suggested that the positive impact of PsyCap might be even stronger for people with a lot of social support. The COR theory posits that resources are crucial in shaping one's appraisal and coping mechanisms in various situations [39]. The COR theory, PsyCap, and MH could be viewed as personal resources, while social support can be seen as situational resources.

This study investigates the mediating role of PSS in the relationship between PsyCap and MH. A conceptual model (refer to Fig. 1) is proposed and validated, comprising three constructs: PsyCap (independent), PSS (mediator), and MH (dependent). The PSS construct interacts with independent and dependent variables, reflecting its mediating role. Based on the conceptual model depicted in Fig. 1, the hypotheses of the study are formulated as follows.

H1. PsyCap and MH are significantly and positively correlated.

H2. PsyCap and PSS are significantly and positively correlated.

H3. PSS and MH are significantly and positively correlated.

H4. PSS positively and significantly contributes in the relationship between PsyCap and MH.

2.2. Procedure

A descriptive cross-sectional study was undertaken, employing a survey as the data collection method. The survey was administered to participants online and face-to-face, and it was conducted individually by each student. On average, respondents spent approximately 20 min to complete the survey. The questionnaire began by introducing the research's purpose, followed by a section

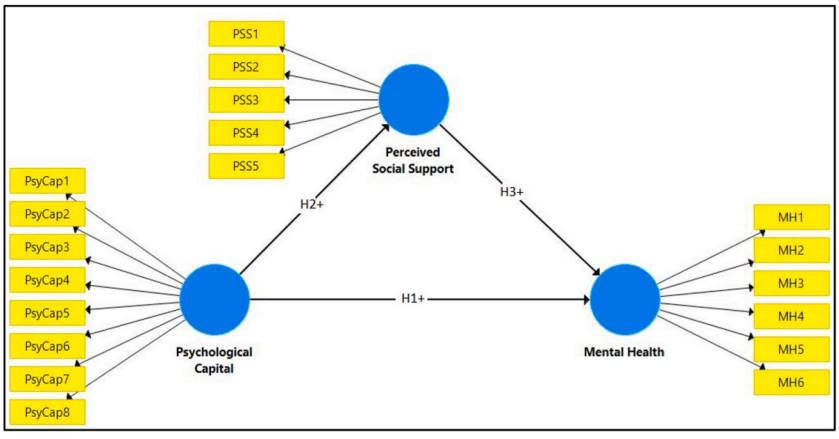

Fig. 1. Conceptual framework.

where participants gave informed consent. The study emphasized voluntary participation, allowing participants to withdraw their participation in the research at any time without the obligation to justify it. Although students received course credits for their involvement, the participants did not receive additional incentives. The study's procedures and the utilization of instruments strictly adhered to the principles outlined in the Declaration of Helsinki and the Ethics Code of the University.

2.3. Population and sample size

The study focused on undergraduate and graduate students of the Huazhong University of Science and Technology in Wuhan, China. The university was chosen because it is populous and has good academic records. Furthermore, the choice of Wuhan as the study location was deliberate, given its status as the initial epicenter of the COVID-19 outbreak. This setting presented unique challenges impacting the MH of its inhabitants, particularly students. We randomly selected students using stratified random sampling to ensure a fair sample. In total, we had 443 students in our study. Out of those, 45.15% (200 students) were studying in the School of Humanities, 24.83% (110 students) were studying in the School of Engineering, and 30% (133 students) were studying in the School of Science. Despite the seemingly limited sample size for population inference, this research leveraged the Partial Least Squares Structural Equation Modeling (PLS-SEM) methodology. This analytical method is recognized for its robust multivariate capabilities, exhibiting significant statistical power in spite of the small sample size [40]. The estimation of sample size for PLS-SEM adheres to several benchmarks in the scholarly community. A notable criterion often employed is the '10 times rule', a technique that dictates the sample size should be at least tenfold the number of indicators utilized to measure the construct. This rule is widely recognized and utilized as a fundamental smallest sample size estimation in the PLS-SEM [52].

Nevertheless, the studies [53,54] argue that the "10 times rule" could result in gross overestimations or underestimations of the minimal necessary sample size. In light of this, the current study applied G* Power (version 3.1.9.7), a frequently used tool for sample size estimation, recommended by Ref. [55] and endorsed by Ref. [56]. This study's conceptual model includes three constructs (predictors of MH). Based on this, an effect size (f2) of medium magnitude 0.15 was chosen, the α error probability was fixed at 0.05, and the power (1-β error probability) was determined to be 0.95, in line with the recommendations from earlier research [57] (see Fig. 2). The resultant calculations suggest that a sample size of 119 would be necessary. Consequently, this study's current sample size of 443 is more than sufficient, ensuring robust statistical power (Table 1).

2.4. Measure

Psychological Capital: The present study used the Comprehensive Psychological Capital (CPC) scale [58] to measure PsyCap. The scale comprises four facets: Hope, Optimism, Resilience, and Self-Efficacy, and permits the computation of a composite score through aggregation of the responses across all items. Instructions were given to the Participants to assess each item using a 5-point Likert scale, representing Strongly Disagree with 1 and denoting Strongly Agree with 5. The highest scores on the scale indicated increased levels of PsyCap. In this study, the internal consistency of the scale was measured through Cronbach's alpha, indicating an excellent level of reliability, which is 0.906.

Mental Health: MH was assessed using the GHQ-12 Scale [59]. The original GHQ scale consisted of 12 items, and we adapted it by utilizing six 06 items on a 4-point Likert scale, from not at all (0) to more than usual (3). The modified GHQ Scale comprises 06 items. Cronbach's Alpha coefficient measured the scale's reliability, which was 0.866. In comparison, a value more relative to zero is

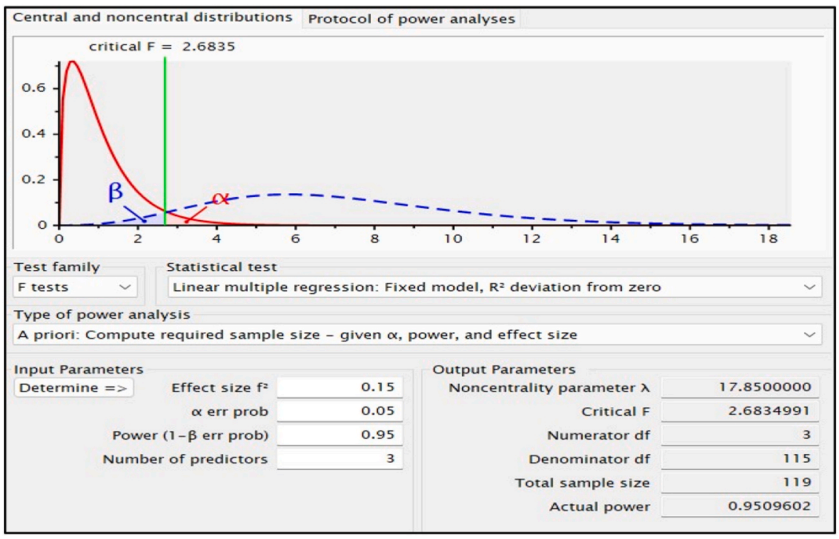

Fig. 2. Power result of required sample size.

Table 1
Demographic data.

Personal Characteristics	Categories	f (n)	%
Gender	Male	220	49.66
	Female	223	50.34
	Total	443	100
Age (Years)	18–20	150	33.86
	21–25	150	33.86
	26–30	143	32.28
	Total	443	100
Major	Humanities	200	45.15
	Engineering	110	24.83
	Science	133	30.02
	Total	443	100

considered to lower the instrument's reliability. The overall scale had values higher than 0.70, indicating that the GHQ is highly acceptable and reliable.

Perceived Social Support*:* This study implemented the Multidimensional Scale of Perceived Social Support (MSPSS) Scale [60] to assess the respondents' PSS level from their friends, family, and significant others. This scale incorporates eight items to measure the participants' perceptions of social support. A five-point Likert scale was used from Strongly Disagree with 1 to Strongly Agree with 5. Representative items included statements such as "When I face difficulties, some people will be there for me" and "I have people (friends, family, and others) who genuinely provide me comfort when I am confronting a problem." In this study, the adapted iteration of the MSPSS scale exhibited construct validity and acceptable internal consistency. The reliability, as indicated by Cronbach's Alpha coefficient, was computed to be 0.835.

2.5. Data analysis

The process of data analysis comprised two principal phases. Initially, descriptive statistics and correlational analyses were conducted utilizing Smart PLS version 3.0. These analyses presented a comprehensive understanding of the variables and explored their interrelationships. Subsequently, a series of Structural Equation Models (SEMs) were computed to find out the mediating role of PSS within the relationship between PsyCap and MH. For these computations, IBM SPSS version 22 was utilized. In the first step, the overall impact of PsyCap on MH indicators (anxiety, depression, stress) was evaluated. The second step involved integrating PSS as a mediating variable within the model. For the estimation of both overall and specific indirect effects, bootstrapping with 5000 resamples was implemented. The 95% bias-corrected confidence intervals (CIs) were employed to ascertain the statistical significance of the effects. An indication of a statistically significant indirect effect, thus demonstrating mediation, is signified by the absence of zero within the 95% bias-corrected CI [61].

Table 2
Validity and reliability of measurement model.

Convergent Validity							Internal Consistency Reliability	
Contracts	Indicators	S.D.	M	Loading	AVE	P	Cronbach's Alpha	Composite Reliability
Mental Health	MH1	0.610	4.014	0.793	0.600	0.000	0.866	0.900
	MH2	0.623	3.962	0.782		0.000		
	MH3	0.606	3.930	0.795		0.000		
	MH4	0.574	3.743	0.819		0.000		
	MH5	0.693	3.228	0.721		0.000		
	MH6	0.680	3.472	0.733		0.000		
Perceived Social Support	PSS1	0.690	5.508	0.724	0.601	0.000	0.835	0.882
	PSS2	0.691	4.905	0.723		0.000		
	PSS3	0.534	5.339	0.846		0.000		
	PSS4	0.563	5.282	0.826		0.000		
	PSS5	0.663	5.181	0.749		0.000		
Psychological Capital	PsyCap1	0.596	3.675	0.803	0.604	0.000	0.906	0.924
	PsyCap2	0.591	3.822	0.807		0.000		
	PsyCap3	0.686	3.964	0.727		0.000		
	PsyCap4	0.686	3.440	0.727		0.000		
	PsyCap5	0.659	3.688	0.752		0.000		
	PsyCap6	0.647	3.621	0.762		0.000		
	PsyCap7	0.579	3.774	0.815		0.000		
	PsyCap8	0.577	3.815	0.817		0.000		

S.D: Standard Deviation, M: Mean, P: Significant Value, AVE: Average Variance Extracted.

3. Results

Table No. 1 presents demographic information, categorized based on personal attributes such as gender, age, and major. In terms of gender, there were 220 males and 223 females, making up 49.66% and 50.34% of the total respondents, respectively. In terms of age, there were 150 respondents in the 18–20 years and 21–25 years categories, accounting for 33.86% each, while the 26–30 years category had 143 respondents, representing 32.28% of the total. Regarding majors, there were 200 respondents from the Humanities field, 110 from Engineering, and 133 from science, constituting 45.15%, 24.83%, and 30.02% of the total, respectively. The data were adequate for implementing Partial Least Squares Structural Equation Modelling (PLS-SEM) using the statistical software Smart PLS 3.

3.1. Evaluation of measurement model

The initial phase of assessing PLS-SEM results entails scrutinizing the measurement models [62]. The canonical evaluation criteria for assessing the reflective measurement model encompass three facets: convergent validity, discriminant validity, and internal consistency reliability [63,64].

3.2. Internal consistency reliability

Internal consistency reflects the level of correlation among observed variables within a particular test or questionnaire. Traditional internal consistency reliability methods include Cronbach's alpha and Composite reliability (CR). However, CR is often considered superior to Cronbach's alpha, as it assigns weights to indicators based on their unique reliability levels [64]. The CR value lies between 0 and 1, where larger values indicate superior reliability. Consequently, a CR score exceeding 0.60 in exploratory research is considered satisfactory [56]. As demonstrated in Table 2, all constructs surpassed the recommended threshold of 0.60, affirming the requisite internal consistency reliability of the sample.

3.3. Convergent validity

Convergent validity identifies how closely a measure/aspect aligns with other measures of a similar concept, which explains the differences within its measures. This suggests that measures based on similar or the same constructs should have significant relationships. Researchers commonly measure convergent validity through the outer loadings of indicators and the Average Variance Extracted (AVE) [63]. The recommended guideline suggests the outer loadings values should be at least 0.708 and AVE values be 0.50 [57].

To evaluate convergent validity, researchers frequently utilize indicators' outer loadings and the AVE [65]. As illustrated in Table 2, every construct's AVE value surpasses 0.5, indicating that each construct reports more than half of the variance of its corresponding items.

3.4. Discriminant validity

Discriminant validity is an empirical measure of how much a construct differs from other constructs [63]. Its primary goal is to confirm that a reflective construct demonstrates a strong relationship with its associated indicators. Researchers typically use twofold

Table 3
Discriminant validity (cross-loading).

Items	MH	PSS	PsyCap
MH1	**0.794**	0.303	0.662
MH2	**0.783**	0.281	0.634
MH3	**0.796**	0.303	0.615
MH4	**0.817**	0.380	0.717
MH5	**0.719**	0.336	0.645
MH6	**0.734**	0.290	0.655
PSS1	0.267	**0.724**	0.249
PSS2	0.208	**0.723**	0.243
PSS3	0.315	**0.846**	0.339
PSS4	0.391	**0.826**	0.386
PSS5	0.359	**0.749**	0.312
PsyCap1	0.742	0.358	**0.803**
PsyCap2	0.734	0.351	**0.807**
PsyCap3	0.628	0.287	**0.727**
PsyCap4	0.596	0.248	**0.727**
PsyCap5	0.618	0.201	**0.752**
PsyCap6	0.597	0.373	**0.762**
PsyCap7	0.654	0.362	**0.815**
PsyCap8	0.676	0.311	**0.817**

MH: Mental Health, PSS: Perceived Social Support, PsyCap: Psychological Capital.

approaches to evaluate discriminant validity: (i) analyzing indicators' cross-loadings and (ii) implementing the Fornell-Larcker criterion [66]. As [55] outlined, an indicator's cross-loading on its related construct should exceed all other constructs' indicators' loadings for sufficient discriminant validity. If this criterion is not met, it may signify potential discriminant validity issues. Table 3 illustrates that all indicators fulfill the suggested cross-loadings threshold, thus validating their discriminant validity. Usually, the suggested threshold value is less than 0.85 or 0.9.

The Fornell-Larcker criterion [67] is broadly acknowledged as a stringent method for measuring discriminant validity. It necessitates comparing the square root of AVE values with the relationships among constructs [68]. To ascertain discriminant validity, the AVE's square root for every construct must surpass its maximum correlation with any other construct in the same model [69]. Table 4 demonstrates that the results follow the suggested criteria, thereby verifying the discriminant validity of the measurement model.

3.5. Collinearity assessment

Collinearity is measured by investigating the Variance Inflation Factor (VIF) values associated with each construct [57]. The VIF value is used to indicate the level of collinearity between variables. In line with the recommendations [70], the VIF value of a construct should range between 0.20 and 5 to prevent collinearity issues. Table 5 illustrates all the computed VIF values in this acceptable range.

3.6. Structural model path coefficients

The path coefficients within the structural model were evaluated using a bootstrapping method with 5000 sub-samples and applying a two-tailed test at a significance level of 0.05. The findings in Table 6 suggest that all hypothesized relationships hold statistical significance. The results indicate that PsyCap significantly correlates with MH ($\beta = 0.815$, $t = 31.074$, $p < 0.000$), supporting the first hypothesis (H1) of the current study. Furthermore, PsyCap positively correlates with PSS ($\beta = 0.405$, $t = 28.051$, $p < 0.000$), which aligns with the study's second hypothesis (H2). Similarly, PSS is significantly linked with MH ($b = 0.080$, $t = 2.319$, $p < 0.020$), supporting the study's third hypothesis (H3).

3.7. Coefficient of determination (R2)

Researchers employed the coefficient of determination (R2) to evaluate the ability of endogenous constructs to explain variations in a model. R2 values vary from 0 to 1, with greater values signifying greater explanatory power. The R2 values of 0.25, 0.50, and 0.75 for endogenous constructs are classified as weak, moderate, and substantial respectively [64].

In Table 6, the R^2 values for MH and PsyCap quality are reported as 0.723 and 0.362, respectively. These values suggest that the MH construct exhibits substantial explanatory power, while the PsyCap quality construct demonstrates moderate explanatory capacity. These results indicate that the models possess significant explanatory power in explaining the respective constructs.

This study examined PSS with a mediating effect on the relationship between PsyCap and MH. Table 7 showed that PSS moderately mediates this relation, with a coefficient of $b = 0.032$ and a significance level of $p < 0.034$, which supports hypothesis H4. This shows that PSS moderately mediates the relationship between PsyCap and MH.

3.8. Evaluation of the stature model

The subsequent phase of evaluating PLS-SEM results entails scrutinizing the structural model [71]. Five key aspects have been established in assessing the standard criteria for the structural model [72]. These aspects include the assessment of collinearity, examination of path coefficients within the structural model (see Fig. 3), determination of the coefficient of determination (R2), and the effect size (f2).

3.9. Effect size (f^2)

Effect size, typically represented by f^2, is used to measure the magnitude of the influence of exogenous constructs on endogenous constructs. As recommended, these guidelines are commonly followed in determining effect sizes. The f2 values of 0.02, 0.15, and 0.35 represent the magnitudes of modest, medium, and large impacts of an exogenous construct on an endogenous construct. Table 8 shows that PsyCap 0.210 has a large effect, and PSS 0.190 has a medium effect on students' MH.

Table 4
Discriminant validity (Fornell-Larcker).

Constructs	MH	PSS	PsyCap
Mental Health (MH)	0.774		
Perceived Social Support (PSS)	0.410	0.773	
Psychological Capital (PsyCap)	0.748	0.405	0.677

Table 5
Collinearity assessment.

Constructs	VIF	Higher than 0.20 and lower than 5
Mental Health (MH)	1.196	Yes
Perceived Social Support (PSS)	1.196	Yes
Psychological Capital (PsyCap)	1.000	Yes

Note. VIF = Variance Inflation Factor.

Table 6
Path coefficient.

Path Coefficient	Coefficient (Original)	Coefficient (M)	S.D.	t	P
PSS →MH	0.080	0.080	0.034	2.319	0.020
PsyCap →MH	0.815	0.815	0.026	31.074	0.000
PsyCap →PSS	0.405	0.408	0.050	28.051	0.000
	R Square	**R Square Adjusted**			
MH	0.724	0.723			
PsyCap	0.364	0.362			

Table 7
Indirect relations.

Indirect Relations	Coefficients	M	S.D.	t	P	Result
PsyCap → PSS → MH	0.032	0.033	0.015	2.126	0.034	Accepted

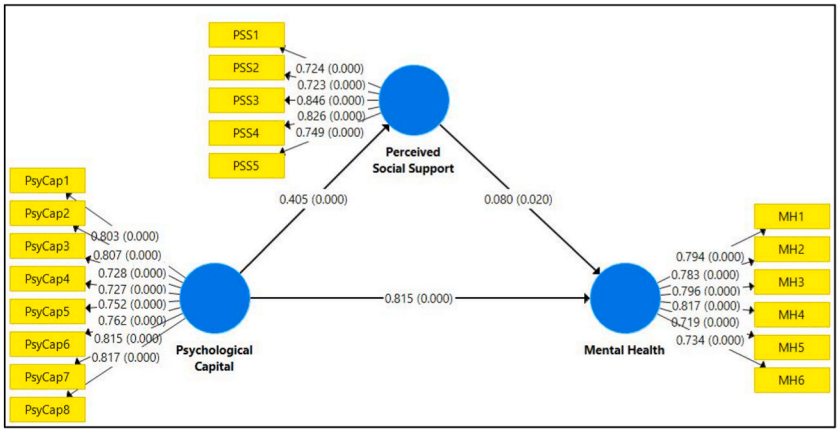

Fig. 3. Final model (output).

Table 8
Effect size.

	f^2	Effect Size
Mental Health	–	–
Perceived Social Support	0.190	Medium
Psychological Capital	0.210	Large

4. Discussion

The current study presents empirical findings on the implications of constructs such as PsyCap, MH, and PSS (friends, family, and significant others) within the context of Chinese higher Education. Specifically, we hypothesized that PSS mediates the association between PsyCap and MH among higher education students. Initially, we investigated the direct and indirect correlation between (a) PsyCap and MH and (b) PSS and MH. The results highlighted a positive correlation between PsyCap and MH among Chinese higher education students, which aligns with prior research [73]. The findings also depicted a positive relationship between PsyCap and

students' psychological and physiological well-being. Similar findings were obtained in the study [74], which revealed that higher levels of PsyCap correlate with improved students' well-being and life satisfaction. Previous research provides robust evidence for the correlation between PsyCap and students' overall well-being [75–78].

Additionally, the study [77] found that PsyCap positively affects MH. In the study, the lower levels of PsyCap were correlated with increased MH issues like post-traumatic stress disorder, depression, anxiety, and substance abuse (alcohol and drug abuse). Earlier studies have consistently demonstrated that PsyCap and anxiety, workplace deviance, and burnout are negatively correlated [75,79,80].

The findings of this study also indicated a positive link between PSS and MH, in line with other studies [81,82], which concluded that PsyCap and PSS from friends, family, and others significantly promote MH among higher education students. The observed direct relationships align with the COR theory [83], which posits that individuals who possess high levels of one resource (PsyCap or social support) tend to exhibit high levels of other resources (MH). Furthermore, we explored the mediating role of PSS in the relationship between PsyCap and MH. Importantly, the findings depicted a significant and positive impact of PsyCap and PSS on MH, thus supporting this study's hypothesis (H1).

Moreover, the findings of this study underscore that PSS levels influence the relationship between PsyCap and MH. Specifically, the findings signify that higher levels of PSS enhance the relationship between PsyCap and MH. Conversely, when social support is low, the impact of PsyCap on MH weakens. These findings align with the proposition proposed by the COR theory, which emphasizes the importance of situational resources in coping [83]. Our study provides empirical evidence that PSS, as a situational resource, can contribute to improved MH outcomes. Our study's findings, which underscore the mediating function of PSS, are substantiated by the stress-buffering model of social support [75]; earlier research has demonstrated that PSS can be a protective factor in the connection between PsyCap and well-being [39]. Our results align with the stress-buffering model of social support, emphasizing the essential role of social support in bolstering MH amid psychological stressors. Such stressors could include the actual or potential loss of resources or failure to secure resources after exerting effort [84]. For example, stress among higher education students can be sparked by less personal resources, such as low self-efficacy, less optimism, life stressors, everyday difficulties, and academic stress. These stressors can adversely affect students' MH.

The present study adds to the current body of knowledge by explaining PSS as a key defensive mechanism against perceived stress. Strong interpersonal relationships within social networks, such as families, friends, and peers, facilitate this buffering process. These networks provide a sense of inclusion, trust, support, and cooperation, which are protective barriers to MH. They help mitigate the perceived impact of stressful events and offer potential coping strategies.

Furthermore, our research advances the understanding of PsyCap by emphasizing the role of social capital as a crucial boundary condition for MH. By highlighting social capital as a situational resource, this study adds to the field of educational psychology, underscoring its pivotal role in nurturing mental well-being. It further expands the limited research on the role of PSS as a mediator in the relationship between PsyCap and MH. It offers useful insights into the relationship of these concepts within the framework of higher education in China. Future research may investigate supplementary contextual factors and interventions that may augment the well-being of higher education students. Furthermore, conducting longitudinal studies could offer a more comprehensive insight into the long-term impact of PsyCap and PSS on MH outcomes.

5. Recommendations and policy implications

Higher education institutions aim to provide students with the required information, skills, talents, and attitudes to succeed in their careers, effectively manage stress, and maintain good MH and overall well-being [16, 86]. The results of our research highlight the importance of PSS in improving students' MH to cope with challenges. People with a greater perception of social support, particularly from their friends, classmates, and family members, are likelier to possess improved MH outcomes. This enumerates the necessity of acknowledging the significance of social resources in educational environments.

The importance of cultivating PSS among students at higher education institutions has been overlooked. Emphasizing the development of social support and personal resources is crucial for promoting mental well-being. When designing interventions to enhance students' overall development and well-being, teachers, mentors, coaches, MH professionals, and academic supervisors should thoroughly assess these evidence-based findings. Intervention programs can focus on several key aspects, including (a) raising awareness regarding the significance of social support, (b) finding the areas for the cultivation of social support, and (c) implementing training programs to enhance students' social support networks.

6. Conclusion

This study highlights the significance of PSS within higher education settings for fostering and preserving sound MH. While earlier research has confirmed the direct effect of social support on MH, our research uniquely elucidates the mediating effect of PSS within the correlation between PsyCap and MH. We propose that an abundance of social resources can help individuals counteract stressors, thereby bolstering the mental well-being of higher education students.

7. Limitations and further research directions

The current study acknowledges many limitations. Initially, it exclusively aimed at higher education in Wuhan, China. Further research could be conducted in wider and more representative settings to enhance researchers' understanding of the described

phenomena. This study implemented the participant self-report method. Future studies may employ several methodologies to enhance the clarity of relationships among variables. Finally, we investigated the influence of PSS as a mediator in the relationship between PsyCap and MH. Subsequent research may evaluate the impact of anxiety, loneliness, emotional intelligence, and social standing/socioeconomic status. Although the current study employed a cross-sectional methodology, future studies could utilize a time-lag design to investigate this phenomenon.

8. Scope of the study

The present study encompasses a focused investigation into the mediating role of PSS in the relationship between PsyCap and MH among higher education students. The study is based on principles of Positive Psychology, which has previously established a connection between PsyCap and MH. However, the specific interplay with PSS within higher Education remains unexplored, prompting this research to delve deeper. The study sample consists of 443 undergraduate and graduate students drawn explicitly from Chinese universities in the Hongshan District of Wuhan, located within the Hubei province of China. This selection criteria narrows the focus to a specific demographic, allowing for a detailed exploration of the variables under scrutiny within the educational context. Notably, this sample size and demographic choice are deliberate, reflecting a reasonable consideration of factors that may vary the findings. The overall scope of this study extends to a comprehensive investigation into the intricate relationships among PsyCap, PSS, and MH within the context of higher education. Focusing on undergraduate and graduate students in Chinese universities in the Hongshan District of Wuhan offers a unique lens to understand these dynamics. The findings, analyzed through PLS-SEM, contribute to theoretical and practical domains, providing valuable insights for educators, psychologists, and curriculum developers in Higher Education.

Statement on ethics

All participants in the study provided informed written consent. This study was performed under the Declaration of Helsinki. The Ethics Committee of the School of Huazhong University of Science and Technology (IRB No. 20221027) approved the study.

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Data availability

The study encompasses the authors’ primary research, available in articles or supplementary materials. The corresponding author can be contacted for further inquiries.

CRediT authorship contribution statement

Aashiq Khan: Writing – review & editing, Writing – original draft, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Irum Zeb:** Writing – review & editing, Visualization, Methodology, Formal analysis. **Yan Zhang:** Supervision, Funding acquisition. **Shawana Fazal:** Writing – review & editing. **Jie Ding:** Funding acquisition.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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