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Psychological Capital Among University Students in an Interconnected Learning Environment: Sleep Quality, Social Media Use, Academic Stress and Social Connectedness in Higher Education

Addah Temple Tamuno-Opubo
Olabisi Onabanjo University
Olufemi Talabi
University NHS Foundation Trust
Joshua Eriki Osagbai
Essex Partnership University NHS Foundation Trust
Blessing Umeh Akudo
Latham House Medical Practice
Moshood Moses Mamudu
mmamudu@oauife.edu.ng
Obafemi Awolowo University
Chibuike Umeh
University Hospitals of Leicester NHS Trust

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Abstract

Purpose

This study examines how sleep quality, academic stress, social connectedness and social media use shape psychological capital among Nigerian university students in an interconnected learning environment. It also tests the mediating role of academic stress and the moderating role of social media use.

Design/methodology/approach:

A cross-sectional survey was conducted among 849 students at Obafemi Awolowo University, Nigeria. Participants comprised 335 females and 514 males, with a mean age of 25.1 years, SD = 5.30. Data were collected using the Insomnia Severity Index, reverse-scored to indicate sleep quality, the Social Connectedness Scale-Revised, the Compound Psychological Capital Scale, the Perceived Academic Stress Scale and the Social Media Use Scale. Descriptive statistics, correlation analysis and structural equation modelling were conducted using SPSS and AMOS.

Findings:

Better sleep quality was associated with higher psychological capital, $r = .40$, $p < .01$, while academic stress, $r = -.50$, $p < .01$, and social media use, $r = -.52$, $p < .01$, were negatively associated with psychological capital. Social connectedness was positively associated with psychological capital, $r = .11$, $p < .01$. The mediation model explained 32% of the variance in psychological capital. Sleep quality positively predicted psychological capital, $\beta = .39$, $p = .003$, while academic stress negatively predicted psychological capital, $\beta = -.32$, $p < .001$. Academic stress mediated the sleep quality-psychological capital pathway, $\beta = .08$, $p = .001$. Social media use weakened the positive relationship between social connectedness and psychological capital, $\beta = -.12$, $p = .003$.

Practical implications:

Universities should strengthen student wellbeing through integrated policies that promote sleep health, reduce academic stress, build social connectedness and support digital-life balance.

Originality/value:

The study reframes psychological capital as a student capacity shaped by institutional, social and digital conditions in interconnected higher education environments.

Introduction

Universities are increasingly operating as interconnected learning environments where academic work, peer interaction, institutional communication, and personal identity are shaped through both physical and digital spaces (Adeyi, 2023). This transformation has created new opportunities for access, collaboration, and flexible learning, but it has also intensified pressures on students' well-being. In such environments, students are expected to manage academic demands, digital engagement, social relationships, and personal recovery simultaneously. These conditions make psychological capital an important resource for understanding how students adapt, persist, and thrive in higher education (Chemagosi, 2024).

Psychological capital refers to a positive psychological state characterised by hope, self-efficacy, resilience, and optimism (Luthans et al., 2006; Sabouripour et al., 2021). These capacities are important for academic adjustment, motivation, well-being, and persistence. Students with stronger psychological capital are more likely to approach academic challenges with confidence, sustain effort during difficult periods, recover from setbacks, and maintain positive expectations about the future (Goel & Wani, 2024; Sabouripour et al., 2024). However, psychological capital should not be treated only as an individual trait or a matter of personal motivation. In contemporary higher education, it is also shaped by institutional, social, academic, and digital conditions.

In Nigerian universities, students often experience pressure from academic workload, competitive performance expectations, crowded learning environments, limited support services, and increasing dependence on digital platforms for social and academic life (Ogunyemi, 2023). These pressures may affect students' sleep quality, stress levels, social connectedness, and psychological resources. Poor sleep quality is particularly important because sleep supports cognitive functioning, emotional regulation, attention, and recovery from daily demands (Adebayo, 2014; Bello, 2022). When students experience disrupted or inadequate sleep, their ability to manage academic pressure and sustain positive psychological functioning may be reduced (Abah et al., 2019; Eboma, 2019; Gebregergis & Csukonyi, 2025). In digitally active student populations, late-night study, online social interaction, and constant screen exposure may further complicate sleep patterns.

Academic stress is another important factor in students' well-being (Aihie, 2022). It refers to the psychological strain students experience as a result of academic expectations, examinations, deadlines, workload, competition, and fear of poor performance. High academic stress can produce cognitive overload, emotional fatigue, reduced motivation, and a weakened sense of control (Oyewobi et al., 2021; Aya et al., 2024). These experiences may undermine the development and expression of psychological capital (Pérez, 2022; Kristensen et al., 2023; Gebregergis & Csukonyi, 2025). In this sense, academic stress may function as a pathway through which poor sleep quality and weak social support translate into lower psychological capital.

Social connectedness also plays a central role in student well-being (Bassey & Adediran, 2024). It refers to students' sense of closeness, belonging, and meaningful connection with others (Lee & Robbins,

1995). In higher education, social connectedness may come from peers, family, classmates, lecturers, student communities, and the wider university environment. Strong social connectedness can provide emotional support, practical help, encouragement, and a sense of belonging, all of which may strengthen students' hope, optimism, resilience, and self-efficacy (du Plessis, 2021; Li et al., 2021; Barwal & Cherian, 2024; Liu et al., 2025). Conversely, weak social relationships and loneliness may increase vulnerability to distress and reduce students' psychological resources.

The role of social media use complicates this relationship (Adekunle, 2024). Social media has become part of the everyday learning and social ecology of university students (Elom et al., 2025). It can support communication, information sharing, academic collaboration, and social belonging (Abbas et al., 2019). However, excessive or poorly regulated use may also contribute to distraction, social comparison, emotional overload, sleep disruption, and digital fatigue (Zsido et al., 2021; Lim & Tan, 2024; Smith, 2024; Aramide & Shalom, 2025). Therefore, digital connection does not automatically translate into psychological connectedness. In an interconnected campus, social media use may either support students' social lives or weaken the psychological benefits that normally come from meaningful social connectedness.

Although previous studies have examined sleep quality, academic stress, social connectedness, social media use, and psychological wellbeing separately, fewer studies have examined how these factors operate together in shaping psychological capital among Nigerian university students. This gap is important because universities seeking to promote student wellbeing cannot rely only on individual counselling or motivational programmes. They also need evidence on how academic pressure, sleep health, social belonging, and digital-life balance interact within the student experience. Such evidence is relevant to sustainable higher education, especially in relation to student support systems, inclusive learning environments, digital wellbeing, and leadership responses to student stress (Falola et al., 2025).

The present study is guided by the Conservation of Resources Theory (Hobfoll, 1989), which suggests that individuals strive to acquire, protect, and maintain resources needed to cope with demands. In the context of this study, sleep quality and social connectedness are treated as important personal and social resources, while psychological capital represents a positive psychological resource that supports student adaptation. Academic stress is considered a resource-draining condition that may weaken psychological capital, while social media use is examined as a digital factor that may shape how sleep quality and social connectedness relate to psychological capital.

This study, therefore, examines psychological capital among university students in an interconnected learning environment by assessing the roles of sleep quality, social connectedness, academic stress, and social media use. Specifically, the study investigates the relationship between sleep quality and psychological capital, examines the influence of social connectedness on psychological capital, tests the mediating role of academic stress in the relationship between sleep quality, social connectedness, and psychological capital, and assesses the moderating role of social media use in the relationship between sleep quality, social connectedness, and psychological capital. By doing so, the study provides

evidence that can inform student wellbeing policy, academic stress reduction, institutional support systems, digital-life balance strategies, and sustainable higher education practice in Nigeria.

Methods

Design

This study adopted a cross-sectional quantitative research design to examine the relationships among sleep quality, social connectedness, academic stress, social media use, and psychological capital among Nigerian university students. The design was appropriate because it allowed the collection of self-reported data at a single point in time and enabled the testing of mediating and moderating relationships using statistical modelling techniques. Academic stress was examined as a mediator, while social media use was examined as a moderator in the relationship between sleep quality, social connectedness, and psychological capital.

Participant

Participants were students of Obafemi Awolowo University, Ile-Ife, Nigeria. The sample comprised 849 students drawn from undergraduate, postgraduate, and diploma programmes. Participants were recruited through convenience sampling. Eligible participants were registered students of the university who were willing to participate in the study and able to complete the questionnaire.

The respondents consisted of 335 females, 39.5%, and 514 males, 60.5%. Their ages ranged from 17 to 34 years, with a mean age of 25.1 years, SD = 5.30. Most participants were enrolled in degree programmes, 632 students, 74.4%, followed by postgraduate programmes, 163 students, 19.2%, and diploma programmes, 54 students, 6.4%. Academic performance was assessed using self-reported cumulative grade point average and categorised according to academic standing.

Instrumentation

Data were collected using a structured questionnaire comprising sections on sociodemographic characteristics, psychological capital, sleep quality, social connectedness, social media use, and academic stress. The sociodemographic section obtained information on age, gender, faculty, field of study, academic programme, and academic performance.

Psychological capital. Psychological capital was measured using the Compound Psychological Capital Scale, developed by Lorenz et al. (2016) and later revised by Dudasova et al. (2021). The scale assesses four dimensions of psychological capital: hope, optimism, resilience, and self-efficacy. Each dimension is represented by three items. Responses are rated on a 6-point Likert scale ranging from 0, strongly disagree, to 5, strongly agree. Higher scores indicate higher psychological capital. The scale has

demonstrated good psychometric properties in previous studies. In the present study, the reliability coefficient was .76.

Sleep quality. Sleep quality was measured using the 7-item Insomnia Severity Index, developed by Bastien et al. (2001). The original ISI assesses insomnia symptoms over the preceding two weeks, including difficulty falling asleep, difficulty staying asleep, early morning awakening, satisfaction with sleep, interference with daily functioning, noticeability of sleep problems, and distress caused by sleep difficulties. Items are rated on a 5-point scale ranging from 0 to 4, and the original total score ranges from 0 to 28, with higher scores indicating more severe insomnia. For the purpose of the present analysis, ISI scores were reverse-scored so that higher scores represented better sleep quality. This scoring direction was used consistently in the correlation, mediation, and moderation analyses. The reliability coefficient of the scale in the present study was .67.

Social connectedness. Social connectedness was measured using the 20-item Social Connectedness Scale-Revised, developed by Lee and Robbins (1995). The scale assesses the extent to which individuals feel close to, affiliated with, and connected to others within their social environment. Items are rated on a 6-point Likert scale ranging from 1, strongly disagree, to 6, strongly agree. Higher scores indicate stronger social connectedness. The scale has demonstrated strong psychometric quality in previous research. In the present study, the reliability coefficient was .80.

Social media use. Social media use was measured using the Social Media Use Scale, developed by Tuck and Thompson (2024). The scale assesses active and passive social media behaviours across four domains: image-based behaviours, comparison-based behaviours, belief-based interactions, and consumption-based habits. Respondents rated the frequency of their engagement on a 9-point Likert scale ranging from 1, never, to 9, hourly or more. Higher scores indicate greater social media use. The reliability coefficient in the present study was .77.

Academic stress. Academic stress was measured using the Perceived Academic Stress Scale, developed by Bedewy and Gabriel (2015). The scale contains 18 items covering academic self-perceptions, academic pressures, and academic frustration. Items are rated on a 5-point Likert scale ranging from 1, strongly disagree, to 5, strongly agree. Higher scores indicate higher perceived academic stress. The scale demonstrated good internal consistency in the original study, and the reliability coefficient in the present study was .84.

Data Collection Procedure

Data were collected using a structured, self-administered questionnaire. The questionnaire was distributed to participants in both physical and online formats. It contained measures of psychological capital, sleep quality, social connectedness, social media use, academic stress, and sociodemographic characteristics.

Participants were informed about the purpose of the study, the voluntary nature of participation, confidentiality of responses, and their right to withdraw at any stage without penalty. Only students who provided informed consent participated in the study. Completed questionnaires were screened before analysis. Questionnaires with substantial missing responses on the main study variables were excluded, and only complete responses were retained for analysis. A total of 849 completed questionnaires were retained for final analysis.

Ethical Considerations

The study received ethical approval from the Health Research Ethics Committee of Obafemi Awolowo University, Ile-Ife, Nigeria, as reflected in the approval notice, Ref No: IPHOAU/12/2437. The study was conducted in accordance with the principles of the Declaration of Helsinki. Written informed consent was obtained from all participants before data collection. Participants were assured that their responses would be treated confidentially and used only for research purposes. No identifying information was included in the analytic dataset, and participation involved no coercion or undue influence.

Method of Data Analysis

Data were analysed using SPSS Version 23 and AMOS Version 23. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarise participants' sociodemographic characteristics and study variables. Pearson product-moment correlation was used to examine bivariate relationships among sleep quality, social connectedness, academic stress, social media use, and psychological capital.

Structural equation modelling was used to test the mediating role of academic stress and the moderating role of social media use. Model fit was assessed using the chi-square divided by degrees of freedom ratio, Root Mean Square Error of Approximation, Standardised Root Mean Square Residual, Goodness-of-Fit Index, Comparative Fit Index, and Tucker-Lewis Index. Statistical significance was set at $p < .05$.

Results

Table 1

Frequency Distribution Showing Respondents' Socio-Demographic Characteristics

Variables	Categories	Frequencies	Percentages
Sex	Female	335	39.5
	Male	514	60.5
	Total	849	100.0
Programme	Degree	632	74.4
	Postgraduate	163	19.2
	Diploma	54	6.4
	Total	849	100.0
Academic performance	4.50–5.00	51	6.0
	3.50–4.49	90	10.6
	2.49–3.49	218	25.7
	1.50–2.48	242	28.5
	Good academic standing	248	29.2
	Total	849	100.0
Age	Mean = 25.1; SD = 5.30	Range: 17–34 years	

Table 1 presents the socio-demographic characteristics of the study participants. Among the 849 participants, 335, 39.5%, were female, while 514, 60.5%, were male. The age range of participants was from 17 to 34 years, with a mean age of 25.1 years, SD = 5.30. In terms of academic programme, 632 participants, 74.4%, were enrolled in degree programmes, 163, 19.2%, were postgraduate students, and 54, 6.4%, were diploma students. Regarding academic performance, 51 participants, 6.0%, had a grade point between 4.50 and 5.00, while 90, 10.6%, had a grade point between 3.50 and 4.49. Also, 218 participants, 25.7%, had a grade point between 2.49 and 3.49, while 242, 28.5%, had a grade point between 1.50 and 2.48. The remaining 248 participants, 29.2%, were classified as being in good academic standing.

Correlational Analysis

Table 2

Correlation Matrix Showing Relationships among Study Variables

Variables	1	2	3	4	5	6	7
1. Gender	1						
2. Age	-.07	1					
3. Academic stress	-.05	-.05	1				
4. Social media use	-.04	-.01	.32**	1			
5. Social connectedness	-.07*	.09*	-.01	.08*	1		
6. Sleep quality	.03	-.01	-.19**	-.22**	.04	1	
7. Psychological capital	-.07*	-.05	-.50**	-.52**	.11**	.40**	1
Mean	—	25.1	55.0	58.6	58.3	22.9	39.8
SD	—	5.30	9.74	11.79	11.58	3.93	7.54

Note. *p < .05; **p < .01. Higher sleep quality scores indicate better sleep quality.

Table 2 presents the relationships among gender, age, academic stress, social media use, social connectedness, sleep quality, and psychological capital. Sleep quality was reverse-scored so that higher scores indicate better sleep quality. The results showed that better sleep quality was significantly and positively related to psychological capital, r = .40, p < .01. This indicates that students who reported better sleep quality also tended to report higher psychological capital.

Academic stress was significantly and negatively related to psychological capital, r = -.50, p < .01. This means that students who reported higher academic stress tended to report lower psychological capital. Social media use was also significantly and negatively related to psychological capital, r = -.52, p < .01, suggesting that higher social media use was associated with lower psychological capital. Social connectedness had a positive relationship with psychological capital, r = .11, p < .01, indicating that students who felt more socially connected reported higher psychological capital.

Academic stress was positively related to social media use, r = .32, p < .01. Sleep quality was negatively related to academic stress, r = -.19, p < .01, and social media use, r = -.22, p < .01. These findings suggest that better sleep quality was associated with lower academic stress and lower social media use, while higher academic stress and heavier social media use were associated with weaker psychological capital.

The mediation model showing the indirect effect of academic stress in the relationship between sleep quality, social connectedness, and psychological capital is presented in Fig. 1.

The path diagram presents the structural equation model examining the mediating role of academic stress in the relationship between sleep quality, social connectedness, and psychological capital. The model accounted for 32% of the variance in psychological capital. Sleep quality significantly predicted

psychological capital, β = .39, p = .003, indicating that better sleep quality was associated with higher psychological capital. Social connectedness also predicted psychological capital, β = .10, p = .050, suggesting that stronger social connectedness was associated with higher psychological capital.

Academic stress significantly predicted psychological capital in the expected negative direction, β = -.32, p < .001. This indicates that higher academic stress was associated with lower psychological capital. The result supports the view that academic stress weakens students' positive psychological resources, including hope, optimism, resilience, and self-efficacy.

The indirect effect of sleep quality on psychological capital through academic stress was significant, β = .08, p = .001. This suggests that better sleep quality was associated with lower academic stress, which in turn was associated with higher psychological capital. The indirect effect of social connectedness on psychological capital through academic stress was statistically significant but very small, β = .001, p = .020, and should therefore be interpreted cautiously.

Predictors of Psychological Capital

Table 3

Model Fit Indices for the Mediation Model

Table 3 presents the fit indices for the mediation model examining academic stress as a mediator in the relationship between sleep quality, social connectedness, and psychological capital. The model demonstrated good fit to the data. The CMIN/DF value of 1.564 was below the recommended threshold of 3.00, while the RMSEA value of .026 and SRMR value of .034 were both below .05, indicating close fit. In addition, the GFI, CFI, and TLI values were .999, .998, and .991 respectively, all exceeding the recommended .90 threshold. These indices show that the mediation model was statistically adequate for interpreting the direct and indirect pathways among the study variables.

CMIN/DF	RMSEA	SRMR	GFI	CFI	TLI
1.564	.026	.034	.999	.998	.991

The final mediation model accounted for 32% of the variance in psychological capital. Sleep quality, social connectedness, and academic stress had significant direct effects on psychological capital. Sleep quality had a positive effect, β = .39, p = .003, indicating that better sleep quality predicted higher psychological capital. Social connectedness also had a positive effect, β = .10, p = .050, indicating that students with stronger social connectedness reported higher psychological capital. Academic stress had a negative effect, β = -.32, p < .001, indicating that higher academic stress predicted lower psychological capital.

The mediating role of academic stress was also supported. Sleep quality had a significant indirect effect on psychological capital through academic stress, β = .08, p = .001. Social connectedness also had an indirect effect through academic stress, β = .001, p = .020, although the size of this effect was very small and should be interpreted cautiously.

The moderation model showing the role of social media use in the relationship between sleep quality, social connectedness, and psychological capital is presented in Fig. 2.

A moderation analysis examined whether social media use influenced the relationship between sleep quality, social connectedness, and psychological capital. The results indicated that social media use did not significantly moderate the relationship between sleep quality and psychological capital, β = .03, t = .80, p = .425. This means that the relationship between sleep quality and psychological capital did not significantly change at different levels of social media use.

However, social media use significantly moderated the relationship between social connectedness and psychological capital, β = -.12, t = -3.01, p = .003. This indicates that higher social media use weakened the positive relationship between social connectedness and psychological capital. In other words, students with stronger social connectedness tended to report higher psychological capital, but this beneficial effect was reduced when social media use was high.

Table 4 Regression Coefficients for the Moderation Model

Predictor variables	β	t-value	p-value
Social connectedness	.06	2.08	.038*
Social media use	-.47	-4.82	< .001***
Social connectedness × social media use	-.12	-3.01	.003**
Sleep quality	.29	5.13	< .001***
Sleep quality × social media use	.03	.80	.425
Model R^2	.32		
F-statistic	9.41		< .001

Note. *p < .05; **p < .01; ***p < .001.

Table 4 shows the regression coefficients for the moderation model. Sleep quality had a positive and significant effect on psychological capital, β = .29, t = 5.13, p < .001. Social connectedness also had a positive and significant effect on psychological capital, β = .06, t = 2.08, p = .038. Social media use had a negative and significant effect on psychological capital, β = -.47, t = -4.82, p < .001. This means that higher social media use was associated with lower psychological capital.

The interaction between sleep quality and social media use was not significant, β = .03, t = .80, p = .425. Therefore, social media use did not moderate the relationship between sleep quality and psychological capital. However, the interaction between social connectedness and social media use was significant, β = -.12, t = -3.01, p = .003. This indicates that social media use moderated the relationship between social connectedness and psychological capital by weakening the positive effect of social connectedness.

The bootstrapping results used to test the direct and interaction effects are presented in Table 5.

Table 5 Bootstrapping Analysis for Hypothesis Testing

Path	Beta	t-statistics	p-value	Decision
Sleep quality → Psychological capital	.29	9.79	< .001	Supported
Social connectedness → Psychological capital	.06	2.07	.038	Supported
Social media use → Psychological capital	-.47	-13.15	< .001	Supported
Sleep quality × social media use → Psychological capital	.03	.80	.425	Not supported
Social connectedness × social media use → Psychological capital	-.12	-3.02	.003	Supported

Bootstrapping analysis was conducted to test the significance of both direct and interaction effects. The results confirmed that sleep quality significantly predicted psychological capital, β = .29, p < .001. Social connectedness also significantly predicted psychological capital, β = .06, p = .038. Furthermore, social media use had a significant negative effect on psychological capital, β = -.47, p < .001. However, the interaction between sleep quality and social media use was not significant, β = .03, p = .425, indicating that social media use did not moderate the relationship between sleep quality and psychological capital.

On the other hand, the interaction between social connectedness and social media use was significant, β = -.12, p = .003. This confirms that social media use moderated the relationship between social connectedness and psychological capital. Specifically, high social media use reduced the beneficial effect of social connectedness on psychological capital.

The simple slope plot showing how social media use moderates the relationship between social connectedness and psychological capital is presented in Fig. 3.

A simple slope analysis showed that social media use moderated the relationship between social connectedness and psychological capital. The slope indicated that the positive relationship between social connectedness and psychological capital was stronger when social media use was low and weaker when social media use was high. This suggests that excessive social media use may reduce the psychological benefits that students normally gain from social connectedness.

Summary of Findings

Overall, the findings show that better sleep quality and stronger social connectedness were associated with higher psychological capital among university students. Higher academic stress was associated with lower psychological capital and mediated the relationship between sleep quality and psychological capital. Social media use had a negative direct effect on psychological capital and also weakened the positive association between social connectedness and psychological capital. These findings suggest that in digitally interconnected university environments, psychological capital is shaped not only by individual wellbeing factors such as sleep quality and academic stress, but also by the quality of students' social and digital lives.

Discussion

This study examined how sleep quality, social connectedness, academic stress, and social media use relate to psychological capital among Nigerian university students. The findings show that psychological capital is not shaped only by individual traits or personal motivation. In an interconnected learning environment, students' hope, optimism, resilience, and self-efficacy are also influenced by the quality of their sleep, the pressure they experience from academic demands, the strength of their social relationships, and the way they engage with digital platforms. This evidence is important for higher education institutions because student wellbeing now depends on both offline and online conditions of learning.

The results showed that better sleep quality was associated with higher psychological capital. This suggests that students who sleep better are more likely to report stronger psychological resources for coping with academic and social demands. Sleep may support psychological capital by improving emotional regulation, attention, motivation, and the capacity to recover from academic pressure. This finding is consistent with studies that link adequate sleep with better psychological wellbeing, academic motivation, and resilience among students (Ugwueze et al., 2021; Olanrewaju & Tinuke, 2022). In the context of digitally connected campuses, this finding is especially important because late-night study, online engagement, and constant digital availability may disrupt sleep routines. Universities therefore need to recognise sleep quality as part of student wellbeing policy, not merely as a private lifestyle issue.

The study also found that academic stress was negatively associated with psychological capital and mediated the relationship between sleep quality and psychological capital. This means that better sleep quality may support psychological capital partly because it reduces academic stress. Conversely, when academic stress is high, it can weaken students' positive psychological resources even when other protective factors are present. This supports the view that academic stress produces cognitive overload, emotional fatigue, and reduced sense of control, which may lower students' hope, optimism, resilience, and self-efficacy. Similar findings have been reported in studies showing that academic pressure contributes to anxiety, burnout, poor motivation, and reduced psychological wellbeing among students (Kumi, 2023; Akpan et al., 2024). For university leadership, this finding implies that academic stress

should not be treated only as a student coping problem. It is also an institutional issue linked to curriculum load, assessment design, academic advising, timetable pressure, and access to support.

Social connectedness was positively associated with psychological capital, although its indirect effect through academic stress was very small. This indicates that students who feel socially connected are more likely to report higher psychological capital. Social connectedness may provide emotional support, belonging, encouragement, and practical help, all of which strengthen students' confidence and capacity to cope with academic challenges. This aligns with evidence that social support and belonging can reduce distress and improve students' psychological adjustment (Aminu et al., 2024). However, the small indirect effect through academic stress suggests that social connectedness may influence psychological capital more directly than through stress reduction. In other words, belonging itself may be psychologically strengthening, regardless of whether it substantially reduces academic stress.

The findings on social media use are particularly relevant to interconnected learning environments. Social media use had a significant negative direct effect on psychological capital and also weakened the positive relationship between social connectedness and psychological capital. This suggests that digital connection does not automatically translate into psychological connectedness. Although social media may provide communication, information, and peer interaction, heavier use may also expose students to distraction, comparison, emotional overload, digital fatigue, and reduced face-to-face engagement. This may explain why the psychological benefits of social connectedness were weaker among students with higher social media use. The result supports the argument that universities need to promote digital-life balance rather than assuming that online connectedness is always beneficial.

Interestingly, social media use did not moderate the relationship between sleep quality and psychological capital. This means that the positive relationship between sleep quality and psychological capital remained stable regardless of students' level of social media use. However, because social media use had a direct negative effect on psychological capital and weakened the benefit of social connectedness, it remains an important wellbeing issue. The implication is that universities should avoid simplistic digital policies that only warn students against excessive use. Instead, institutions should help students develop healthier digital habits, including intentional social media use, screen-time boundaries, digital rest periods, and awareness of online comparison and emotional fatigue.

Taken together, the findings extend psychological capital research by situating students' positive psychological resources within the wider ecology of contemporary higher education. Psychological capital is often discussed as an internal capacity, but this study shows that it is also shaped by institutional and digital conditions. In Nigerian higher education, where students face academic pressure, social change, and increasing digital engagement, psychological capital should be understood as a shared concern for students, lecturers, counsellors, digital learning units, and university leadership. This interpretation aligns with sustainable higher education because student success cannot be measured only through enrolment, examination performance, or graduation rates. Sustainable higher

education also requires learning environments that protect wellbeing, support belonging, and build students' long-term adaptive capacity.

Implications for higher education policy and practice

The findings have several implications for student wellbeing policy and institutional leadership. First, universities should integrate psychological capital development into student support systems. Programmes that strengthen hope, resilience, optimism, and self-efficacy can be embedded in orientation programmes, counselling services, academic advising, peer mentoring, and student leadership activities.

Second, sleep health should become part of campus wellbeing promotion. Universities can provide psychoeducation on sleep hygiene, late-night screen use, time management, and recovery from academic pressure. This is particularly important in digitally interconnected campuses where students may remain academically and socially active online late into the night.

Third, academic stress reduction should be treated as a leadership and policy issue. University leaders, faculty administrators, and academic departments should review assessment timing, workload clustering, feedback systems, student advising, and access to academic support. Reducing unnecessary academic pressure does not mean lowering standards. Rather, it means designing learning environments that are rigorous but psychologically sustainable.

Fourth, institutions should strengthen social connectedness through structured peer mentoring, inclusive student communities, academic support groups, residence-based support, and student engagement programmes. Since social connectedness contributes to psychological capital, universities should create conditions that help students feel seen, supported, and included.

Fifth, digital-life balance should be incorporated into university wellbeing strategies. Social media use should not be framed only as a distraction or moral problem. It should be addressed as part of the modern learning environment. Universities can support students through digital literacy training, awareness of social comparison, guidance on healthy online engagement, and policies that encourage balance between online interaction and meaningful offline relationships.

Limitations and future research

This study has some limitations. The cross-sectional design means that causal conclusions cannot be made. Although the findings show significant associations and mediation or moderation pathways, the direction of these relationships should be interpreted cautiously. Longitudinal studies are needed to examine how sleep quality, academic stress, social connectedness, social media use, and psychological capital influence one another over time.

The study also relied on self-report measures, which may be affected by recall bias, social desirability, and individual differences in reporting sleep, stress, digital behaviour, and psychological resources.

Future studies may include objective indicators such as sleep tracking, screen-time data, academic records, or counselling service data. In addition, the study was conducted in one Nigerian university using convenience sampling, which may limit generalisability. Future research should include multiple universities across different regions, institutional types, and student populations.

Future studies should also distinguish between different types of social media use. Active, supportive, academic, passive, comparison-based, and compulsive uses of social media may have different implications for psychological capital. Qualitative or mixed-method research would also help explain how students experience digital connection, academic pressure, belonging, and institutional support in everyday campus life.

Conclusion

This study shows that psychological capital among Nigerian university students is shaped by sleep quality, academic stress, social connectedness, and social media use. Better sleep quality and stronger social connectedness were associated with higher psychological capital, while academic stress and social media use were associated with lower psychological capital. Academic stress mediated the relationship between sleep quality and psychological capital, while social media use weakened the positive relationship between social connectedness and psychological capital.

The findings suggest that student psychological capital should not be treated only as an individual psychological trait. In an interconnected learning environment, it is also shaped by institutional, social, and digital conditions. Universities therefore need integrated wellbeing policies that combine sleep-health promotion, academic stress reduction, social connectedness, digital-life balance, and stronger institutional support systems. Such responses are essential for sustainable higher education because students are more likely to thrive when universities support both academic achievement and psychological wellbeing.

Declarations

Consent for Publication

Each of the authors has given his/her consent to the publication of this article.

Author Contributions

All authors made substantial contributions to this study, including the conception and design of the research, data collection, analysis, and interpretation. They jointly drafted and critically revised the manuscript for intellectual clarity. Each author approved the final version and accepts responsibility for the integrity of the work.

Disclosure

The authors do not have any conflicts of interest.

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Data Availability Statement

The datasets generated and analyzed during the current study are are available from the corresponding author on reasonable request.

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Figures

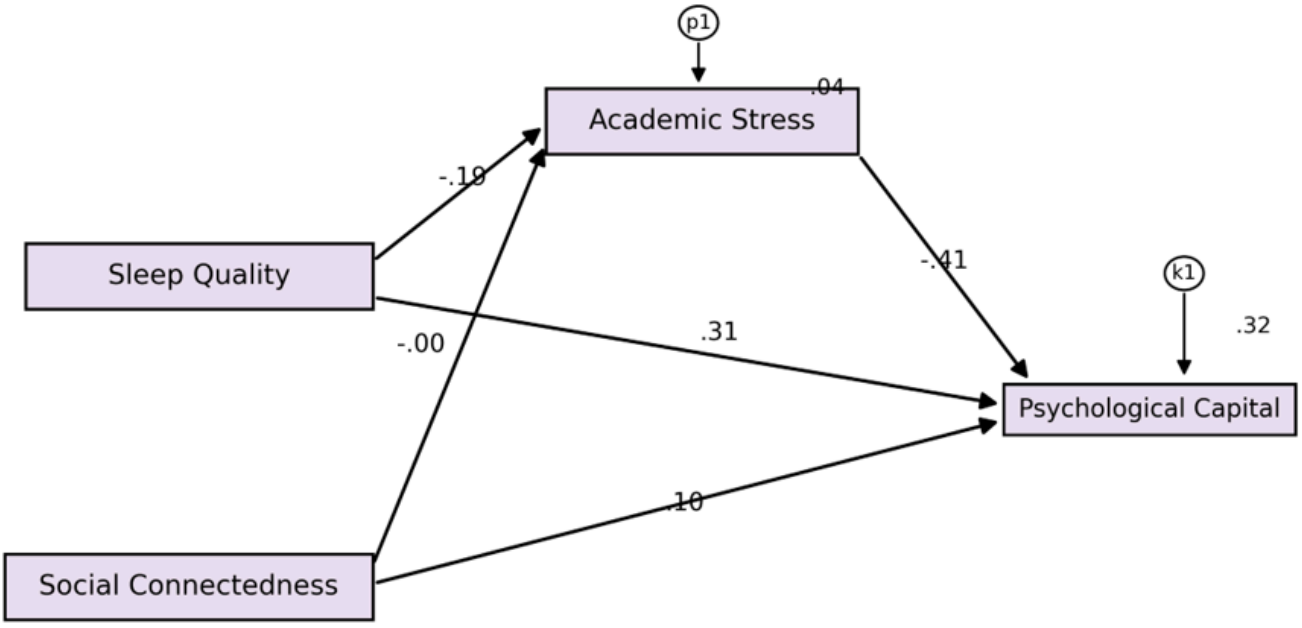


Figure 1

Path Diagram Showing the Mediating Effect of Academic Stress on the Relationship between Sleep Quality, Social Connectedness, and Psychological Capital

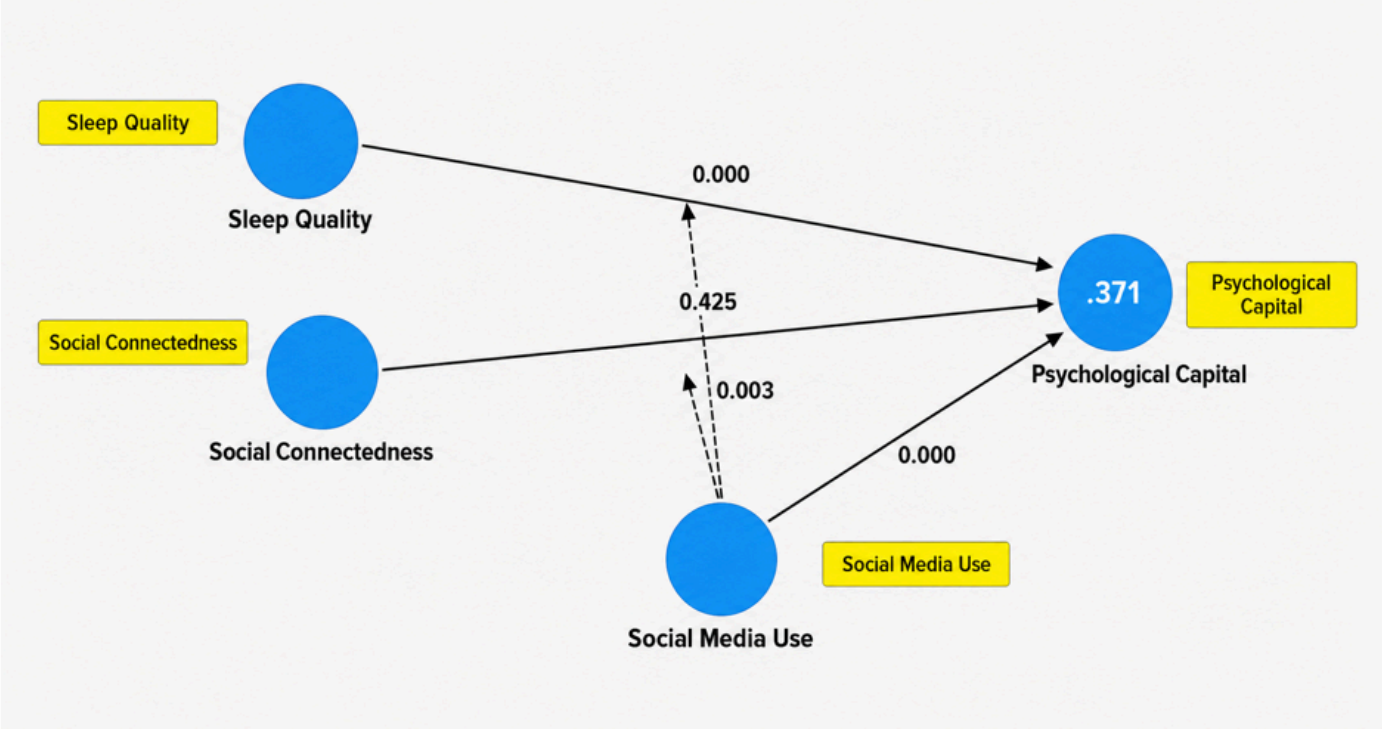


Figure 2

Path Diagram Showing the Moderating Effect of Social Media Use in the Relationship between Sleep Quality, Social Connectedness, and Psychological Capital

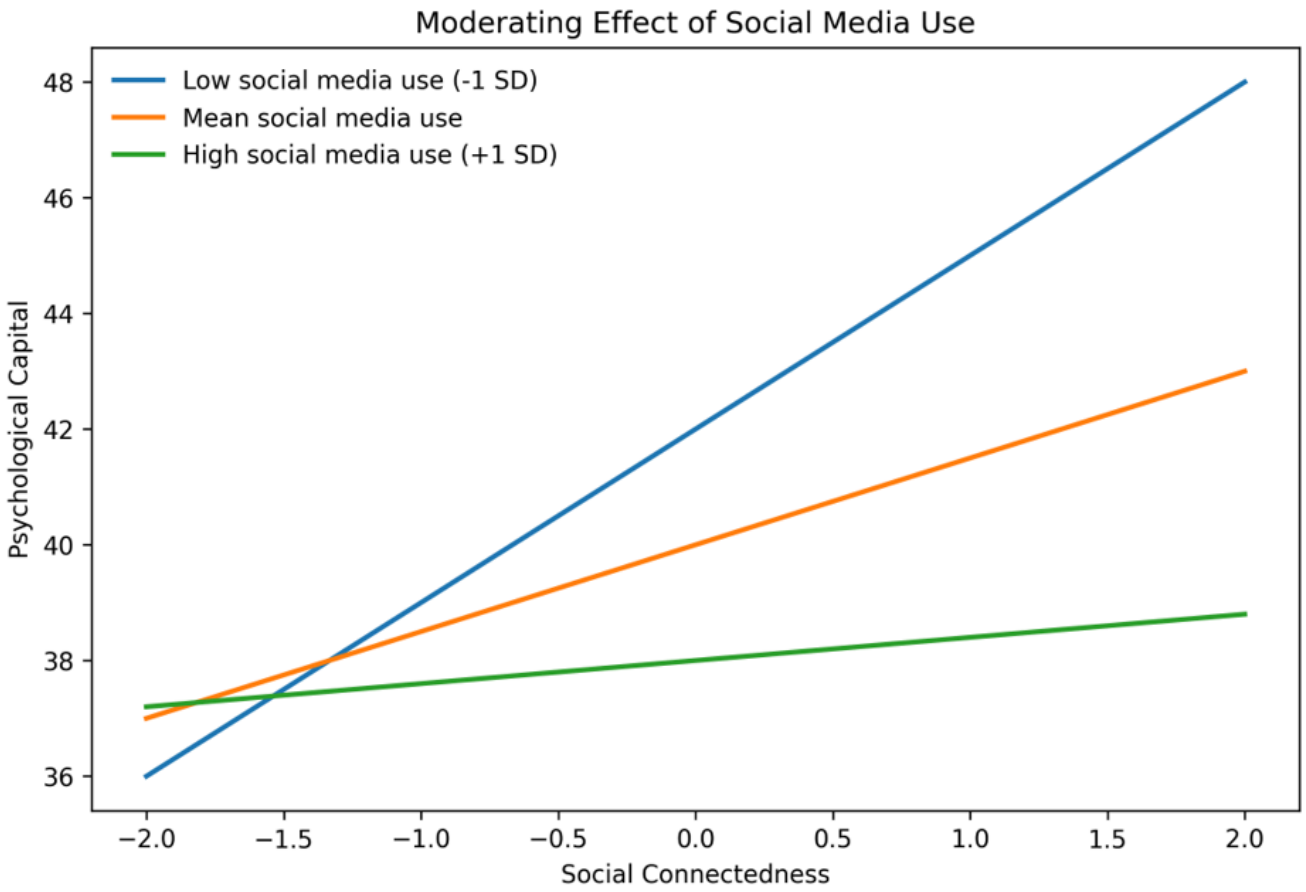


Figure 3

Slope of the Moderating Effect of Social Media Use on Social Connectedness and Psychological Capital