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Relationship between Social Media Addiction and Mental Well-Being among College Students: A Quantitative Study Using Statistical Analysis

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Abstract

Social media has become an essential part of college students' academic, social, and personal lives. Although these platforms facilitate communication and information sharing, excessive use may develop into addictive behavior that negatively affects mental well-being. The present study examines the relationship between social media addiction and mental well-being among college students using a quantitative research approach. Data were collected from **400 undergraduate and postgraduate students** through a structured questionnaire based on a five-point Likert scale. The collected data were analyzed using descriptive statistics, reliability analysis, exploratory factor analysis, Pearson correlation, hierarchical multiple regression, moderation analysis, and MANOVA in IBM SPSS Statistics.

The findings indicate a significant negative relationship between social media addiction and mental well-being. Students with higher levels of addictive social media use reported lower psychological well-being, greater emotional exhaustion, and reduced life satisfaction. Regression analysis further revealed that social media addiction significantly predicts mental well-being after controlling for demographic variables. The study highlights the importance of promoting responsible social media use and digital well-being initiatives within higher education institutions. The findings provide useful implications for educators, mental health professionals, and policymakers in designing interventions that encourage healthier digital habits among college students.

Keywords: Social Media Addiction, Mental Well-Being, College Students, Digital Well-Being, Psychological Health, Screen Time, Quantitative Research.

Introduction

The proliferation of smartphones and high-speed internet has fundamentally altered the social and academic lives of college students. Social media platforms such as Instagram, Facebook,

WhatsApp, Snapchat, X (formerly Twitter), and YouTube have become integral components of daily communication, entertainment, education, and self-expression. Although these platforms facilitate collaboration, information exchange, and social connectedness, excessive engagement has raised growing concerns regarding its potential impact on psychological well-being. Increasing evidence suggests that compulsive social media use may evolve into problematic or addictive behavior characterized by impaired self-control, preoccupation with online activities, withdrawal symptoms, and interference with daily functioning (Ansari et al., 2024).

Mental well-being represents a positive state in which individuals recognize their abilities, effectively manage everyday stress, maintain satisfying interpersonal relationships, and contribute productively to society. It encompasses emotional stability, psychological resilience, life satisfaction, optimism, and social functioning rather than merely the absence of mental illness. College students often encounter multiple academic, financial, and social pressures while simultaneously adapting to significant developmental transitions. In this context, maintaining good mental well-being has become increasingly challenging, particularly in an environment where digital engagement occupies a substantial proportion of students' daily routines.

Recent research indicates that problematic social media use is associated with numerous adverse psychological outcomes, including depression, anxiety, stress, loneliness, poor sleep quality, low self-esteem, fear of missing out (FoMO), and reduced subjective well-being. Continuous exposure to idealized online lifestyles, social comparison, cyberbullying, and constant notifications can contribute to emotional fatigue and psychological distress. While moderate social media use may enhance social support and interpersonal communication, excessive dependence often disrupts healthy coping mechanisms and emotional regulation.

Theoretical perspectives such as the Uses and Gratifications Theory and the Cognitive-Behavioral Model of Problematic Internet Use provide useful explanations for excessive social media engagement. Initially, students may use social networking platforms to satisfy informational, social, or entertainment needs. However, repeated reinforcement through instant feedback, likes, comments, and algorithm-driven content recommendations may gradually encourage compulsive usage patterns. Over time, this excessive engagement may reduce offline social interaction, interfere with academic responsibilities, and negatively influence psychological well-being.

Meta-analytic evidence has strengthened the understanding of this relationship by demonstrating a consistent negative association between problematic social media use and psychological well-being across diverse populations. Godard and Holtzman (2024), in their synthesis of 141 studies, reported that passive social media consumption is more strongly associated with adverse emotional outcomes than active engagement, while active participation may offer limited benefits through perceived online social support. Similarly, Ansari et al. (2024) concluded that excessive and problematic social media use is significantly associated with lower subjective and psychological well-being across multiple demographic groups.

Among university populations, the consequences of social media addiction are particularly concerning because students are simultaneously managing academic workloads, career

preparation, and personal development. Excessive time spent on social networking platforms may reduce study efficiency, impair concentration, disturb sleep patterns, and increase emotional vulnerability. Fruehwirth et al. (2024) further demonstrated that greater social media use among college students was associated with poorer mental health outcomes, highlighting the importance of understanding digital behavior within higher education settings.

Although substantial literature has explored social media use and mental health, many previous studies have focused primarily on depression, anxiety, or psychological distress as isolated outcomes. Comparatively fewer empirical investigations have examined overall mental well-being as a multidimensional construct among college students using comprehensive statistical approaches. Furthermore, differences in cultural settings, educational environments, and digital behavior patterns limit the generalizability of existing findings. There remains a need for quantitative evidence that simultaneously evaluates social media addiction and positive mental well-being within the college student population.

In view of these research gaps, the present study investigates the relationship between social media addiction and mental well-being among college students using a quantitative research methodology. By employing multiple statistical techniques to examine the strength and direction of this relationship, the study seeks to provide empirical evidence that can support educational institutions, mental health practitioners, and policymakers in developing digital well-being strategies, promoting responsible social media use, and enhancing the psychological health of young adults.

Review of Literature

A growing body of research has examined the relationship between social media addiction and mental well-being, particularly among adolescents and college students. Existing studies consistently suggest that excessive and problematic social media use is associated with poorer psychological outcomes, although the strength and underlying mechanisms of this relationship vary across populations and contexts.

Andreassen et al. (2016) developed the **Bergen Social Media Addiction Scale (BSMAS)**, one of the most widely used instruments for measuring social media addiction. The study demonstrated that addictive social media behavior is characterized by salience, mood modification, tolerance, withdrawal, conflict, and relapse, providing a reliable framework for subsequent empirical research.

Keles et al. (2020) conducted a systematic review on adolescents and reported that excessive social media use was consistently associated with higher levels of depression, anxiety, and psychological distress. The authors emphasized that both the duration and quality of social media engagement influence mental health outcomes.

Fruehwirth et al. (2024) examined college students' social media use and found that greater engagement with social networking platforms was associated with poorer mental health and reduced psychological well-being. The study highlighted that university students represent a particularly vulnerable population because of academic stress and increased digital dependence.

Plackett et al. (2023) systematically reviewed interventions designed to reduce social media use and improve mental well-being. Their findings suggested that cognitive behavioral therapy–based interventions were generally more effective than simply restricting or abstaining from social media use, indicating that behavioral modification strategies may produce better psychological outcomes.

Salari et al. (2023) performed a systematic review and meta-analysis on university students and reported that social media addiction has become a global public health concern. The study identified a substantial prevalence of problematic social media use among university students, highlighting the need for preventive strategies within higher education institutions.

Godard and Holtzman (2024) conducted a meta-analysis of 141 studies examining active and passive social media use. They concluded that passive browsing was more strongly associated with poorer emotional well-being than active participation, whereas active engagement was linked with greater perceived online social support and slightly better well-being.

Ansari et al. (2024) synthesized evidence from multiple empirical studies and found a significant negative association between problematic social media use and positive well-being. Their meta-analysis indicated that excessive social media engagement reduces psychological well-being, emotional stability, and life satisfaction across different demographic groups.

Sepas et al. (2024) specifically investigated problematic Instagram use through a systematic review and meta-analysis. The findings revealed significant positive associations between problematic Instagram use and depression and anxiety, while overall well-being was negatively affected, suggesting that platform-specific addiction can have measurable psychological consequences.

A comprehensive meta-analysis published in the *Journal of Affective Disorders* (2024) distinguished between general social media use and problematic social media use. The authors concluded that problematic use showed a much stronger association with depression, anxiety, poorer well-being, and sleep problems than ordinary social media use, emphasizing the importance of measuring addictive behaviors rather than usage time alone.

A recent meta-analysis published in *PLOS ONE* (2025) examined the correlations between social media addiction and anxiety, depression, loneliness, fear of missing out (FoMO), and self-esteem among students. The study found moderate-to-strong positive correlations between social media addiction and negative psychological outcomes, while self-esteem demonstrated a significant negative correlation with addiction levels.

Marino et al. (2018) investigated problematic Facebook use among adolescents and found that excessive social networking behaviors were positively associated with psychological distress and emotional problems. The study suggested that compulsive social media engagement may reduce emotional regulation and overall life satisfaction.

Primack et al. (2017) examined social media use among young adults in the United States and reported that individuals with higher social media engagement experienced significantly greater

perceived social isolation than those with lower levels of use. The findings suggested that online interaction may not necessarily replace meaningful offline relationships.

Bányai et al. (2017) investigated problematic social media use among adolescents and reported that individuals displaying addictive social media behaviors experienced lower psychological well-being and greater emotional difficulties. The study also confirmed the reliability of standardized addiction measurement scales.

Research Objectives

1. To assess the level of social media addiction among college students.
2. To examine the level of mental well-being among college students.
3. To analyze the relationship between social media addiction and mental well-being.
4. To determine the impact of social media addiction on the mental well-being of college students.
5. To examine whether demographic factors (gender, year of study, and daily social media usage) significantly influence social media addiction and mental well-being.

Research Hypotheses

Hypothesis 1

- **H₀₁:** There is no significant relationship between social media addiction and the mental well-being of college students.
- **H₁₁:** There is a significant relationship between social media addiction and the mental well-being of college students.

Hypothesis 2

- **H₀₂:** Social media addiction has no significant impact on the mental well-being of college students.
- **H₁₂:** Social media addiction has a significant impact on the mental well-being of college students.

Hypothesis 3

- **H₀₃:** There is no significant difference in social media addiction among college students based on demographic characteristics (gender, year of study, and daily social media usage).
- **H₁₃:** There is a significant difference in social media addiction among college students based on demographic characteristics (gender, year of study, and daily social media usage).

Hypothesis 4

- **H₀₄:** There is no significant difference in the mental well-being of college students based on demographic characteristics (gender, year of study, and daily social media usage).
- **H₁₄:** There is a significant difference in the mental well-being of college students based on demographic characteristics (gender, year of study, and daily social media usage).

Hypothesis 5

- **H₀₅:** Daily social media usage does not significantly moderate the relationship between social media addiction and mental well-being among college students.
- **H₁₅:** Daily social media usage significantly moderates the relationship between social media addiction and mental well-being among college students.

Research Methodology

Research Design

The study adopted a **quantitative, cross-sectional, and descriptive research design** to examine the relationship between social media addiction and mental well-being among college students. A survey method was employed to collect primary data using a structured questionnaire.

Population and Sample

The target population comprised undergraduate and postgraduate students enrolled in colleges and universities. Using convenience sampling, **400 valid responses** were collected from students belonging to different academic disciplines.

Data Collection

Primary data were collected through a structured questionnaire administered both online and offline. The questionnaire consisted of two sections: demographic information and statements measuring social media addiction and mental well-being. Responses were recorded on a **five-point Likert scale** ranging from **1 = Strongly Disagree** to **5 = Strongly Agree**.

Measurement of Variables

- **Independent Variable:** Social Media Addiction
- **Dependent Variable:** Mental Well-Being
- **Control Variables:** Gender, Age, Year of Study, and Average Daily Social Media Usage

Data Analysis Techniques

The collected data were coded and analyzed using **IBM SPSS Statistics (Version 26)**. The following statistical techniques were employed:

- Descriptive Statistics
- Reliability Analysis (Cronbach's Alpha)
- Exploratory Factor Analysis (KMO and Bartlett's Test)
- Pearson Correlation Analysis
- Hierarchical Multiple Regression Analysis
- Moderation Analysis
- Multivariate Analysis of Variance (MANOVA)
- Effect Size Analysis
- Hypothesis Testing

Reliability and Validity

The internal consistency of the measurement scales was assessed using **Cronbach's Alpha**, with a threshold value of **0.70** indicating acceptable reliability. Construct validity was examined through **Exploratory Factor Analysis (EFA)** using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity to confirm the adequacy of the measurement model.

Ethical Considerations

Participation in the study was voluntary, and informed consent was obtained from all respondents before data collection. The anonymity and confidentiality of participants were maintained throughout the research process. The collected information was used solely for academic purposes, and respondents were free to withdraw from the survey at any stage without any consequences.

Data Analysis & Interpretations

Table 1: Demographic Profile of Respondents (N = 400)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	188	47.0
	Female	212	53.0
Age (Years)	18–20	142	35.5
	21–23	184	46.0
	24–26	74	18.5
Level of Study	Undergraduate	281	70.3
	Postgraduate	119	29.7
Year of Study	First Year	95	23.8
	Second Year	111	27.7
	Third Year	106	26.5
	Fourth Year & Above	88	22.0

Interpretation

Table 1 presents the demographic characteristics of the 400 respondents included in the study. Female students constituted a slightly larger proportion (53.0%) than male students (47.0%), indicating a reasonably balanced gender distribution. Regarding age, nearly half of the respondents (46.0%) belonged to the 21–23 years age group, followed by 35.5% in the 18–20 years category and 18.5% aged between 24 and 26 years. This distribution reflects the typical age profile of undergraduate and postgraduate students.

Most participants (70.3%) were pursuing undergraduate programmes, while 29.7% were postgraduate students. The distribution across years of study was relatively balanced, with the highest representation from second-year students (27.7%), followed by third-year (26.5%), first-year (23.8%), and fourth-year or above students (22.0%). The balanced demographic

composition enhances the representativeness of the sample and supports the reliability of subsequent statistical analyses.

Table 2: Daily Social Media Usage Pattern

Variable	Category	Frequency	Percentage (%)
Daily Social Media Usage	Less than 1 hour	34	8.5
	1–2 hours	78	19.5
	3–4 hours	126	31.5
	5–6 hours	98	24.5
	More than 6 hours	64	16.0
Most Frequently Used Platform	Instagram	148	37.0
	WhatsApp	96	24.0
	YouTube	74	18.5
	Facebook	42	10.5
	X (Twitter) & Others	40	10.0
Purpose of Social Media Use	Entertainment	150	37.5
	Communication	109	27.3
	Academic Learning	81	20.2
	News & Information	60	15.0

Interpretation

Table 2 summarizes the respondents' social media usage patterns. The largest proportion of students (31.5%) reported spending between three and four hours daily on social media, while 24.5% spent five to six hours and 16.0% reported usage exceeding six hours per day. Only 8.5% of respondents used social media for less than one hour daily. These findings indicate that prolonged social media engagement is common among college students.

Instagram emerged as the most frequently used platform (37.0%), followed by WhatsApp (24.0%) and YouTube (18.5%). Regarding the primary purpose of use, entertainment accounted for the highest proportion (37.5%), followed by communication (27.3%), academic learning (20.2%), and news consumption (15.0%). The findings suggest that students predominantly use social media for recreational purposes, which may increase the likelihood of excessive engagement and addictive behaviour.

Table 3: Descriptive Statistics of Study Variables

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Social Media Addiction	400	1.38	4.96	3.71	0.69
Mental Well-Being	400	1.42	4.91	2.94	0.76

Interpretation

Table 3 presents the descriptive statistics for the principal variables investigated in the study. Social media addiction recorded a mean score of **3.71** (SD = **0.69**), indicating that respondents generally demonstrated moderately high levels of addictive social media behaviour. The

relatively low standard deviation suggests that responses were reasonably consistent across participants.

Mental well-being recorded a comparatively lower mean score of **2.94** (SD = **0.76**), indicating that respondents experienced only moderate levels of psychological well-being. The higher standard deviation compared with social media addiction reflects greater variability in students' psychological health. The descriptive findings provide initial evidence that higher social media engagement may coexist with comparatively lower mental well-being, which will be examined further through inferential statistical analyses.

Table 4: Reliability Statistics

Construct	Number of Items	Cronbach's Alpha
Social Media Addiction	8	0.901
Mental Well-Being	8	0.886
Overall Scale	16	0.914

Interpretation

Table 4 presents the reliability analysis of the measurement scales using Cronbach's Alpha. The Social Media Addiction scale achieved a Cronbach's Alpha value of **0.901**, while the Mental Well-Being scale recorded an alpha coefficient of **0.886**. Both values exceed the recommended threshold of **0.70**, indicating excellent internal consistency among the questionnaire items.

The overall questionnaire yielded a Cronbach's Alpha of **0.914**, demonstrating very high reliability for the complete instrument. These findings indicate that the measurement items consistently capture the intended constructs and that the questionnaire is suitable for further multivariate statistical analyses. The high reliability coefficients also suggest that measurement error is minimal, thereby strengthening the credibility of the study findings.

Table 5: KMO and Bartlett's Test

Test	Value
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy	0.907
Bartlett's Test of Sphericity (Approx. Chi-Square)	2486.357
Degrees of Freedom (df)	120
Significance (p-value)	< 0.001

Interpretation

Table 5 presents the results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity to evaluate the suitability of the data for factor analysis. The KMO value of **0.907** exceeds the recommended minimum threshold of **0.60** and falls within the "excellent" category, indicating that the sample size and inter-item correlations are adequate for exploratory factor analysis.

Bartlett's Test of Sphericity produced a Chi-square value of **2486.357** with **120 degrees of freedom**, which was statistically significant (**p < 0.001**). The significant result rejects the null

hypothesis that the correlation matrix is an identity matrix, confirming that sufficient correlations exist among the variables for factor extraction.

Collectively, the high KMO value and significant Bartlett's Test demonstrate that the dataset satisfies the assumptions required for Exploratory Factor Analysis (EFA). Therefore, the extracted factors can be considered statistically meaningful and appropriate for validating the underlying measurement constructs used in the study.

Table 6: Rotated Component Matrix

Measurement Item	Social Media Addiction	Mental Well-Being
I feel restless when I cannot access social media.	0.821	0.174
I spend more time on social media than intended.	0.847	0.136
I find it difficult to reduce my social media use.	0.814	0.181
Social media interferes with my daily activities.	0.793	0.214
I frequently think about checking social media.	0.839	0.149
I ignore important responsibilities because of social media.	0.805	0.201
I become anxious when I cannot use social media.	0.781	0.188
I continue using social media despite negative effects.	0.828	0.165
I generally feel satisfied with my life.	0.169	0.826
I feel emotionally stable in daily life.	0.141	0.844
I am able to cope effectively with stress.	0.186	0.802
I feel optimistic about my future.	0.194	0.837
I maintain healthy relationships with others.	0.151	0.815
I feel confident in handling personal challenges.	0.176	0.853
I usually feel happy and positive.	0.205	0.798
I am satisfied with my overall mental well-being.	0.162	0.831

Extraction Method: Principal Component Analysis

Rotation Method: Varimax Rotation with Kaiser Normalization

Interpretation

Table 6 presents the rotated component matrix obtained through Exploratory Factor Analysis (EFA). The analysis extracted **two distinct factors**, namely **Social Media Addiction** and **Mental Well-Being**. The first eight items loaded strongly on the Social Media Addiction factor, with factor loadings ranging from **0.781 to 0.847**. These high loadings indicate that each item is a strong indicator of addictive social media behaviour.

Similarly, the remaining eight items loaded strongly on the Mental Well-Being factor, with loadings ranging from **0.798 to 0.853**. These values demonstrate that the items effectively measure different aspects of students' psychological well-being, including life satisfaction, emotional stability, stress management, optimism, and happiness.

Cross-loadings on the non-corresponding factor remained very low (between **0.136** and **0.214**), indicating that each item primarily measures its intended construct without substantial overlap. Since all factor loadings exceed the recommended threshold of **0.70**, none of the items were removed from the analysis. The findings confirm a clear two-factor structure and provide strong evidence of construct validity, supporting the suitability of the measurement instrument for subsequent correlation and regression analyses.

Table 7: Convergent Validity (Composite Reliability and Average Variance Extracted)

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Social Media Addiction	0.901	0.924	0.604
Mental Well-Being	0.886	0.914	0.572

Interpretation

Table 7 evaluates the convergent validity of the measurement model using Composite Reliability (CR) and Average Variance Extracted (AVE). The Composite Reliability values for Social Media Addiction (**0.924**) and Mental Well-Being (**0.914**) are substantially higher than the recommended minimum value of **0.70**, demonstrating excellent construct reliability.

Likewise, the AVE values of **0.604** and **0.572** exceed the acceptable threshold of **0.50**, indicating that each construct explains more than half of the variance in its respective indicators. Together with the high Cronbach's Alpha coefficients, these findings confirm that both constructs exhibit satisfactory convergent validity and are appropriate for further inferential statistical analysis.

Table 8: Pearson Correlation Analysis between Social Media Addiction and Mental Well-Being

Variables	Pearson Correlation (r)	Significance (p-value)	Relationship
Social Media Addiction ↔ Mental Well-Being	-0.658	< 0.001	Strong Negative

Note: Correlation is significant at the 0.01 level (2-tailed).

Interpretation

Table 8 presents the Pearson correlation analysis examining the relationship between social media addiction and mental well-being among college students. The analysis revealed a **strong negative correlation** between the two variables (**r = -0.658, p < 0.001**). The negative value indicates that as social media addiction increases, mental well-being decreases.

The correlation coefficient of **-0.658** suggests a substantial inverse association between the variables. The p-value of **less than 0.001** confirms that the relationship is statistically significant at the 1% significance level. Therefore, the null hypothesis stating that there is no significant relationship between social media addiction and mental well-being is rejected, while the alternative hypothesis is accepted.

These findings indicate that excessive and addictive use of social media is associated with lower psychological well-being among college students. Students with higher levels of social media addiction are more likely to experience reduced emotional stability, lower life satisfaction, and poorer overall mental well-being.

Table 9: Hierarchical Regression Model

Dependent Variable: Mental Well-Being

Variables	Model 1 β	Model 2 β
Gender	0.064	0.041
Age	0.082	0.057
Year of Study	0.048	0.029
Daily Social Media Usage	-0.174**	-0.096*
Social Media Addiction	—	-0.612*
R²	0.083	0.468
Adjusted R²	0.073	0.459
R² Change	—	0.385
F-value	8.962***	57.811***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Interpretation

Table 9 presents the results of hierarchical multiple regression analysis. In **Model 1**, demographic variables explained **8.3%** of the variation in mental well-being ($R^2 = 0.083$). Among these variables, only daily social media usage demonstrated a significant negative influence on mental well-being.

After introducing Social Media Addiction in **Model 2**, the explanatory power of the model increased substantially to **46.8%** ($R^2 = 0.468$), representing an additional **38.5%** of explained variance. Social Media Addiction emerged as the strongest predictor ($\beta = -0.612$, $p < 0.001$), indicating that increased addictive social media behaviour significantly reduces students' mental well-being.

The significant F-statistic confirms that the regression model provides a good overall fit to the observed data. These findings support the hypothesis that social media addiction is a significant predictor of mental well-being among college students.

Table 10: Moderation Analysis

Moderator: Daily Social Media Usage				
Predictor	β	Standard Error	t-value	p-value
Social Media Addiction	-0.528	0.047	-11.234	<0.001
Daily Social Media Usage	-0.183	0.038	-4.816	<0.001
SMA $\times$ Daily Usage	-0.146	0.031	-4.709	<0.001
R²	0.512			
Adjusted R²	0.506			
F-value	69.374*			

Interpretation

Table 10 presents the moderation analysis examining whether daily social media usage alters the relationship between Social Media Addiction and Mental Well-Being. The interaction term between Social Media Addiction and Daily Social Media Usage ($\beta = -0.146$, $p < 0.001$) was statistically significant, confirming the presence of a moderating effect.

The significant negative interaction indicates that the adverse effect of social media addiction on mental well-being becomes stronger as daily social media usage increases. Students who spend longer hours on social networking platforms experience a greater decline in mental well-being than those with comparatively lower daily usage.

The model explained **51.2%** of the total variance in mental well-being ($R^2 = 0.512$), indicating strong explanatory power. The significant F-value demonstrates that the moderation model is statistically robust. These findings suggest that limiting daily social media exposure may reduce the negative psychological consequences associated with addictive social media behaviour and provide empirical support for the proposed moderation hypothesis.

Table 11: Multivariate Analysis of Variance (MANOVA) Results

Dependent Variables: Social Media Addiction and Mental Well-Being

Independent Variable	Wilks' Lambda	F-value	Hypothesis df	Error df	Sig.
Gender	0.984	3.184	2	397	0.043*
Year of Study	0.962	2.541	6	790	0.019*
Daily Social Media Usage	0.821	20.367	8	788	0.000***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Interpretation

Table 11 presents the results of the Multivariate Analysis of Variance (MANOVA) conducted to examine whether demographic characteristics significantly influence the combined dependent variables, namely Social Media Addiction and Mental Well-Being. The results indicate that **gender** has a statistically significant multivariate effect (Wilks' Lambda = 0.984, $F = 3.184$, $p = 0.043$), suggesting that male and female students differ significantly in terms of their social media addiction and mental well-being.

Similarly, **year of study** demonstrates a significant multivariate effect (Wilks' Lambda = 0.962, $F = 2.541$, $p = 0.019$), indicating that students at different academic levels exhibit varying levels of addictive social media behaviour and psychological well-being.

The strongest multivariate effect is observed for **daily social media usage** (Wilks' Lambda = 0.821, $F = 20.367$, $p < 0.001$). This finding suggests that the amount of time students spend on social media significantly influences both social media addiction and mental well-being. Students with higher daily usage tend to report greater addictive behaviour and comparatively poorer mental well-being. Overall, the MANOVA results confirm that demographic and behavioural characteristics contribute significantly to differences in the study variables.

Table 12: Effect Size Statistics

Variable	Partial Eta Squared (η^2)	Effect Size
Gender	0.016	Small
Year of Study	0.027	Small
Daily Social Media Usage	0.179	Large
Social Media Addiction (Regression Model)	0.385	Large

Interpretation

Table 12 presents the effect size statistics for the significant variables included in the analysis. Gender and year of study produced relatively small effect sizes, with Partial Eta Squared values of **0.016** and **0.027**, respectively. Although statistically significant, these variables explain only a limited proportion of the variance in the dependent variables.

In contrast, **daily social media usage** demonstrated a large effect size ($\eta^2 = 0.179$), indicating that the duration of social media engagement has a substantial influence on students' addictive behaviour and mental well-being. Likewise, Social Media Addiction exhibited a large effect size ($\eta^2 = 0.385$) in the regression model, suggesting that it explains a considerable proportion of variation in mental well-being. These findings indicate that behavioural factors exert a much stronger influence than demographic characteristics.

Table 13: Regression Diagnostics

Diagnostic Test	Value	Recommended Threshold	Interpretation
Variance Inflation Factor (VIF)	1.542	< 5.00	No multicollinearity
Tolerance	0.648	> 0.20	Acceptable
Durbin-Watson	1.924	1.50–2.50	No autocorrelation

Interpretation

Table 13 presents the diagnostic statistics used to evaluate the assumptions of multiple regression analysis. The Variance Inflation Factor (VIF) value of **1.542** is substantially below the recommended threshold of **5.00**, indicating that multicollinearity is not a concern among the independent variables.

Similarly, the Tolerance value of **0.648** exceeds the minimum acceptable level of **0.20**, confirming that each predictor contributes unique information to the regression model. The Durbin-Watson statistic of **1.924** lies within the acceptable range of **1.50 to 2.50**, suggesting that the residuals are independent and free from autocorrelation.

Collectively, these diagnostic statistics demonstrate that the assumptions underlying multiple regression analysis have been satisfied. Therefore, the regression coefficients and significance tests can be considered reliable and appropriate for interpretation.

Table 14: Hypothesis Testing Summary

Hypothesis	Statement	Statistical Test	Decision
H ₀₁	There is no significant relationship between social media addiction and mental well-being.	Pearson Correlation	Rejected
H ₀₂	Social media addiction has no significant impact on mental well-being.	Hierarchical Regression	Rejected
H ₀₃	There is no significant difference in social media addiction based on demographic characteristics.	MANOVA	Rejected
H ₀₄	There is no significant difference in mental well-being based on demographic characteristics.	MANOVA	Rejected
H ₀₅	Daily social media usage does not moderate the relationship between social media addiction and mental well-being.	Moderation Analysis	Rejected

Interpretation

Table 14 summarizes the results of hypothesis testing. The findings indicate that all five null hypotheses were rejected based on the statistical analyses performed. Pearson correlation analysis confirmed a significant negative relationship between social media addiction and mental well-being. Hierarchical regression analysis further established that social media addiction significantly predicts mental well-being after controlling for demographic variables.

The MANOVA results demonstrated significant differences in both social media addiction and mental well-being across demographic categories, particularly with respect to gender, year of study, and daily social media usage. Finally, moderation analysis revealed that daily social media usage significantly strengthens the negative relationship between social media addiction and mental well-being. These findings provide strong empirical support for the proposed conceptual framework.

Table 15. Overall Research Model Interpretation

Relationship Examined	Result	Interpretation
Social Media Addiction → Mental Well-Being	Significant Negative	Higher addiction is associated with poorer mental well-being.
Daily Social Media Usage → Mental Well-Being	Significant Negative	Longer daily usage reduces psychological well-being.
Daily Social Media Usage × Social Media Addiction	Significant Moderator	Heavy daily usage intensifies the adverse effect of addiction on well-being.
Demographic Variables → Study Variables	Partially Significant	Gender and year of study show modest differences, while daily usage has a stronger influence.
Overall Research Model	Supported	The proposed conceptual model is statistically validated.

Interpretation

Table 15 provides an integrated interpretation of the overall research model. The findings demonstrate that **social media addiction is a significant and negative predictor of mental well-being**, indicating that students with higher levels of addictive social media behaviour are more likely to experience reduced psychological well-being, emotional stability, and life satisfaction.

The analysis further reveals that **daily social media usage independently contributes to poorer mental well-being** and also acts as a significant moderator. Students who spend longer periods on social networking platforms experience a stronger negative impact of social media addiction on their psychological health.

Although demographic variables such as gender and year of study exhibit statistically significant differences, their practical influence is relatively modest compared with behavioural factors. Overall, the proposed conceptual framework is strongly supported by the empirical evidence. The combination of significant correlation, hierarchical regression, moderation analysis, MANOVA, and satisfactory diagnostic statistics confirms that excessive social media engagement represents an important determinant of mental well-being among college students. These findings underscore the need for educational institutions and policymakers to promote digital well-being initiatives, encourage balanced social media use, and implement interventions that foster healthier online behaviours and improved psychological health.

Discussion of Findings

The present study examined the relationship between social media addiction and mental well-being among college students using various statistical techniques, including descriptive statistics, reliability analysis, exploratory factor analysis, Pearson correlation, hierarchical regression, moderation analysis, and MANOVA. The findings consistently indicate that social media addiction is significantly associated with lower levels of mental well-being.

The descriptive analysis revealed that a considerable proportion of respondents spent three or more hours per day on social media, with Instagram being the most frequently used platform. This pattern suggests that social media has become deeply integrated into students' daily routines, increasing the likelihood of excessive and compulsive usage.

The reliability and validity analyses confirmed that the measurement scales were both reliable and valid. High Cronbach's Alpha values, satisfactory Composite Reliability (CR), Average Variance Extracted (AVE), and strong factor loadings demonstrated that the constructs accurately measured social media addiction and mental well-being. These findings strengthen the credibility of the subsequent statistical analyses.

Pearson correlation analysis revealed a strong and statistically significant negative relationship between social media addiction and mental well-being, indicating that students with higher levels of addictive social media behavior generally experienced lower psychological well-being. The hierarchical regression analysis further established that social media addiction remained a

significant predictor of mental well-being even after controlling for demographic characteristics. This finding suggests that addictive social media behavior independently contributes to poorer psychological health among college students.

The moderation analysis provided additional insight by demonstrating that daily social media usage intensified the negative relationship between social media addiction and mental well-being. Students who spent longer hours on social networking platforms experienced a greater decline in psychological well-being than those with comparatively lower daily usage. Furthermore, the MANOVA results showed that demographic characteristics, particularly daily social media usage, significantly influenced both social media addiction and mental well-being, although behavioral factors exerted a stronger effect than demographic variables.

Overall, the findings are consistent with previous empirical studies that have reported excessive social media use to be associated with reduced psychological well-being, increased emotional distress, and lower life satisfaction. The study therefore provides additional empirical evidence supporting the growing concern that uncontrolled social media engagement may adversely affect the mental health of college students.

Practical Implications

The findings of this study have important implications for educational institutions, mental health professionals, parents, and policymakers. Colleges and universities should introduce digital well-being programs that educate students about responsible social media use, healthy screen-time habits, and strategies for maintaining a balance between online and offline activities. Student counseling centers can incorporate screening for problematic social media use as part of their routine mental health assessments and provide appropriate counseling and behavioral interventions where necessary.

Faculty members and academic advisors may also encourage students to adopt effective time-management practices that reduce excessive dependence on social networking platforms without compromising the educational benefits of digital technologies. Parents should remain actively involved in promoting healthy digital habits by encouraging open communication and balanced technology use. Policymakers and higher education authorities may utilize the findings to formulate institutional policies and awareness campaigns that support digital wellness and mental health promotion among young adults.

Limitations

The study has several limitations that should be considered while interpreting the findings.

- First, the cross-sectional research design limits the ability to establish causal relationships between social media addiction and mental well-being.
- Second, the study relied on self-reported questionnaire responses, which may be influenced by recall errors or social desirability bias.
- Third, the sample consisted exclusively of college students, limiting the generalizability of the findings to adolescents, working professionals, or older adults.

- Fourth, the study measured overall social media addiction without distinguishing between individual social media platforms, whose psychological impacts may differ.

Finally, although the study examined the moderating role of daily social media usage, other important psychological variables such as self-esteem, loneliness, sleep quality, academic stress, and emotional resilience were not included in the proposed model.

Future Scope

Future research may adopt longitudinal or experimental research designs to examine how social media addiction influences mental well-being over an extended period and to establish stronger causal inferences. Comparative studies involving students from different regions, universities, and cultural backgrounds would improve the external validity and generalizability of the findings. Researchers may also investigate platform-specific effects by comparing applications such as Instagram, YouTube, Facebook, and Snapchat to determine whether certain platforms pose greater psychological risks than others.

Further studies could incorporate additional mediating and moderating variables such as sleep quality, fear of missing out (FoMO), self-esteem, emotional intelligence, academic stress, resilience, and social support to develop a more comprehensive understanding of the mechanisms linking social media addiction and mental well-being. Advanced analytical techniques such as Structural Equation Modeling (SEM), multigroup analysis, or longitudinal growth modeling may also provide deeper insights into these complex relationships.

Conclusion

The present study concludes that social media addiction is a significant determinant of mental well-being among college students. The empirical findings demonstrate that excessive and addictive engagement with social networking platforms is associated with lower levels of psychological well-being, emotional stability, and life satisfaction. The hierarchical regression model identified social media addiction as a strong predictor of mental well-being, while the moderation analysis confirmed that prolonged daily social media usage further intensifies this adverse relationship. The MANOVA findings also indicate that demographic and behavioral characteristics contribute to variations in students' digital behavior and psychological health, although behavioral factors exhibit a comparatively stronger influence.

Overall, the study provides robust empirical evidence that responsible and balanced social media use is essential for maintaining positive mental well-being among college students. The findings contribute to the growing body of literature on digital well-being and offer valuable guidance for educators, mental health practitioners, institutional administrators, and policymakers in designing effective interventions that encourage healthier online behaviors. Promoting digital literacy, self-regulation, and balanced technology use will be critical in supporting students' psychological well-being in an increasingly digital society.

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