

Social Media Engagement and Academic Performance among University Students: The Moderating Role of Self-Regulation

Received: 23-06-2026	Revised: 20-07-2026	Accepted: 19-08-2026	Published: 25-08-2026
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ABSTRACT

There Social media is now an integral part of the university life; however, there are conflicting debates regarding the impacts regarding academic achievement. The study focused on the impact of social media use on the academic achievement of university students and the effect of self-regulation on the above-mentioned relationship. A cross-sectional quantitative design was used and 350 undergraduate students were used in the data collection process using a structured questionnaire. Descriptive statistics, Pearson's correlation, multiple regression, and Hayes' PROCESS Model 1 were used, and age, gender, academic level and field of study were used as control variables. The findings indicated that social media engagement negatively correlated with academic performance while self-regulation positively correlated with academic performance. The relationship was significantly moderated by self-regulation: the negative association of engagement was greatest for students with low self-regulation and was not significant for students with high self-regulation. Based on the findings, academic risk of social media is not just related to the use of social media, but also students' ability to do their homework, focus, and remove themselves from the distractions of social media. This study provides practical applications to universities, educators, and learners for maximizing the use of social media without sacrificing achievement.

Keywords: social media engagement; academic performance; self-regulation; moderation; university students



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INTRODUCTION

The campus students have integrated social networking sites into their lives, using them to connect with others, disseminate information and foster relationships (Boyd & Ellison, 2007). Students also use the platforms for studying, for example, discussing course content, sharing resources and collaborating on assignments, while mobile devices and social media are reported to facilitate their learning (Gikas & Grant,

2013). Social media in higher education have been praised for their pedagogical potential and there are substantial obstacles to it (Manca & Ranieri, 2016). The impact of such engagement on academic performance is thus a key issue for universities.

Evidence is inconclusive. Initial research found that high levels of Facebook use were correlated with lower grades and decreased hours spent studying (Kirschner & Karpinski, 2010) and subsequent studies concluded that time spent on Facebook accounted for a decrease in GPA, although some uses had little or no impact (Junco, 2012b). There is also evidence that the nature of the use is important, as frequency of use and engagement in specific activities have different relationships with students' engagement (Junco, 2012a). There is an additional layer as there are concerns about the excessive and addictive use of GMO: problematic use can interfere with study time and sleep and concentration (Andreassen et al., 2012; Kuss & Griffiths, 2011).

One mechanism that has been suggested time and time again is distraction. Using off-task technology during learning has been linked with lower real-time comprehension (Wood et al., 2012) and with lower cognitive control and higher susceptibility to interference when using too many media at once (Ophir et al., 2009). If the engagement causes the student to lose focus and study time primarily, then the extent of the loss should be based on the student's ability to control himself.

Self-regulation is ideally positioned to do this. Self-regulated learning involves goal setting and planning, monitoring of time and learning, and self-regulating of attention and behaviour, which are essential in the college students' motivation and learning process (Zimmerman, 2002; Pintrich, 2004). Self-control is related to improved grades and adjustment (Tangney et al., 2004), and self-discipline is more predictive of academic performance than intelligence among adolescents (Duckworth & Seligman, 2005). A review of psychological factors associated with university success also shows that factors related to self-regulation are robust and consistent predictors of success (Richardson et al., 2012). Self-regulation can thus provide a protective effect against the negative impact of high social media use.

While these findings have provided some understanding, few studies have examined the role of self-regulation as a moderator of the engagement–performance relationship, holding constant demographic characteristics, and separating out academic and non-academic uses. This study aimed to fill this gap by investigating (a) the impact of social media engagement on academic performance, (b) the impact of self-regulation on academic performance and (c) the moderating effect of self-regulation in engagement–performance relationship among university undergraduates. It also contributes by highlighting when social media engagement is unhealthy and it charts out a skill students can acquire to mitigate the risk.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Conceptual background

Social media engagement involves how long students use social network sites, how often students use them for academic purposes, how often students use them for non-academic purposes, and their level of interaction on the sites, such as posting, commenting, and messaging (Boyd & Ellison, 2007; Junco, 2012a). Academic performance is the result of students' learning and is frequently represented through their grade point average or their percentage grades (Richardson et al., 2012). Self-reported grades are commonly employed in survey research and are generally considered reasonably valid, especially when the grade is for recent results and the responses are anonymous (Kuncel et al., 2005). Self-regulation (Pintrich, 2004;

Zimmerman, 2002) is the ability to plan, monitor, and control time, attention, and behavior towards goals. These ideas form the foundation of a framework in which students' engagement is a demand for time and attention, students' self-regulation is a resource for coping with the demand for time and attention, and students' academic performance is the result.

Social media engagement and academic performance

Increased social media use has been associated with decreased academic performance due to time spent, multitasking while using social media and a lack of focus. Kirschner and Karpinski (2010) found that Facebook users experienced a decline in their GPA compared to non-users, while Junco (2012b) found that the time spent on Facebook was negatively correlated with GPA. Multitasking is known to interfere with learning and understanding, especially when it is done off-task (Wood et al., 2012), while frequent media multitasking is linked to poor cognitive control (Ophir et al., 2009). These risks are exacerbated by problematic and addictive patterns of use (Andreassen et al., 2012; Kuss & Griffiths, 2011). In parallel, there is a possibility that the overall engagement would have a modest rather than high net negative association because academic uses have the potential to support learning (Gikas & Grant, 2013; Manca & Ranieri, 2016). Accordingly:

H1: There is a significant negative relationship between the use of social media and academic performance.

Self-regulation and academic performance

Self-regulated students plan learning objectives, organise their time, and focus their attention on tasks while ignoring distractions (Zimmerman, 2002), which are important factors in learning in the college environment (Pintrich, 2004). People with increased self-control score higher on measures of academic achievement and demonstrate higher adjustment (Tangney et al., 2004), and self-control explains subsequent academic performance more than IQ (Duckworth & Seligman, 2005). Meta-analytic evidence shows that some self-regulation related factors are important for university performance (Richardson et al., 2012). Hence:

H2: Self-regulation is found to make a significant contribution to academic achievement.

The moderating role of self-regulation

Social media engagement typically has a negative impact on performance, through time and attention consumption. When students are able to regulate their engagement, they can set limits, plan how to allocate the time they spend on notifying, and return to study tasks, therefore while their engagement is the same, less learning is displaced (Pintrich, 2004; Zimmerman, 2002). Students who have weak self-regulation are more likely to be distracted and to use compulsively (Andreassen et al., 2012; Wood et al., 2012). For those with high levels of self-regulation, the relationship between engagement and performance should be less negative, hence less strong, because self control would have a negative effect on the impact of temptation on behaviour (Tangney et al., 2004). Moderation is assessed by an interaction term in a regression model (Hayes, 2018). Thus:

H3: The relationship between social media use and academic performance is mediated by self-regulation, with the negative relationship being less strong when self-regulation is higher.

Control variables

A set of controls variables were included for age, gender, academic level and field of study because they have been shown to be associated with both social media use and academic outcomes (Junco, 2012b; Richardson et al., 2012).

Conceptual framework

In the conceptual model, social media engagement is considered as the independent variable, academic performance is the dependent variable, and self-regulation is the moderator of the engagement – academic performance relationship (Path 1 of the PROCESS Model, the simple direct model). The age and gender of students and academic level and field of study are considered as covariates.

METHODOLOGY

Research design

A cross sectional quantitative design was adopted to examine the role of social media engagement on the academic performance of university students and the role that self-regulation plays in this relationship. The choice of quantitative approach was justified by the study testing the theory-based hypotheses and estimating the size and significance of the main and interaction effects. All data was collected at one time.

Human and animal populations and their interactions.

The study used a structured questionnaire to collect data from 350 undergraduate students who are studying at universities. Only currently enrolled undergraduate students who used at least one social media platform were included, participation was voluntary, answers were assured to remain anonymous, and were used only for research. Sample size was adequate for modeling a regression model with one moderator, an interaction term and four control variables.

Instrument and measurement

The level of engagement with social media was measured by how much social media was used daily, how often social media was used for academic or non-academic purposes and how much interaction was had with social media platforms. Students' academic performance was self-reported in terms of their grade point average (GPA) or percentile grade, and the percentile grade was translated to a four point GPA scale to ensure consistency across all responses; self-reported recent grades were deemed to be adequate for use in this survey research study (Kuncel et al., 2005). Self-regulation was measured by the items in the categories of time management, concentration, and control of digital distractions. The engagement and self-regulation items were rated on a 5-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). Control variables such as field of study, academic level, gender and age were obtained. The questionnaire was pre-tested with a small group of students and unclear questions were modified.

Reliability, validity, and common method bias

Prior to the hypothesis test, reliability and validity checks were performed. The internal consistency of each scale was evaluated by Cronbach alpha and scores of 0.70 or above were considered acceptable (Tavakol

& Dennick, 2011). Construct validity was examined through exploratory factor analysis, using the Kaiser–Meyer–Olkin measure, Bartlett’s test of sphericity, and factor loadings, and content validity was supported by the pilot test and review of items. Since all variables were self-reported by the same respondents, procedural remedies were used which included anonymity and clear wording; and common method bias was recognized as a limitation (Podsakoff et al., 2012).

Data analysis

Descriptive statistics, Pearson correlation, multiple regression, and moderation analysis (Hayes' PROCESS Model 1) were used to analyze the responses. For the sample and the study variables, descriptive statistics and frequencies were used, while Pearson correlations were used to look at the bivariate relationships. Before interpreting the results of the regression, the following assumptions were tested: linearity, normality of residuals, homoscedasticity and multicollinearity. For PROCESS Model 1, social media engagement and self-regulation were mean-centered prior to creating the interaction term, and academic performance was subsequently regressed on social media engagement, self-regulation, and their interaction while controlling for the control variables per Hayes (2018). A significant interaction was examined by calculating the conditional effect of engagement at lower (–1 SD), average, and higher (+1 SD) levels of self-regulation, using heteroscedasticity-consistent standard errors.

ANALYSIS AND RESULTS

Demographic profile

Table 1 shows the characteristics of the 350 respondents. The sample consisted of students from various age groups, academic backgrounds and study areas and slightly more females.

Table 1. Demographic profile of respondents (N = 350)

Characteristic	Category	Frequency	Percentage
Gender	Male	162	46.3
Gender	Female	188	53.7
Age	18–20 years	119	34.0
Age	21–23 years	171	48.9
Age	24 years and above	60	17.1
Academic level	First–second year	147	42.0
Academic level	Third–fourth year	203	58.0
Field of study	Social sciences/management	142	40.6

Characteristic	Category	Frequency	Percentage
Field of study	Sciences/engineering	121	34.6
Field of study	Arts/humanities and others	87	24.8

Reliability, validity, and descriptive statistics

Table 2 presents the number of items, factor loading, mean, standard deviations and Cronbach's alpha. Factor loadings were greater than 0.60 and all alpha values were greater than 0.70. The Kaiser–Meyer–Olken value was .90 and Bartlett's test was statistically significant ($p < .001$) showing that the data was appropriate for factor analysis. Since there was only one self-reported GPA academic performance was not alphaable.

Table 2. Reliability, validity, and descriptive statistics

Variable	Items	Loadings range	Mean	SD	Cronbach's α
Social media engagement	10	0.62–0.81	3.64	0.72	0.87
Self-regulation	9	0.65–0.83	3.41	0.65	0.89
Academic performance (GPA, 4-point)	1	–	3.12	0.42	–

Correlation analysis

The Pearson correlations are given in Table 3. There were negative correlations between social media engagement and academic performance, as well as negative correlations between social media engagement and self-regulation, while there were positive correlations between self-regulation and academic performance. There was no multicollinearity as all correlations were below 0.80.

Table 3. Pearson correlations among study variables

Variable	1	2	3
1. Social media engagement	1		
2. Self-regulation	–0.33**	1	
3. Academic performance	–0.28**	0.41**	1

Note. N = 350. ** $p < .01$ (two-tailed).

Regression and moderation analysis

The PROCESS Model 1 results for this model after controlling for age, gender, academic level and field of study appear in Table 4. The effects of social media engagement and self-regulation were significant and negatively and positively related to academic performance, respectively, with $B = -0.09$, $p = .003$ for social media engagement and $B = 0.24$, $p < .001$ for self-regulation, respectively. The relationship between engagement and self-regulation was positive and significant ($B = 0.07$, $p = .020$) and accounted for an additional 1.0% of the variance in performance ($\Delta R^2 = .010$) which supported H3. The complete model accounted for 27% of the variance in academic performance. The interaction of engagement and self-regulation was negative for the low self-regulation ($B = -0.14$, $p < .001$) and average self-regulation ($B = -0.09$, $p = .003$) conditions, but was small and non-significant at high self-regulation ($B = -0.04$, $p = .32$). Therefore, the negative effects of engagement were limited to weaker self-regulated students.

Table 4. PROCESS Model 1 results for academic performance (unstandardized coefficients)

Predictor	B	SE	t	p	LLCI	ULCI
Constant	3.10	0.05	62.00	< .001	3.00	3.20
Social media engagement (X)	-0.09	0.03	-3.00	.003	-0.15	-0.03
Self-regulation (W)	0.24	0.04	6.00	< .001	0.16	0.32
X × W	0.07	0.03	2.33	.020	0.01	0.13
Age	0.01	0.01	1.00	.318	-0.01	0.03
Gender (female = 1)	0.06	0.04	1.50	.134	-0.02	0.14
Academic level	0.04	0.04	1.00	.318	-0.04	0.12
Field of study	0.02	0.03	0.67	.504	-0.04	0.08
Conditional effect of X at W = -1 SD	-0.14	0.04	-3.50	< .001	-0.22	-0.06
Conditional effect of X at W = mean	-0.09	0.03	-3.00	.003	-0.15	-0.03
Conditional effect of X at W = +1 SD	-0.04	0.04	-1.00	.318	-0.12	0.04

Note. $R^2 = .27$; ΔR^2 due to interaction = .010, $p = .020$. X and W were mean-centered. LLCI and ULCI are the 95% confidence interval limits.

DISCUSSION

The findings verified lower academic performance in relation to heavier social media usage among university students. This is consistent with initial studies that found heavier Facebook usage correlates with diminished performance in school and reduced study time (Kirschner & Karpinski, 2010), and the more recent research that found that time spent on social media was negatively predictive of GPA (Junco, 2012b). The relatively small size of the effect supports the notion that engagement is not always negative: academic

uses could be conducive to learning (Gikas & Grant, 2013; Manca & Ranieri, 2016) and that type of use is important (Junco, 2012a). The negative net association fits with research that off-task tech use has a negative effect on comprehension (Ophir et al., 2009) and that regular media multitasking has a negative effect on cognitive control (Wood et al., 2012).

Academic performance was strongly positively associated with self-regulation, which reinforced the known importance of self-regulated learning and self-control to academic achievement (Duckworth & Seligman, 2005; Tangney et al., 2004; Pintrich, 2004; Zimmerman, 2002; Richardson et al., 2012). Students who manage their time, concentrate and control digital distractions are more likely to be getting higher grades regardless of how much social media they use.

The large moderation implies that self-regulation has an impact on the relationship between engagement and performance. Students with low self-regulation had a significantly stronger relationship between engagement and grade levels than students with high self-regulation, with engagement being negatively related to grade level. This implies that when pupils can establish boundaries and filter out distractions, they may use social media without a negative impact on their learning. The findings also align with research correlating problematic and difficult to control use with adverse consequences (Andreassen et al., 2012; Kuss & Griffiths, 2011), and suggest that the issue is not the use of technology but how students use it.

CONCLUSION AND RECOMMENDATIONS

The authors of this study aimed to explore the relationship between social media engagement and academic performance of undergraduate students and the role of self-regulation in the aforementioned relationship. The evidence indicated that there was a negative relationship between engagement and performance, as well as a positive relationship between self-regulation and performance, with the negative relationship becoming non-significant at high levels of self-regulation. The study is novel in its demonstration of the conditional nature of academic risks of social media, and in its identification of self-regulation as a modifiable protective factor.

Based on these results, universities should incorporate self-regulation training into orientation sessions, study-skills courses, and academic counseling, on topics such as time management, planning, attention control, and limiting notifications. To minimize distraction, instructors can establish clear guidelines for the use of their devices during class time and direct students to well-defined academic activities, for example, moderated course groups (as described in the literature and reported by Gikas & Grant, 2013; Manca & Ranieri, 2016). Pupils should be encouraged to keep track of their own use, set aside periods of study when they will not be using devices, and access help and advice from counselling staff if they feel it is becoming an addiction. Brief self-regulation screening can also be used to identify students who are at greatest risk to the university policymakers and student-support services.

There are a few drawbacks to note. The cross-sectional design precludes causal inferences and the relationship could be two-way, such as when less well-performing students use social media more. Although recent grades are generally reliable (Kuncel et al., 2005), self-reported engagement and grades may be plagued by recall and social desirability bias, as well as common method bias (Podsakoff et al., 2012). Engagement was calculated based on the length of engagement, frequency of engagement, and level of engagement, and differences between platforms or activities were not differentiated. Longitudinal studies, incorporation of data on device use and institutional records, more precise classifications of

academic versus non-academic uses and the testing of other factors like motivation, sleep, or personality are examples of avenues for future research.

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