Development and Validation of Scale SMPS for Assessment of Procrastination Due to Social Media Among University Students

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Abstract

This article explores the impact of social media on the procrastination behaviors of university students, specifically through the development of the Social Media Procrastination Scale (SMPS). The major objective is to understand the underlying factors contributing to academic procrastination due to social media use. The scale was developed with 50 items across three factors: Time management skills, engagement in academic activities, peer and social influence expert opinions led to the removal of 19 items with poor content validity (below 0.45). The remaining items were administered to university students via Google forms shared on WhatsApp groups. Exploratory factor analysis with varimax rotation validated the scale, resulting in a KMO measure of 0.771 and a significant Bartlett's test (p < 0.001). The scale's reliability was confirmed with a Cronbach's alpha of 0.738. The final structure consists of three factors, providing a robust tool for assessing social media procrastination. To further validate the internal structure, Confirmatory Factor Analysis (CFA) was performed using AMOS-21. The CFA results indicated ,the Chi-Square test and CMIN/DF suggest a decent fit, as the ratio is below 3.The baseline comparisons (NFI, RFI, IFI, TLI, CFI) indicate that the model fit could be improved since these values are lower than the typical threshold of 0.90.The RMSEA is below 0.08, which suggests an acceptable fit, but closer to 0.05 would be preferred. AIC, BIC, and CAIC values are provided for comparison with other models. Lower values are preferred, indicating a better fit. The ECVI value also indicates how well the model would perform on a new sample, with lower values being better. Overall, the model shows a reasonable fit with room for improvement, particularly in indices like IFI, NFI, and CFI, which are below the recommended thresholds. The RMSEA indicates an acceptable fit, and the CMIN/df ratio supports the model's overall appropriateness.

Keywords: SMPS, Procrastination, Collaboration, Distraction, Revolutionized

Introduction

In the modern digital era, social media has become an integral part of daily life, particularly for university students. Understanding the impact of social media on procrastination is crucial, as it directly affects academic performance and time management, both essential for student success. Procrastination, defined as the act of delaying or postponing tasks, is a widespread issue among students, further aggravated by digital distractions, with social media being one of the primary culprits (Andreassen et al., 2016).

Social media platforms like Facebook, Instagram, and Twitter are designed to capture attention and keep users engaged for extended periods. This continuous engagement often distracts

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students from their academic responsibilities. Studies have shown a significant correlation between excessive social media use and poor academic performance, as well as higher levels of procrastination (Meier et al., 2022). These distractions reduce the time available for studying and completing assignments and disrupt the focus required for effective learning.

Moreover, the omnipresence of social media fosters a culture of instant gratification and continuous social interaction, which can detract from the self-discipline needed for academic success. The phenomenon known as Fear of Missing Out (FOMO) compels students to constantly check their social media updates, leading to frequent interruptions in their study sessions (Przybylski et al., 2013). Peer pressure also significantly influences students' online behavior, as they strive to stay connected with friends and be part of the social media conversation (Rosen et al., 2013).

Social media's design, which often involves endless scrolling and algorithm-driven content that maximizes engagement, exacerbates this issue. Students are not merely distracted by social media but are often caught in cycles of behavior where checking notifications and engaging with online content takes precedence over academic tasks. This behavioral loop creates a significant challenge for maintaining sustained attention and productivity in academic work (Clayton et al., 2013).

Figure 1: Behavioral loop
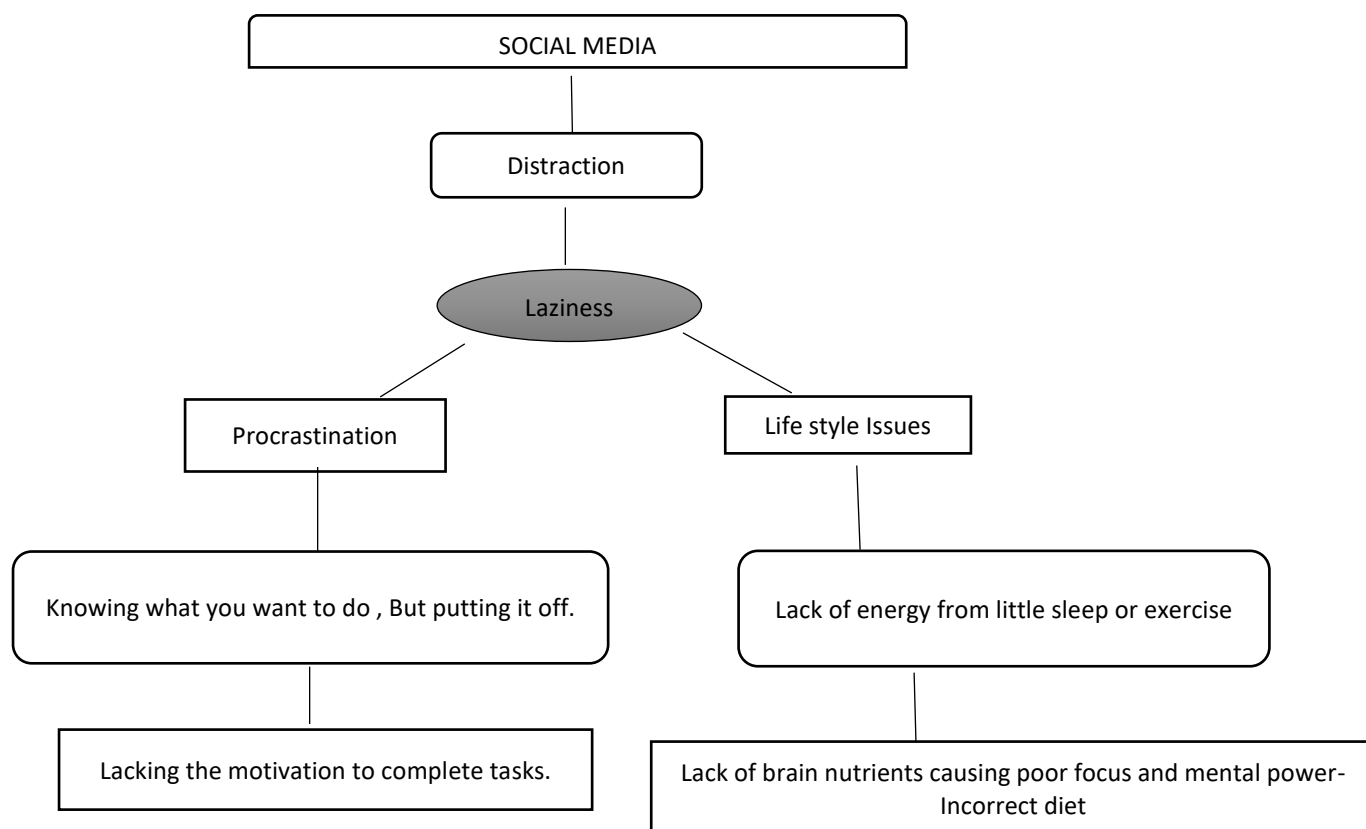
The flowchart illustrates how social media usage can lead to laziness, which then results in procrastination and various lifestyle issues. Social media acts as a major distraction, which leads to laziness. This laziness has two main outcomes: procrastination and lifestyle issues. Procrastination involves knowing what needs to be done but delaying it, resulting in a lack of motivation to complete tasks (Shensa et al., 2018). Lifestyle issues include a lack of energy due to poor sleep or exercise and inadequate brain nutrients from an incorrect diet, causing

poor focus and mental power. Overall, the flowchart emphasizes the negative impact of social media on productivity and health, detailing the pathways through which these effects manifest (Zhou et al., 2017).

Given these challenges, it is essential to examine the relationship between social media usage and procrastination among university students. By developing tools like the Social Media Procrastination scale (SMPS), researchers can gain insights into how digital distractions influence academic behaviors. This scale allows for a detailed assessment of various factors such as time management skills, engagement in academic activities, peer and social influence, and the extent of social media use. Understanding these dynamics can help in formulating effective strategies to help students manage their time more efficiently and enhance their academic performance (Elhai et al., 2016).

The development of the SMPS aims to provide a comprehensive measure to evaluate the impact of digital distractions on academic delay. By identifying specific areas where students are most affected, targeted interventions can be designed. These might include workshops on time management, creating awareness about the effects of social media on productivity, and incorporating digital well-being modules into university curricula. Such measures can empower students to control their social media use, thereby reducing procrastination and improving academic outcomes (Wolniewicz et al., 2018).

Literature Review

Social media's influence on university students' academic behaviors has been the subject of extensive research, revealing both positive and negative impacts. While social media platforms offer opportunities for collaboration, networking, and access to educational resources, they also present significant distractions that can hinder academic performance (Turel & Qahri, 2016).

Positive Impacts of Social Media on Students

Social media platforms have revolutionized how students interact and engage with academic content, offering a plethora of advantages:

Facilitating Collaboration: Social media platforms offer students virtual spaces, such as Facebook groups, WhatsApp chats, and online forums, to engage in collaborative efforts for group projects, exchange study materials, and delve into academic discussions (Veletsianos & Kimmons, 2013). These digital environments cultivate a sense of community and facilitate peer-to-peer learning opportunities.

Access to Educational Resources: Social media platforms provide students with a vast array of educational content, ranging from online courses to scholarly articles and research papers. Platforms such as Twitter and LinkedIn empower students to follow industry experts and academic organizations relevant to their field of study, ensuring they remain abreast of the latest advancements and trends (Junco, 2012).

Resource Sharing: Social media platforms function as reservoirs of educational materials, where students can avail themselves of a diverse range of resources such as lecture notes, study guides, and educational videos shared by both peers and educators. This collective dissemination of resources cultivates a culture of collaboration and empowers students to enrich their learning experiences with supplementary materials (Veletsianos & Kimmons, 2013).

Networking Opportunities: Social media platforms present students with opportunities to establish connections with professionals, alumni, and potential mentors within their field of interest. Platforms such as LinkedIn offer a space for students to highlight their skills and accomplishments, cultivate professional relationships, and investigate career prospects (Veletsianos & Kimmons, 2013).

Negative Impacts of Social Media on Students

Distraction and Procrastination: Among the notable drawbacks of social media is its capacity to divert students' attention from their academic duties. The persistent stream of notifications, updates, and the temptation to browse through feeds can result in procrastination, prompting students to defer their study sessions and assignments (Rosen et al., 2013).

Impaired Cognitive Functioning: Overindulgence in social media has been linked to cognitive deficits, such as diminished attention span and weakened concentration abilities. Constantly shifting between tasks and being bombarded with excessive information on social media platforms can compromise students' cognitive performance and impede their capacity to concentrate on academic responsibilities (Kirschner & Karpinski, 2010).

Social Comparison and Self-Esteem Issues: Social media platforms frequently portray curated representations of reality, where users exhibit their accomplishments and accentuate their most favorable moments. This continual exposure to idealized images and lifestyles may trigger feelings of inadequacy and diminish self-esteem in students. Engaging in comparisons with others on social media can foster unrealistic standards and exacerbate feelings of anxiety and depression (Chou & Edge, 2012).

In summary, while social media offers valuable opportunities for collaboration, communication, and access to educational resources, its negative impacts on students' time management, academic engagement, and peer interactions cannot be overlooked. Recognizing these challenges is essential for educators and students to develop strategies to mitigate the adverse effects of social media on academic performance and promote a healthy balance between online and offline activities.

Strategies

strategies for educators and students to mitigate the adverse effects of social media on academic performance and promote a healthy balance between online and offline activities:

For Educators

Digital Literacy Education: Incorporate digital literacy education into the curriculum to help students understand the potential risks and benefits of social media use. Teach them critical thinking skills to evaluate online information critically and discern credible sources.

Set Clear Expectations: Clearly communicate expectations regarding social media use in the classroom. Establish guidelines for when and how students can use social media for academic purposes, and reinforce the importance of minimizing distractions during class time.

Encourage Offline Engagement: Design engaging offline activities that encourage students to interact face-to-face and collaborate in person. Encourage group discussions, hands-on projects, and experiential learning opportunities that foster meaningful interactions outside of social media platforms (Brand et al., 2019).

Promote Digital Well-being: Educate students about the importance of digital well-being and the potential negative impacts of excessive social media use on mental health. Provide resources and support services for students who may be struggling with social media addiction or related issues.

Model Healthy Behavior: Lead by example and demonstrate healthy social media habits. Avoid excessive use of social media during class time and encourage students to disconnect from technology periodically to focus on offline activities and self-care.

For Students

Set Boundaries: Establish clear boundaries for social media use and designate specific times for checking notifications and engaging with online content. Use productivity tools or apps to limit screen time and prevent distractions during study sessions.

Practice Self-awareness: Reflect on your social media habits and their impact on your academic performance and well-being. Identify triggers that lead to excessive use of social media and develop strategies to manage them effectively (Pontes & Griffiths, 2017).
Create a Study Environment: Designate a distraction-free study environment where you can focus solely on academic tasks without the temptation of social media. Consider using website blockers or apps that restrict access to social media platforms during study sessions.
Prioritize Tasks: Prioritize your academic responsibilities and allocate dedicated time for studying, completing assignments, and engaging in extracurricular activities. Use time management techniques such as the Pomodoro Technique or Eisenhower Matrix to maximize productivity and minimize procrastination (Wegmann et al., 2020).
Seek Support: Reach out to peers, educators, or support services if you're struggling to manage your social media use or its impact on your academic performance. Don't hesitate to ask for help and support when needed (Brailovskaia & Margraf, 2018).
By implementing these strategies, educators and students can work together to foster a healthy balance between online and offline activities and mitigate the adverse effects of social media on academic performance.

Method
The development of the SMPS involved several steps:

Item Piloting
Initially, 50 items were constructed based on the four identified factors by literature review. Costello and Osborne (2005) Suggest a minimum of 3 items per factor, with more items (up to around 8) often providing better reliability

Content Validity of SMPS
Table 1: Content validity estimates

Item No.	CVR	Item No.	CVR	Item No.	CVR
1.	1	11.	0.85	21.	1
2.	0.85	12.	1	22.	1
3.	1	13.	1	23.	0.85
4.	1	14.	1	24.	1
5.	1	15.	1	25.	1
6.	1	16.	1	26.	0.85
7.	1	17.	1	27.	0.85
8.	0.85	18.	1	28.	0.85
9.	0.71	19.	1	29.	0.71
10.	1	20.	0.85	30.	1
CVI	**0.94**	31.	1		

Construct Validity of SMPS
Expert opinions from 14 academics were solicited, resulting in the removal of 19 items that had a content validity ratio below 0.45.

KMO and Bartlett's Test
The Kaiser-Meyer-Olkin measure was 0.771and Bartlett's test was significant ($p < 0.001$), indicating sampling adequacy for factor analysis.

Table 2: KMO and Bartlett's Test

1	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.771
2	Bartlett's Test of Sphericity	1332.647
3	df	465
4	Sig.	.000

Scree Test and Total Variance Explained

The screen test helped refine the factors, leading to a three-factor solution after exploratory factor analysis.

Figure 2: Scree test
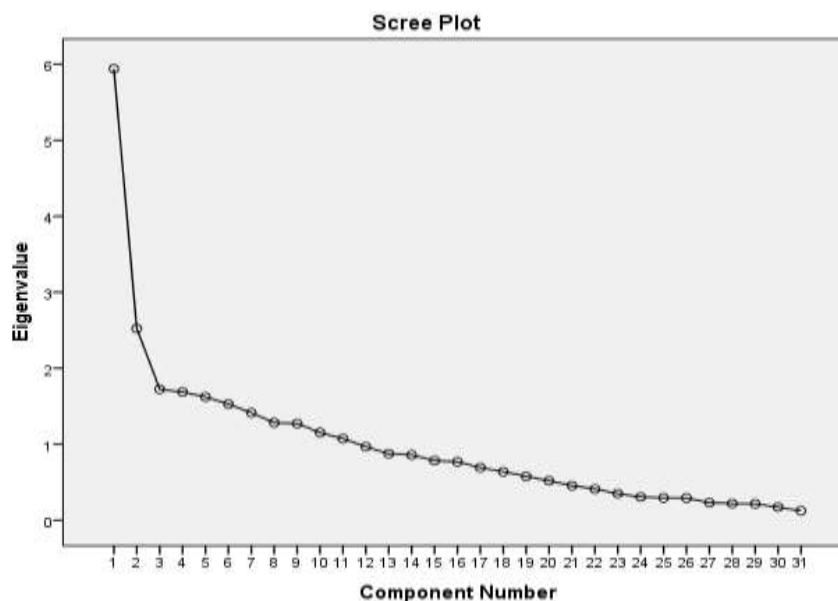
Table 3: Total Variance Explained and Parallel Analysis

Component	Eigenvalues	Random Eigenvalue	Decision	% of Variance	Cumulative %
1	8.040	1.52243	**Accepted**	19.488	19.488
2	3.091	1.342014	**Accepted**	11.947	31.435
3	2.156	1.20198	**Accepted**	11.427	42.862

Reliability Analysis

Cronbach's alpha for the final scale was 0.884, indicating acceptable internal consistency.

### Table 4: Cronbach Alpha reliability statistics

Sr.	Alpha	No. of Items
1	0.884	31

Rotated Matrix Component

Factor loadings from the varimax rotation confirmed the presence of three robust factors.

Table 5: Rotated component Matrix			
Variables	**Component**		
	1	**2**	**3**
V10	**.640**	-.130	.026
V11	**.666**	.055	.143
V12	**.515**	.206	-.113
V13	**.653**	.202	-.065
V14	**.421**	.261	.227
V15	**.439**	.383	-.017
V18	**.570**	-.013	.165
V19	**.601**	.089	.055
V20	**.726**	.198	.041
V21	**.687**	.341	.145
V22	**.545**	.285	-.113
V23	**.707**	.268	.101
V24	**.593**	.121	.357
V25	**.546**	.289	.338
V26	**.609**	.378	.082
V16	.100	**.505**	.089
V17	.326	**.632**	.020
V30	.334	**.675**	.057
V31	.060	**.651**	.314
V33	.247	**.566**	.000
V34	.103	**.739**	-.017
V27	-.209	-.129	**.055**
V28	.090	.188	**.453**
V29	.106	-.093	**.574**
V32	-.143	.275	**.608**
V35	.118	.046	**.790**
V36	-.134	.105	**.648**
V37	.088	.361	**.471**
V38	.216	.219	**.329**
V39	.388	-.163	**.578**
V40	-.044	-.275	**.635**

SMPS AMOS Graphics

Based on the findings in the table, a measurement model has been developed using AMOS-21 to more rigorously verify the internal factor structure. This model includes 31 items distributed across 3 components.

Figure 3: Procrastination Measurement Model
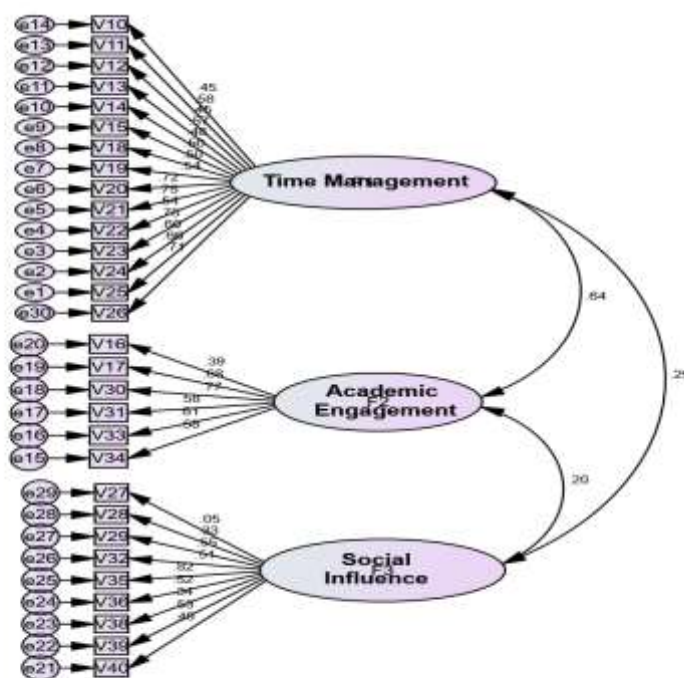
Confirmatory factor analysis (CFA) for the Social Media Procrastination Scale (SMPS). It shows the relationships between observed variables (items) and latent constructs (factors).

Time Management is linked with several items (e.g., V10, V11, V12), showing factor loadings ranging from 0.45 to 0.75. This indicates the strength of the relationship between each item and the latent factor of time management.

Academic engagement is associated with items (e.g., V16, V17, V30), with loadings from 0.39 to 0.88, suggesting how well these items represent the factor of academic engagement.

Social influence connects to items (e.g., V27, V28, V29), with loadings from 0.05 to 0.86, indicating varying degrees of representation of the social influence factor.

Inter-factor correlations show a strong positive correlation (0.64) between time management and academic engagement. Moderate correlations between time management and social influence (0.29) and between academic engagement and social influence (0.20).These results validate the three-factor structure of the SMPS, demonstrating that the items reliably measure the intended constructs of time management, academic engagement, and social influence. The varying factor loadings and correlations highlight the interconnectedness of these factors in understanding social media-related procrastination.

Model Fit Indices

According to McDonald and Hu (2002), it's important to report CFI, GFI, NNFI, and NFI, while Kline (2013) emphasizes SRMR, RMSEA, and CFI. Additionally, Basak et al. (2013) highlight RMR, GFI, AGFI, NFI, and CFI as key model fit indices. Hu and Bentler (1999), however, caution that these values should not be viewed as strict standards. In this study, the researcher used CMIN/df, RMR, GFI, AGFI, NFI, CFI, SRMR, and RMSEA to determine acceptable model fit. All the fit indices, including CMIN/df, RMR, GFI, AGFI, NFI, and CFI (indicators of goodness of fit), as well as SRMR and RMSEA (indicators of badness of fit), are within acceptable ranges according to expert recommendations.

Table 6: Model fit indices

Sr.#	Indicators	Estimates	Cutt off Value	Reference
1	CMIN/df	1.621	0<CMIN/df	Hair et al.(2010)
2	IFI	.750	>0.90	Hu et al.(1998)
3	PNFI	.464	>0.50	Mulaik et al.(1989)
4	NFI	.534	.90<NFI	Basak et al.(2013)
5	CFI	.733	.90<CFI<.95	Basak et al.(2013)
6	PCFI	.637	>0.50	Mulaik et al.(1989)
7	RMSEA	.078	.05<RMSEA<.08	Hair et al.(2010)

The table provides several fit indices for the confirmatory factor analysis (CFA) of the Social Media Procrastination Scale (SMPS), along with their estimates, cutoff values, and references. Here's a summary interpretation:

CMIN/df (1.621): This value is below the cutoff of 3.0 (recommended by Hair et al., 2010), indicating a good model fit.

IFI (0.750): The incremental fit index is below the recommended cutoff of 0.90 (Hu et al., 1998), suggesting that the model fit could be improved.

PNFI (0.464): The Parsimony-adjusted normed fit index is below the cutoff of 0.50 (Mulaik et al., 1989), indicating that the model has lower parsimony.

NFI (0.534): The normed fit index is below the desired range of 0.90 (Basak et al., 2013), implying that the model does not fit the data as well as expected.

CFI (0.733): The Comparative Fit Index is below the ideal range of 0.90 to 0.95 (Basak et al., 2013), indicating a need for model improvement.

PCFI (0.637): The parsimony-adjusted comparative fit index is above the 0.50 cutoff (Mulaik et al., 1989), suggesting moderate parsimony.

RMSEA (0.078): The root mean square error of approximation is within the acceptable range of 0.05 to 0.08 (Hair et al., 2010), suggesting a reasonable fit.

Discussion

The study aimed to develop a reliable tool, the Social Media Procrastination Scale (SMPS), to measure procrastination behaviors linked to social media use among university students. The validation process for the SMPS included exploratory and confirmatory factor analyses, ensuring the scale's reliability and structural integrity. The final scale consists of three key factors: time management skills, engagement in academic activities, and peer and social influence. Each factor plays a significant role in understanding how social media contributes to academic procrastination.

Exploratory Factor Analysis (EFA)

The initial phase of the study involved constructing an extensive item pool based on a comprehensive literature review of social media use and procrastination. This process yielded 50 items, categorized into potential factors identified as critical in influencing academic procrastination. To ensure the scale's content validity, expert opinions were solicited, leading to the removal of 19 items that did not meet the required content validity ratio threshold.

The remaining items were then subjected to exploratory factor analysis (EFA) with varimax rotation to identify the underlying factor structure. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.771, indicating that the data were suitable for factor analysis. Bartlett's test of sphericity was highly significant ($p < 0.001$), further supporting the factorability of the correlation matrix.

The scree plot and total variance explained analysis from EFA revealed a three-factor solution. These factors were interpreted as follows:

Time Management Skills: This factor encompasses items related to the ability of students to effectively manage their time amidst social media distractions. Items within this factor include behaviors such as setting study schedules, prioritizing tasks, and avoiding procrastination triggers related to social media use.

Engagement in Academic Activities: This factor reflects the degree to which students actively participate in academic tasks and responsibilities. Higher engagement implies a lower propensity for procrastination, as students are more focused on their studies rather than social media distractions.

Peer and Social Influence: This factor captures the influence of peers and social networks on students' procrastination behaviors. It includes items related to the impact of peer pressure, social norms, and the desire to stay connected and engaged in online social interactions, often at the expense of academic obligations.

Confirmatory Factor Analysis (CFA)

Following EFA, confirmatory factor analysis (CFA) was conducted using AMOS-21 to further validate the structure of the SMPS. CFA confirmed the three-factor model derived from EFA, providing empirical evidence for the scale's structural validity. The model fit indices, including the Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Chi-Square/degrees of freedom ratio (CMIN/df), indicated a reasonably good fit of the model with the data. However, some indices suggested room for improvement, particularly in achieving higher thresholds recommended for model fit.

Implications of the Factors

Each factor identified in the SMPS holds specific implications for understanding how social media contributes to procrastination among university students:

Time Management Skills: Strengthening time management skills through targeted interventions and workshops can help students mitigate the negative effects of social media distractions. Strategies may include promoting effective planning, goal-setting, and the use of productivity techniques to enhance academic focus.

Engagement in Academic Activities: Fostering a culture of active learning and participation in academic tasks can reduce the allure of social media distractions. Encouraging collaborative learning environments and meaningful student-teacher interactions can enhance student engagement and minimize procrastination tendencies.

Peer and Social Influence: Addressing peer pressure and social norms associated with social media use is crucial. Educating students about the impact of social comparison and Fear of Missing Out (FOMO) on procrastination behaviors can empower them to make more informed decisions about their online interactions.

Beyond the scale development, the study underscores the broader implications of social media on academic performance and student well-being. Social media platforms, while offering connectivity and information access, also pose significant challenges in terms of time management, attention span, and mental health. Recognizing these challenges allows educators and policymakers to develop comprehensive strategies for promoting digital literacy, responsible social media use, and overall student success.

Findings

The findings highlight several critical insights:

Time Management Skills: Students who struggle with time management are more likely to procrastinate due to social media distractions. This factor emphasizes the importance of self-regulation and effective time management strategies to mitigate procrastination.

Engagement in Academic Activities: A lower level of engagement in academic tasks correlates with higher procrastination levels. Students who are more involved in their studies are less prone to be distracted by social media.

Peer and Social Influence: The influence of peers and the pressure to stay connected on social media significantly contribute to procrastination. The Fear of Missing Out (FOMO) and the desire to be part of social conversations can detract from academic responsibilities.

Suggestions

Based on the findings, several strategies can be recommended to reduce social media procrastination:

Time Management Workshops: Universities can offer workshops focused on improving students' time management skills. These sessions can provide practical tools and techniques to help students prioritize their academic tasks over social media activities.

Awareness Campaigns: Implementing awareness campaigns about the negative impacts of excessive social media use on academic performance can help students recognize and address their procrastination habits.

Digital Well-being Programs: Incorporating digital well-being modules into the curriculum can educate students about maintaining a healthy balance between online and offline activities. These programs can offer tips on reducing screen time and managing social media use effectively.

Peer Support Networks: Establishing peer support groups where students can share their experiences and strategies for managing social media distractions can foster a supportive environment that encourages better academic focus.

Conclusion

The development and validation of the Social Media Procrastination Scale (SMPS) provide a valuable tool for assessing the impact of social media on academic procrastination among university students. The study's findings underscore the importance of addressing social media's role in academic procrastination and offer practical suggestions for mitigating its effects. By implementing targeted interventions and promoting digital well-being, universities can help students manage their social media use more effectively, ultimately enhancing their academic performance and overall well-being.

In conclusion, the SMPS is a robust and reliable measure that can aid in understanding and addressing the challenges posed by social media procrastination in academic settings. Future research can further refine the scale and explore additional factors that may influence procrastination behaviors, contributing to a more comprehensive understanding of this phenomenon.

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