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Digital Dependency and its Impacts on University Students Understanding Management Relevant Predictors of Distress

Dr. Muhammad Luqman Khan
luqman.khan@riphahfsd.edu.pk
Associate Professor, Department of Psychology, Riphah International University Faisalabad Campus

Farwa Shafique
farwashafique7@gmail.com
Department of Psychology, International Islamic University Islamabad

Dr. Shahid Nadeem
shahid.nadeem@ucp.edu.pk
Professor, Faculty of Management Sciences, University of Central Punjab, Johar Town, Lahore 54590, Pakistan

Dr. Muhammad Akmal Pasha
akmal.pasha@ucp.edu.pk
Assistant Professor, University of Central Punjab, Johar Town Lahore, Pakistan

Hassan Imran
hassanimran332@gmail.com
PhD Scholar, Department of Psychology, Riphah International University, Faisalabad Campus

Aqsa Ali
aqsam7386@gmail.com
MS Scholar, Department of Clinical Psychology, SZABIST, University Islamabad

Haiqa Zahid Abbasi
haiqazahid123@gmail.com
PhD Scholar, Department of Psychology, Shifa Tameer E Milat University, Islamabad, Pakistan

Dr. Kashifa Yasmeen
kashifa@uosahiwal.edu.pk
Associate Professor, Department of Psychology, University of Sahiwal
Corresponding Author: * Dr. Muhammad Luqman Khan luqman.khan@riphahfsd.edu.pk

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ABSTRACT

The rapid integration of digital technologies into academic and social life has increased students' reliance on digital devices, raising concerns about psychological distress. This study examined the impact of digital dependency on university students' psychological well-being, with a focus on management-relevant predictors, including academic workload, self-regulation, and perceived social support. A quantitative cross-sectional design was employed, collecting data from 500 university students using validated self-report instruments: the Digital Dependency Scale, Kessler Psychological Distress Scale (K10), Academic Workload Scale, Self-Regulation Scale, and Multidimensional Scale of Perceived Social Support (MSPSS). Descriptive statistics, correlation analysis, multiple regression, and mediation/moderation analyses were conducted using SPSS 26 and PROCESS macro. Results indicated that digital dependency was positively associated with psychological distress, and academic workload

further exacerbated this effect. Self-regulation partially mediated the relationship, suggesting that students with higher self-control experienced lower distress, even with high digital engagement. Perceived social support moderated the relationship, serving as a buffering factor against the negative effects of digital dependency. The study highlights the importance of holistic management strategies in higher education, including digital literacy programs, workload balancing, self-regulation interventions, and strengthened support networks. Limitations include the cross-sectional design, self-reported measures, convenience sampling, and a single-country sample. Future research should employ longitudinal designs, multi-country samples, and objective digital tracking to examine causal relationships. Overall, the findings provide empirical evidence for understanding how digital dependency influences student distress and offer actionable insights for universities to promote psychological well-being and healthier digital engagement.
Keywords: *Digital dependency, Psychological Distress, University Students, Academic Workload, Self-regulation, Social Support*

INTRODUCTION

In recent years, the rapid proliferation of digital technologies, including smartphones, laptops, and internet-based applications, has profoundly transformed the academic and social lives of university students. Digital devices provide constant access to educational resources, social networks, and entertainment platforms, leading to increased convenience and connectivity. However, this pervasive engagement has also resulted in heightened levels of digital dependency, defined as excessive reliance on digital technologies for daily functioning and social interactions (Przybylski et al., 2013). Digital dependency is increasingly recognized as a psychological and behavioral phenomenon that may have negative consequences, particularly for young adults navigating academic demands. University students, who often manage multiple responsibilities, including coursework, social obligations, and part-time employment, are especially vulnerable to developing patterns of overuse that can interfere with their academic performance, emotional stability, and interpersonal relationships. The increasing integration of digital tools into educational systems, though beneficial for learning outcomes, has inadvertently intensified pressures on students, creating a delicate balance between productive usage and dependency.

Digital dependency among university students is associated with a range of psychological stressors that can compromise well-being and academic performance. Prior research indicates that excessive digital engagement may exacerbate anxiety, depression, and overall psychological distress (Elhai et al., 2017). Students often experience cognitive overload due to constant notifications, multitasking between academic and social platforms, and prolonged screen time, which reduces attentional control and self-regulation capacity. This overreliance on technology can disrupt sleep patterns, diminish time spent on academic tasks, and lead to procrastination, thereby creating a cycle of stress and maladaptive coping behaviors. Moreover, students may develop an increased sense of urgency to remain online or connected to peers and academic platforms, which can heighten perceived pressure and contribute to emotional exhaustion. The combined effects of academic expectations and digital dependency underscore the importance of investigating the predictors of psychological distress in university populations to inform effective management strategies.

Self-regulation is a critical factor influencing the relationship between digital dependency and distress. Self-regulatory skills encompass goal-setting, time management, and the ability to control impulses, particularly in contexts of high digital engagement. Students with poor self-regulation are more likely to succumb to compulsive digital behaviors, spending excessive hours online at the expense of academic responsibilities and restorative activities (Andreassen et al., 2012). Conversely, students with effective self-regulatory strategies may navigate digital environments without experiencing significant distress. Academic workload further compounds this issue, as students are required to balance complex

assignments, deadlines, and examinations while managing constant online stimuli. The interaction between digital dependency, self-regulation, and workload highlights the multifaceted nature of distress among university populations, emphasizing the need to consider management-relevant predictors when assessing psychological outcomes.

Perceived social support also plays a significant role in mitigating the negative consequences of digital dependency. Support from family, peers, and faculty provides emotional resources that can buffer stress and facilitate adaptive coping strategies (Cohen & Wills, 1985). Students with limited perceived support may rely more heavily on digital interactions to fulfill social needs, thereby increasing vulnerability to psychological distress. In contrast, those with strong social networks may better regulate digital use, seek help when needed, and maintain healthier routines. Thus, social support is not only a protective factor but also an important contextual variable in understanding how digital dependency translates into distress. Identifying the mechanisms through which social support interacts with digital usage is crucial for developing targeted interventions and campus-wide programs aimed at enhancing student well-being.

The academic environment itself may inadvertently reinforce digital dependency. Universities increasingly integrate online learning platforms, digital submission systems, and social media-based communication tools, which, while enhancing educational efficiency, also create constant connectivity demands (Junco, 2012). Students may feel compelled to maintain near-continuous engagement with these platforms to remain academically competitive. This environment, when coupled with personal predispositions toward digital dependency, can heighten psychological stress and exacerbate maladaptive behaviors such as procrastination, distraction, and compulsive checking of notifications. Understanding the interplay between institutional expectations, individual tendencies, and psychological outcomes is critical for managing student well-being in the digital era.

Despite growing recognition of the prevalence of digital dependency, research examining its predictors and management-relevant consequences remains limited. Most studies focus on general patterns of internet or smartphone overuse, often neglecting contextual factors such as academic workload, self-regulation, and social support (Kuss & Griffiths, 2015). Investigating these factors is essential for developing evidence-based strategies that university administrators, counselors, and educators can implement to reduce distress and foster adaptive digital behaviors. This study aims to address this gap by examining digital dependency in university students and identifying key predictors of psychological distress, providing both theoretical insights and practical recommendations for managing digital engagement effectively.

LITERATURE REVIEW

Digital dependency, often conceptualized as an excessive or compulsive use of digital devices, has emerged as a pressing issue among university students. Studies suggest that dependency on smartphones, social media, and online learning platforms can lead to a range of negative psychological outcomes, including anxiety, depression, and emotional exhaustion (Elhai et al., 2017; Andreassen et al., 2012). Theoretical models of technology addiction emphasize the role of behavioral reinforcement and habitual engagement, where digital platforms provide instant gratification through notifications, likes, or academic feedback. This reinforcement can create compulsive patterns that reduce self-regulation and increase susceptibility to stress. Researchers have highlighted the importance of distinguishing between functional use, which supports learning and productivity, and maladaptive dependency, which contributes to cognitive overload and emotional strain.

Academic workload is a well-established predictor of psychological distress among university students. Heavy course loads, tight deadlines, and multiple assessments create stress that can amplify the negative effects of digital dependency (Misra & McKean, 2000). Students often attempt to balance academic

demands with digital engagement, resulting in multitasking that compromises focus and efficiency. Empirical studies indicate that students with higher academic pressure are more likely to use digital devices as a coping mechanism, including browsing social media or engaging in online entertainment, which paradoxically increases stress and procrastination. The management of academic workload is thus crucial in mitigating the psychological impacts of digital dependency.

Self-regulation plays a central role in determining how students manage their digital behaviors. Self-regulatory skills, such as planning, time management, and goal setting, allow students to regulate digital engagement in a way that minimizes interference with academic responsibilities (Bandura, 1991). Students with low self-regulation are at higher risk of digital dependency, often prioritizing online activities over study-related tasks, leading to heightened stress and decreased academic performance. Conversely, those with strong self-regulation can balance online engagement and academic work, reducing the risk of psychological distress. Several studies have highlighted interventions that enhance self-regulation, such as digital detox programs and structured time management training, as effective tools to mitigate digital overuse (Van Deursen et al., 2015).

Perceived social support is another critical factor influencing the relationship between digital dependency and distress. Social support provides emotional, informational, and instrumental resources that buffer stress and facilitate coping (Cohen & Wills, 1985). Students with high levels of perceived support may experience less psychological impact from digital dependency because they have access to alternative coping mechanisms and guidance. On the other hand, students with limited support may rely excessively on digital platforms for social interaction, increasing vulnerability to distress. Research suggests that fostering supportive networks within academic institutions can help students navigate the challenges associated with digital engagement effectively (Lin et al., 2019).

The interplay between cognitive overload and digital dependency has also been widely examined. Cognitive overload occurs when the volume of information and multitasking exceeds an individual's processing capacity, leading to stress, fatigue, and impaired decision-making (Sweller, 2011). University students who engage excessively with digital devices often experience information overload from academic notifications, social media, and other online sources. This overload can exacerbate anxiety, reduce attentional control, and impair academic performance. Effective strategies for managing cognitive overload, such as prioritization, time blocking, and digital detox interventions, have been recommended to reduce the negative effects of digital dependency.

Although numerous studies have addressed the negative impacts of digital dependency, gaps remain regarding management-relevant predictors of distress among university students. Few studies have simultaneously examined the combined effects of academic workload, self-regulation, and social support in predicting psychological outcomes. Understanding these factors is crucial for developing holistic interventions that not only reduce dependency but also support students' mental health and academic success. This study seeks to fill this gap by investigating digital dependency in the university context and identifying key predictors of psychological distress, providing actionable insights for educators, counselors, and administrators to improve student well-being in the increasingly digital academic environment.

Research Objectives

The primary aim of this study is to examine the impacts of digital dependency on university students' psychological well-being, with a focus on management-relevant predictors of distress. The specific objectives are:

1. To investigate the relationship between digital dependency and psychological distress among university students.
2. To examine the role of academic workload as a predictor of psychological distress in students with high levels of digital dependency.
3. To assess the impact of self-regulation on the association between digital dependency and distress.
4. To explore the moderating effect of perceived social support on the relationship between digital dependency and psychological distress.
5. To identify key management-relevant strategies that can mitigate the negative effects of digital dependency and enhance student well-being.

Research Questions

1. What is the relationship between digital dependency and psychological distress among university students?

2. How does academic workload influence the psychological impact of digital dependency?

3. What role does self-regulation play in moderating or mediating the effects of digital dependency on distress?

4. Does perceived social support buffer or moderate the negative effects of digital dependency on psychological well-being?

5. What management strategies can universities implement to reduce digital dependency-related distress among students?

Research Hypotheses

H_o1: There is no significant relationship between digital dependency and psychological distress among university students.

H_o2: Academic workload does not significantly predict psychological distress in students with digital dependency.

H_o3: Self-regulation does not significantly affect the relationship between digital dependency and psychological distress.

H_o4: Perceived social support does not significantly moderate the relationship between digital dependency and psychological distress.

H_o5: There are no management-relevant strategies that significantly mitigate the negative effects of digital dependency on student well-being.

RESEARCH METHODOLOGY

Research Design

This study employed a quantitative cross-sectional research design to examine the relationship between digital dependency and psychological distress among university students. A cross-sectional approach allows the collection of data at a single point in time, which is efficient for identifying patterns, associations, and predictors of distress related to digital dependency. Quantitative methods were chosen to enable statistical analysis of relationships between variables, providing objective evidence for hypothesis

testing. The design is particularly suitable for this study because it aims to identify management-relevant predictors, including academic workload, self-regulation, and perceived social support, which can be measured reliably through structured questionnaires.

Population and Sample

The target population consisted of university students enrolled in undergraduate and postgraduate programs across various disciplines. Students are particularly relevant for this study due to their high exposure to digital devices for both academic and social purposes, making them susceptible to digital dependency. A total of 500 students participated in the study, selected through convenience sampling from multiple universities to ensure diversity in academic backgrounds, age groups, and digital engagement patterns.

Sampling Technique

Convenience sampling was employed due to practical constraints and accessibility of participants. Students were approached through university portals, social media platforms, and academic groups. Although convenience sampling may limit generalizability, it is effective for exploratory studies where the primary objective is to identify associations and predictors. Efforts were made to ensure representation across disciplines, years of study, and gender to enhance the reliability and validity of findings.

Data Collection Procedure

Data were collected using structured self-administered questionnaires, distributed both online and in paper format. Online questionnaires were shared via university email lists and social media platforms, ensuring accessibility and convenience for participants. Prior to participation, students were provided with a brief explanation of the study, including its objectives, voluntary nature, confidentiality, and estimated time to complete the survey (~15–20 minutes). Written informed consent was obtained from all participants. Participants were encouraged to answer honestly, and anonymity was maintained to reduce social desirability bias.

Research Instruments

The study utilized standardized and validated instruments to measure the main variables:

1. **Digital Dependency Scale:** Adapted from Przybylski et al. (2013), this 15-item scale measures the degree of compulsive digital engagement, including social media, smartphones, and online academic tools. Responses were recorded on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).
2. **Psychological Distress Scale:** The Kessler Psychological Distress Scale (K10) was used to assess levels of anxiety, depression, and general distress over the past month (Kessler et al., 2002).
3. **Academic Workload Scale:** A 10-item scale developed based on Misra & McKean (2000) was used to measure perceived academic pressure and task demands.
4. **Self-Regulation Scale:** Based on Bandura's (1991) self-regulation framework, a 12-item scale measured students' ability to manage time, set goals, and control impulses.
5. **Perceived Social Support Scale:** The Multidimensional Scale of Perceived Social Support (MSPSS) by Zimet et al. (1988) assessed support from family, friends, and significant others.

RESULTS

Table 1
Descriptive Statistics of Study Variables n=500

Variable	Mean	SD	Min	Max
Digital Dependency	3.62	0.78	1.5	5.0
Psychological Distress (K10)	2.98	0.85	1.0	5.0
Academic Workload	3.45	0.70	1.0	5.0
Self-Regulation	3.21	0.72	1.2	5.0
Perceived Social Support	3.68	0.69	1.4	5.0

In table 1, the mean score of digital dependency (M = 3.62, SD = 0.78) indicates that students moderately rely on digital devices, with some showing higher levels of dependency. Psychological distress (M = 2.98, SD = 0.85) suggests that students experience moderate levels of anxiety, depression, and emotional strain. Academic workload (M = 3.45, SD = 0.70) reflects moderate perceived academic pressure, while self-regulation (M = 3.21, SD = 0.72) indicates average ability to manage time and impulses. Perceived social support (M = 3.68, SD = 0.69) suggests that students generally perceive adequate support from family, friends, and peers.

Table 2
Correlation Matrix

Variable	1	2	3	4	5
Digital Dependency	-				
Psychological Distress	0.56**	-			
Academic Workload	0.48**	0.52**	-		
Self-Regulation	-0.42**	-0.46**	-0.38**	-	
Perceived Social Support	-0.35**	-0.40**	-0.30**	0.50**	-

*Note: **p < 0.01*

In table 1, digital dependency shows a significant positive correlation with psychological distress ($r = 0.56$, $p < 0.01$), indicating that higher dependency is associated with higher levels of distress. Academic workload is also positively correlated with distress ($r = 0.52$, $p < 0.01$), suggesting that heavier workload contributes to increased stress. Self-regulation and perceived social support are negatively correlated with distress ($r = -0.46$ and -0.40, respectively, $p < 0.01$), indicating that students with better self-regulatory skills and higher perceived support experience lower distress. These correlations support the expected theoretical relationships.

Table3
Multiple Regression Analysis

Predictor	B	SE B	β	t	p
Digital Dependency	0.42	0.05	0.37	8.40	0.001
Academic Workload	0.28	0.04	0.25	6.20	0.001
Self-Regulation	-0.22	0.04	-0.21	-5.10	0.001
Perceived Social Support	-0.18	0.03	-0.17	-4.80	0.001

Model Summary: $R^2 = 0.52$, $F(4, 495) = 134.5$, $p < 0.001$

In table 3, the model explains 52% of the variance in psychological distress, indicating a strong predictive capability. Digital dependency is the strongest positive predictor ($\beta = 0.37$, $p < 0.001$), followed by academic workload ($\beta = 0.25$, $p < 0.001$). Self-regulation ($\beta = -0.21$, $p < 0.001$) and perceived social support ($\beta = -0.17$, $p < 0.001$) negatively predict distress, suggesting that higher self-regulation and support buffer the effects of dependency and workload.

Table 4
Mediation Analysis (Self-Regulation)

Path	B	SE	t	p
Digital Dependency → Self-Regulation	-0.40	0.05	-8.00	0.001
Self-Regulation → Distress	-0.22	0.04	-5.10	0.001
Digital Dependency → Distress (Direct)	0.32	0.05	6.40	0.001

In table 4, self-regulation partially mediates the relationship between digital dependency and distress. Higher digital dependency reduces self-regulatory capacity, which in turn increases psychological distress. The direct effect remains significant, indicating partial mediation.

Table 5
Moderation Analysis

Predictor	B	SE	t	p
Digital Dependency	0.42	0.05	8.40	0.001
Perceived Social Support	-0.18	0.03	-4.80	0.001
Digital Dependency × PSS	-0.10	0.02	-3.50	0.001

In table 5, the interaction term is significant, indicating that perceived social support moderates the relationship between digital dependency and distress. Students with higher social support experience a weaker effect of digital dependency on distress compared to those with lower support, demonstrating a buffering effect.

DISCUSSION

Digital Dependency and Psychological Distress

The study found a significant positive relationship between digital dependency and psychological distress. Students with higher levels of digital engagement reported greater anxiety, emotional strain, and depressive symptoms. This aligns with prior research suggesting that excessive reliance on digital devices may lead to cognitive overload, sleep disruption, and social isolation, which exacerbate psychological distress (Elhai et al., 2017; Andreassen et al., 2012). The findings also support theoretical frameworks of technology addiction, which posit that compulsive engagement with digital tools can interfere with daily functioning, resulting in emotional and behavioral difficulties. The moderate-to-high mean score of digital dependency observed in this study indicates that university students are vulnerable to overuse due to academic demands and social pressures. This emphasizes the need for monitoring digital behaviors and educating students on responsible usage to maintain psychological well-being.

Academic Workload as a Predictor of Distress

Academic workload emerged as a significant positive predictor of psychological distress. Students experiencing heavier academic demands reported higher stress levels, which amplified the negative impact of digital dependency. This supports previous research showing that high workload leads to multitasking and time pressure, which, when combined with compulsive digital engagement, creates cognitive overload (Misra & McKean, 2000; Junco, 2012). These results highlight the importance of workload management strategies, such as structured timetables, realistic deadlines, and institutional support systems, to prevent excessive stress. Universities must consider both academic and digital demands when designing interventions to reduce distress among students.

The Role of Self-Regulation

Self-regulation partially mediated the relationship between digital dependency and psychological distress, indicating that students with poor self-regulatory skills are more susceptible to the negative consequences of digital overuse. Those with strong time-management, goal-setting, and impulse-control abilities were better able to balance digital engagement with academic responsibilities, resulting in lower distress levels. This finding aligns with Bandura's (1991) social-cognitive theory, which emphasizes self-regulatory mechanisms as critical for adaptive behavior. Interventions aimed at enhancing self-regulation, such as digital detox programs, time-management workshops, and structured planning tools, may reduce the detrimental impact of digital dependency on student well-being.

Perceived Social Support as a Moderator

Perceived social support significantly moderated the relationship between digital dependency and psychological distress. Students with higher support from family, peers, or faculty experienced a weaker association between digital dependency and distress, indicating a buffering effect. Conversely, students with low perceived support were more vulnerable to the negative psychological consequences of excessive digital engagement.

These results align with stress-buffering models of social support (Cohen & Wills, 1985), which suggest that supportive networks provide emotional resources that mitigate stress. Universities can enhance support systems through mentoring programs, peer support groups, and counseling services to help students manage both academic and digital

Limitations and Future Research

The cross-sectional design of the study limits the ability to draw causal inferences; longitudinal studies are recommended to examine changes and effects over time.

1. Reliance on self-reported data may introduce social desirability or response bias, which could affect the accuracy of the findings.
2. The use of convenience sampling restricts the generalizability of the results to the broader university student population.
3. The study was conducted in a single country, and cultural factors that may influence digital behavior and psychological distress were not explored.
4. The scope of digital dependency examined was limited to general device usage and did not consider specific platforms, applications, or behavioral patterns.
5. Future research should incorporate longitudinal designs, multi-country or cross-cultural samples, and objective digital behavior tracking to validate findings.
6. Experimental interventions could be employed in future studies to examine causal relationships and test the effectiveness of strategies for reducing digital dependency and associated distress challenges.

Practical Implications

The findings of this study have important practical implications for higher education institutions seeking to manage student well-being in the context of digital dependency. First, universities should implement digital literacy programs to educate students about responsible device usage, potential psychological risks of overuse, and strategies to maintain healthy digital habits. Second, workload management policies should be developed to balance academic demands with mental health considerations, such as flexible deadlines, staggered assignments, and reduced multitasking pressures, which can help minimize stress and cognitive overload. Third, interventions targeting self-regulation can equip students with essential skills like time management, goal-setting, and impulse control, enabling them to better manage both academic responsibilities and digital engagement. Finally, institutions should focus on strengthening support networks, including mentorship programs, peer counseling, and active family engagement, to provide emotional and practical resources that buffer the negative effects of digital dependency. By integrating these strategies, universities can enhance overall student well-being, reduce psychological distress, and foster healthier, more balanced digital and academic behaviors among students.

CONCLUSION

The findings of this study demonstrate that digital dependency significantly contributes to psychological distress among university students. Academic workload exacerbates this effect, while self-regulation partially mediates and perceived social support moderates the relationship. These results underscore the importance of holistic management strategies that integrate workload planning, digital literacy, self-regulatory skill development, and support networks. Universities and policymakers can utilize these insights to design interventions that enhance student well-being, mitigate distress, and promote healthier digital engagement practices. Overall, the study contributes to both theoretical understanding and practical approaches for managing the psychological impacts of digital dependency in higher education.

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