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Analyzing The Impact Of Academic Pressures And Mobile Phone Addiction As Mediators On Bedtime Procrastination Among Undergraduates

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Abstract

The purpose of this study was to evaluate the academic workload and procrastination that undergraduate students engage in before going to bed, as well as the indirect impacts of active procrastination and addiction to mobile phones. An investigation was car[1]ried out in order to determine the levels of academic stress, procrastination, dependence on smartphones, and behaviors related with completing assignments at the eleventh hour among a total of 350 students. The interaction between Academic Workload (AW) and Cell Phone Addiction (CA) yielded a β = 0.031. The interaction between Academic Workload (AW), Bedtime Procrastination (BP), and Cell Phone Addiction (CA) resulted in a β = 0.027**, highly significant at the p-value of 0.001**. In addition, students who are already predisposed to becoming addicted to mobile phones may encounter more pressure to take on additional responsibilities, which may also result in a further drop in the amount of time they spend sleeping that they get. The information that these studies provide sheds light on the influence and interplay of the dependence that college students have on mobile phones in their day-to-day lives. The research indicates that educational institutions have the potential to significantly contribute to the reduction of the academic constraints that students are under.*

Keywords: *procrastination, cellphone usage, addiction, academic pressure. Academic achievement, technology.*

Introduction

The advancements in digital technology have resulted in a significant rise in the accessibility and utilization of smartphones (Lian et al., 2016). Smartphones offer both benefits and drawbacks, despite their utility. Smartphone addiction is increasing in various cultures (Zhang et al., 2022b). Research conducted by Elhai et al. (2017), Liu et al. (2017a), and Mei et al. (2022) has shown that this reliance has detrimental impacts on individuals' life. This issue is a

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significant global concern, as highlighted by Liu et al. (2018). Therefore, it is imperative to do study on the origins and consequences of smartphone addiction.

Based on the general strain hypothesis, the experience of stress or strain can lead to the development of undesired behaviors such as internet addiction (Agnew, 1992; Jun & Choi, 2015). Previous study has shown that the perception of stress is a reliable indicator of mobile phone addiction, as demonstrated by Liu et al. (2018) and Zhang (2022b). Research has shown that academic stress can exacerbate mobile phone addiction among university students (Jun & Choi, 2015; Kuang-Tsan & Fu-Yuan, 2017). These studies specifically investigate the perceived stress levels of college students and do not analyze specific stress factors (Mushtaque et al., 2022). This highlights the importance of recognizing and mitigating the pressures faced by college students in order to decrease problematic smartphone usage. Perceived stress during the COVID-19 pandemic has been found to be associated with smartphone addiction in certain studies (Peng et al., 2022). However, there is a need to identify and address specific stressors that can help prevent smartphone addiction (Mushtaque, Waqas, et al., 2021). The stressor-separation paradigm posits that excessive workloads can lead to fatigue, necessitating detachment for recovery. According to Tommasi et al. (2023), the communication and social networking functions of smartphones allow individuals to psychologically disengage from work. Prior studies have predominantly focused on employee workload rather than the workload of college students. Students experience academic pressure as a result of frequently having to complete homework and being actively involved in extracurricular activities such as student clubs or organizations.

Procrastination is a common and harmful example of self-regulation failures (Steel, 2007). Chu & Choi (2005) presented active procrastination in a positive light. According to Choi and Moran (2009), active procrastination refers to the intentional postponement of activities, with the expectation of meeting deadlines and a preference for working under pressure, while yet achieving positive results. Research has demonstrated that engaging in deliberate procrastination results in improved academic performance and increased generation of innovative concepts (Kim et al., 2017; Corkin et al., 2011). Active procrastinators demonstrate exceptional skills in managing stress, doing significant tasks, and resisting the temptation of smartphone addiction.

According to this study, a significant amount of effort can decrease the tendency to actively delay tasks, which goes against the idea that self-control resources will be limited, known as the ego depletion hypothesis. Individuals who engage in active procrastination and utilize adaptive self-regulation techniques are less likely to develop smartphone addiction (Coyne et al., 2019). Chu and Choi (2005) found that proactive procrastinators are focused on completing tasks. Majeur et al. (2020) found that high levels of stress can interfere with individuals' task-oriented approach to procrastination, causing them to rely more on emotion-oriented coping strategies, such as seeking enjoyment through smartphone use.

Among Chinese university students, 39.42% had poor sleep quality (Ma et al., 2022). Sun et al. (2016), migraines (2018), and obesity (Rahe et al., 2015) are all possible outcomes of this. Both academic and athletic performance can take a hit when college students don't get enough good sleep (Mah et al., 2018; Maheshwari & Shaukat, 2019). Sleep quality among college students should so be investigated.

In their 2014 study, Kroese et al. defined bedtime procrastination and looked at how it affects the quality of sleep. Sleep deprivation, poor sleep quality, and mental health issues like depression and anxiety are all linked to postponing bedtime, according to multiple research

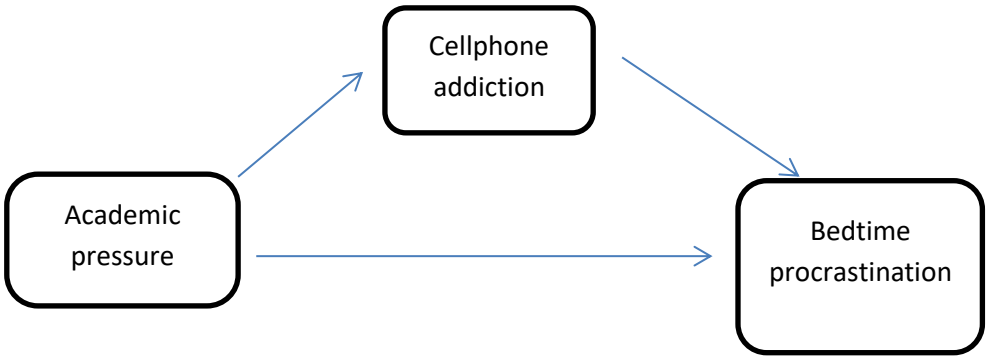
(Hassan, Luo, et al., 2022). This study aims to improve sleep quality by examining the causes of bedtime procrastination.

Research indicates that academic burden is a significant indicator. Several studies have looked at the relationship between emotional and daily stress and putting off going to bed (Deng et al., 2022; Schmidt, 2023). College students may procrastinate on their coursework due to the stressor-detachment model's suggestion that high levels of stress can cause people to put off completing tasks (DeArmond et al., 2014). According to Magalhaes et al. (2021), students who put off their homework also end up sleeping later than expected. Those that struggle with self-control tend to put off getting enough sleep when they're under a lot of pressure (Bernecker & Job, 2019). Academic pressure causes some to put off going to bed until later. Sleep is a wonderful way to recharge, so it's vital to know why some individuals put it off instead of using it to alleviate stress. Kroese et al. (2014) found that using electronic devices before bed more likely to keep people from falling asleep. This dynamic necessitates further investigation into the role of electronic devices. Procrastination in the evenings due to an addiction to smartphones may reduce the quality of sleep (Cain & Gradisar, 2010; Liu et al., 2017a). According to Yang et al. (2020) and Zhang et al. (2021), individuals who are bored tend to use the entertainment aspects of their smartphones as a means to put off going to sleep. The stress-bedtime procrastination relationship is impacted by smartphone addiction, in our opinion.

This study analyzes how academic workload affects bedtime task delay. It emphasizes how active procrastination and smartphone addiction affect this relationship. According to the stressor-detachment model of DeArmond et al. (2014), a heavy workload might inhibit psychological detachment and cause physical fatigue. Fatigue reduces self-control, reducing procrastination (Evans et al., 2015). As said, overusing cellphones may impair self-control, delaying bedtime (Coyne et al., 2019). This project aims to provide theoretical insights and practical suggestions for further research. It uses a serial mediation model to explain the association between scholastic burden, sleep, activity, and smartphone addiction.

Previous research has mostly examined the positive benefits of active procrastination on academic performance (Kim & Seo, 2015; Shaked & Altarac, 2022) and work efficiency (Chauhan et al., 2020), but not on health-related behaviors. Active procrastinators have better self-regulation and are less likely to fail, which leads to bedtime procrastination (Kroese et al., 2014). Active and pre-bedtime procrastination will be examined in this study. It addresses the lack of research on this area and emphasizes the importance of academic and work-related issues on health behaviors.

Conceptual Framework Figure 01



Objectives of Present Study

This work developed a serial mediation model to look at the intermediary impacts of smartphone addiction on bedtime procrastination. The study looked at a number of key questions:

(a) can academic workload predict smartphone addiction?

(b) can smartphone addiction act as a mediator between academic workload and bedtime procrastination?

(c) can active procrastination directly influence bedtime procrastination?

Methodology

This study distributed questionnaires to students enrolled in the first to fourth year at two universities in Lahore, effectively gathering 553 survey replies. Among these, a total of 362 responses were considered legitimate, with 47% of the respondents being male and 53% being female. The survey assessed the students' academic workload, smartphone dependency, and tendency to delay going to bed. At the beginning of the survey, students were provided with information regarding the study's goals and were given assurance regarding their rights to privacy and confidentiality. Additionally, they were notified of their option to discontinue their participation in the study at any given moment.

Instruments

1. **Academic Pressure**
   This study employed an adapted version of the workload scale initially devised by Spector and Jex (1998) to better align with the academic environment. An illustration of an element on this scale is: 'To what extent does your homework (or student work) necessitate a substantial exertion from you?' Participants provided responses on a 5-point scale, which ranged from 1 (infrequent or never) to 5 (frequent, occurring multiple times each day). The Cronbach's alpha coefficient for the scale used in this investigation was 0.87.
2. **Cell Addiction**

   The assessment of smartphone addiction was conducted using the Mobile Phone Addiction Index (Leung, 2008), which consists of 17 items that measure four characteristics of addiction: lack of control over cravings, feelings of anxiety and disorientation, withdrawal symptoms and escapist, and decreased productivity. The rating for each item was assessed using a 5-point scale, ranging from 1 (indicating never) to 5 (indicating always). The Cronbach's alpha coefficient for the scale in this study was 0.92.

3. **Bedtime Procrastination**
   This study employed the bedtime procrastination scale, which was derived from the work of Kroese et al. (2014) and translated by Ma et al. (2021). The scale consists of 9 items, with 4 of them being reverse-scored, to assess bedtime procrastination. Participants provided ratings for each topic using a 5-point scale ranging from 1 (indicating never) to 5 (indicating always). The Cronbach's alpha coefficient for this scale in the present investigation was 0.86.

Statistical Analysis

In the current study, SPSS software was employed to test the hypotheses. Additionally, the PROCESS analysis was utilized for examining mediation effects. This approach facilitates the investigation of the indirect effects of independent variables on dependent variables through mediators, thereby enhancing the understanding of the underlying mechanisms within the data.

Results

Table 1 Demographic Information (N= 362)

Variables	**F(%)**
Gender	
Male students	47%
Female students	53%
Education level	
1st Semester	49%
4th Semester	51%
Residence	
Home	69%
Hostel	31%
Usage of cell Hour	
1-3hr	26%
4-5	20%
More than 5hrs	54%

Table 1 in the study presents demographic information for a sample size of 362 participants. Regarding gender distribution, 47% of the participants are male students, while female students constitute 53%. The education level of the participants is split fairly evenly, with 49% in their 1st semester and 51% in their 4th semester. Most participants (69%) reside at home, while 31% live in hostels. In terms of cell phone usage, 26% of the participants use their phones for 1-3 hours per day, 20% for 4-5 hours, and a significant majority, 54%, use their phones for more than 5 hours daily.

Table 2 Correlation Analysis

Variables	1	2	3
1. Academic Workload	-	-0.43*	0.33**
2. Cell phone addiction		-	0.56*
3. Bedtime Procrastination			-

Table 2 presents a correlation analysis among three variables. The correlation coefficients are as follows: Academic Workload (1) is negatively correlated with Cell Phone Addiction (2) at r = -0.43* and positively correlated with Bedtime Procrastination (3) at r = 0.33**. Cell Phone Addiction (2) is positively correlated with Bedtime Procrastination (3) at r = 0.56*. The asterisks denote significance levels, with one asterisk indicating significance at the 0.05 level, and two asterisks indicating significance at the 0.01 level. This indicates that as academic workload increases, cell phone addiction tends to decrease, whereas bedtime procrastination tends to increase. Additionally, an increase in cell phone addiction is associated with an increase in bedtime procrastination.

Table 3 Mediation Analysis

Interactions	β	p-vale	t	UL	LL
1. AW → CA	0.031*	0.031	3.56	0.010	0.012
2. Aw* BP → CA	0.027**	0.001	4.89	0.003	0028

Note: AW= academic workload, CA= Cell phone addiction, BP= bedtime procrastination

Table 3 provides the results of a mediation analysis examining the interactions between Academic Workload (AW), Cell Phone Addiction (CA), and Bedtime Procrastination (BP). The table lists the standardized regression coefficients (β), p-values, t-values, and 95% confidence intervals (upper limit, UL; lower limit, LL) for each interaction. The interaction between Academic Workload (AW) and Cell Phone Addiction (CA) yielded a β = 0.031, significant at the p-value of 0.031*. The t-statistic for this interaction is 3.56, with a 95% confidence interval ranging from 0.010 to 0.012. The interaction between Academic Workload (AW), Bedtime Procrastination (BP), and Cell Phone Addiction (CA) resulted in a β = 0.027, highly significant at the p-value of 0.001**. The corresponding t-statistic is 4.89, with a 95% confidence interval from 0.003 to 0.028. These results indicate significant mediation effects where Academic Workload influences Cell Phone Addiction directly and through its interaction with Bedtime Procrastination. The asterisks denote the significance levels, with one asterisk indicating significance at the 0.05 level, and two asterisks indicating significance at the 0.01 level.

Discussion & Conclusion

In this study, a serial mediation model was created in order to evaluate the association between academic workload and bedtime procrastination. More specifically, the study aimed to investigate the mediating influences of active procrastination and mobile phone addiction.

According to Zhang et al., (2022) found that the academic burden is a stressor that is connected with mobile phone addiction. This finding is in line with the findings of prior study about this topic. (Khang et al., 2013) Research has shown that mobile phones are widely used as tools to help alleviate emotions of stress (Fang & Mushtaque, 2024). However, contrary to the findings of earlier studies on the perception of stress, it appears that the huge amount of work that students have to do each day is consuming a significant amount of their time, which restricts their capacity to use their phones for activities that are considered to be leisurely. An additional investigation will be conducted on this fortuitous discovery. There is data that supports the stressor-detachment theory, which claims that an increase in workload could result in increased levels of procrastination. DeArmond et al. (2014) give evidence that contributes to the validity of this concept. The current paradigm is expanded upon by this study, which demonstrates that individuals' addiction to mobile phones is a factor that causes them to delay going to bed, further demonstrating that workload is also a role in inducing individuals to delay going to bed. According to Sonnentag (2011), the concept of stressor-detachment proposes that a demanding workload might result in exhaustion, which in turn requires a period of recuperation. On the other hand, some people choose to alleviate this exhaustion by utilizing their mobile phones rather than sleeping. The researchers Kroese et al. (2014) have noticed that people have a tendency to delay going to sleep in order to use electronic devices. As a consequence of this, many people put off going to sleep in order to take advantage of everything that their smartphones have to offer. We elaborated on the problem that was brought up earlier and demonstrated that there is a clear connection between a hard job and the development of an addiction to mobile phones. This connection is defined by those who prioritize the use of their phones over getting enough sleep.

As an additional objective, the purpose of this research is to provide an illustration of the serial mediation model and to evaluate the potential association between active procrastination and sleep procrastination. The academic workload makes it more likely that individuals would engage in active procrastination because it restricts their time, decreases their capacity to successfully control activities, and increases their desire to avoid chores and rely on tactics that are centered on emotions as a means of coping. Individuals are more likely to engage in activities that are immediate and emotionally fulfilling, such as using mobile phones, rather than engaging in sleep, which primarily delivers long-term benefits (Mao et al., 2022).

It was also discovered in the study that engaging in active procrastination has a negative correlation with delaying sleep. This finding expands the scope of active procrastination beyond the realm of professional or academic settings. (Magalhaes et al., 2021) A typical procrastinator is more likely to put off going to bed until later than they normally would. People who engage in active procrastination, as opposed to those who engage in regular procrastination, are less prone to engage in undesired habits such as delaying sleep. Active procrastinators are more focused on completing tasks.

Implications

This study explores the correlation between academic burden and the development of mobile phone addiction in students. Considering that the academic workload is a source of stress that students cannot directly influence, educational institutions, especially those in Lahore, should make efforts to reduce this burden. As an illustration, educational institutions should contemplate decreasing non-essential subjects and extracurricular obligations. Pakistani universities could potentially derive advantages from incorporating stress management practices. Implementing efficient stress management techniques may strengthen students' motivation and abilities, consequently reducing their tendency to delay and potentially improving their utilization of active procrastination strategies, leading to increased free time (Orhero et al., 2023). Improving students' concentration and strengthening social support systems can help reduce stress (Schulz et al., 2019; Smit & Barber, 2016). Insufficient availability of leisure time hinders students from being able to employ appropriate task management techniques, such as active procrastination.

This research examines the function of mobile phone addiction in modulating the relationship between academic workload, active procrastination, and sleep procrastination. Kroese et al. (2014) noted that the appeal of electronic gadgets may be reducing the perceived importance of sleep. Hence, this study proposes that future research should focus on discovering characteristics that could elucidate the correlation between the use of electronic devices and the diminished appreciation of sleep (Ahmed et al., 2023).

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