Academic Procrastination and the Use of Electronic Devices

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202200364 Bachelor Thesis Educational Psychology

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January 22, 2025

Word Count: 12235

Abstract

Academic procrastination, defined as the voluntary delay of study-related activities, is prevalent among university students. It impacts both academic performance and psychological well-being. One major factor contributing to procrastination is the widespread use of electronic devices. While electronic devices are essential for academic work, their increasing reliance raises concerns about their role in procrastination. Therefore, this study explored how digital devices influence students' procrastination and the coping strategies they use. To achieve the objectives, an exploratory approach was used through six focus group interviews with five to six students per group. The findings indicated that electronic devices influenced students' academic procrastination in several ways. Devices especially delayed students' start of study sessions and made them challenge to resume focus. Students used various strategies to manage digital distractions and enhance productivity to cope with it. However, some strategies backfired, such as difficulties with digital self-regulation, the normalization of distractions, and music-related interruptions. This often led to further distraction and reduced focus. This highlights the complexities of managing procrastination in digital environments. Furthermore, the findings showed the complex interplay between technological limitation, psychological elements, such as fear of missing out and low self-control, and social factors. These factors emphasize the need for adaptive digital solutions and enhanced self-regulation. Further research could explore the dynamic nature of procrastination and motivation through longitudinal studies to capture fluctuations in procrastination behaviour across different times of the academic year.

Introduction

Procrastination refers to voluntarily delaying a planned course of action while anticipating negative consequences for the delay (Steel, 2007). The interest in the phenomenon has increased in academic settings because it is highly prevalent among university students, with an estimated prevalence of 50–95% (Steel, 2007). Academic procrastination (i.e., procrastination of study-related activities such as writing an essay or studying for an examination) negatively impacts both academic performance and well-being (Amarnath et al., 2023). More specifically, Kim and Seo (2015) demonstrated that procrastination is negatively correlated with academic performance. Low achievement often becomes inevitable as students struggle to meet deadlines or produce quality work. Furthermore, students who procrastinate are far more likely to experience unpleasant feelings since a discrepancy between their goals and actions is created (Klingsieck, 2013). For instance, students can feel anxiety over exams, continuous stress from incomplete work, exhaustion, and even a loss of interest in learning. This challenging blend of unfavourable emotions negatively impacts on students' overall well-being, contributing to stress, anxiety, low self-esteem, and reduced self-efficacy (Salguero-Pazos, 2024). This variety of unfavourable outcomes can diminish their motivation and dedication to study, leading to low achievement (Klingsieck, 2013).

Procrastinators often fail to self-regulate (Steel, 2007) - the control of one's behaviour by self-monitoring, self-evaluation, and self-reinforcement (American Psychological Association, 2018). Individuals with low self-regulation skills are more prone to procrastinate because they struggle with managing their motivation, time, emotions, and impulses. These challenges make it difficult to initiate and sustain effort on academic tasks, often leading to delays and avoidance behaviour. Therefore, enhancing self-regulation can help students reduce procrastination behaviour (Elizondo et al., 2023).

Considering the negative consequences of academic procrastination, students have shown a desire to decrease their academic procrastination (Grunschel & Schopenhauer, 2015). However, feelings of shame and inadequate self-regulation skills often prevent students from seeking assistance.

To reduce students' academic procrastination, it is crucial to understand the causes and factors contributing to it. Recent research indicates that electrical devices have increased procrastination problems (Salguero-Pazos, 2024). This is especially relevant as these devices play a significant role in daily lives. They make it easier for students to get distracted by social media, and other online content, as well as affect students' productivity and time management. Therefore, this study aims to investigate the extent to which the use of digital devices affects students' level of procrastination. Moreover, it focuses on what students do to cope with academic procrastination in relation to the use of digital devices.

Theoretical Framework

Procrastination

Procrastination is generally defined as the unnecessary delay of tasks, especially when there is no valid reason to do so (Steel, 2007). Irrational behaviour occurs when individuals make conscious choices that will not optimize their well-being, whether regarding material benefits or psychological rewards such as happiness, preferences, or ambitions. According to this perspective, procrastination is the intentional delay of planned activities, in view of predicted negative consequences. Academic procrastination is a form of behaviour specific to academic settings, where students tend to delay completing tasks like studying for exams or doing homework while being aware of the necessity not to do so (González-Brignardello et al., 2023).

Svartdal and Løkke (2022) indicate that procrastination can be explained with a model containing Antecedent Conditions (A), Behaviour (B), and Consequences (C). This ABC

model provides insight into the emergence and maintenance of undesirable behaviours and how issues can be resolved by methodically modifying controlling variables. This method has been applied in behaviour modification, including in contexts like organizations and educational institutions. In this framework, Antecedent Conditions (A) refers to the factors or situations that trigger procrastination. Behaviour (B) represents the procrastination itself or the act of delaying tasks. Finally, Consequences (C) are the outcomes of procrastination, such as immediate relief or improved mood from avoiding an aversive task. Svartdal and Løkke (2022) explain that specific antecedents set the occasion for procrastination, resulting in negative reinforcement by taking away an unwanted task. For example, an aversive task (A) can lead an individual to stop working on a task (B). Consequently, their mood can be immediately improved by avoiding or escaping the task (C).

Svartdal and Løkke (2022) indicate three key antecedents that set the stage for procrastination. The first antecedents of procrastination are *situational temptations and distractions* during goal-directed work. Situational temptations are external circumstances or impulses that encourage individuals to engage in behaviours that are frequently ineffective or inconsistent with their goals. These temptations can arise from environmental cues, social pressures, or other distractions that make it more difficult for individuals to resist engaging in certain behaviours, such as procrastination (Baumeister et al., 2007). One significant factor contributing to self-regulatory failure is the environment, particularly the proximity to temptation. Research indicates that when temptations are farther away, individuals tend to procrastinate less (Steel et al., 2018). For instance, students may find it challenging to focus on an assignment when surrounded by friends, which can lead to distraction. In such situations, self-control becomes crucial in maintaining focus and productivity (Svartdal & Løkke, 2022). Thus, understanding the influence of situational temptations and the role of self-control in managing them is essential for effective goal achievement.

The second antecedent is *task aversiveness*. Individuals tend to avoid aversive stimuli; consequently, the more aversive the situation, the more likely one is to avoid it (Steel, 2007). It was found that when a task is associated with boredom, dissatisfaction, and task resentment, it is perceived as aversive (Blunt & Pychyl, 2000). Task aversiveness, like temptations and distractions, leads to shifts in preferences during goal pursuit, fuelled by the belief that procrastination will provide immediate relief from unpleasant emotions (Svartdal & Løkke, 2022).

Third, *lack of energy* plays an important role in procrastination since it can contribute to making the tasks more difficult to start. Moreover, low energy can lower individual' self-control which makes the person feel more vulnerable to external distractions and temptations. Therefore, experiencing a lack of energy is a predictor signalling that avoidant behaviour can result in short relief and mood improvement (Svartdal & Løkke, 2022). By understanding and addressing these antecedents, individuals can reduce procrastination and enhance productivity.

Factors related to Procrastination

Procrastination is a complex behaviour, shaped by various antecedents that may be influenced by an individual's personality, cognitive traits, and emotional state (Visser et al., 2018). It is closely associated with certain personality traits, specifically low conscientiousness and high impulsiveness (Steel, 2007). Conscientiousness includes variations in impulse control, goal orientation, planning, and adherence to social norms and rules. Consequently, low conscientiousness is strongly associated with distractibility, poor organizational skills, and low achievement motivation. These traits can create a gap between intention and actions, increasing a person's vulnerability to procrastination. Furthermore, procrastinators often have low self-esteem. This suggests that an individual procrastinates to protect their self-esteem by avoiding task completion, which makes it difficult to assess one's perceived inability (Steel, 2007).

From a cognitive perspective, procrastination has been shown to relate to goal-management ability and self-regulation (Steel, 2007). Procrastinators often prioritize managing their immediate emotional state over pursuing long-term goals. For example, they might postpone a planned task they find unpleasant to reduce the negative feelings associated with it (Rebetez et al., 2015). Moreover, cognitive evaluations such as perceived competence and pessimistic academic attributional style also influence procrastination behaviour. For instance, individuals who believe they are incapable of completing the task are more likely to engage in academic procrastination (Visser et al., 2018).

Emotional factors also have an important effect on procrastination since they influence how people manage stress, anxiety, and mood (Visser et al., 2018). Procrastinators often struggle with anxiety and fear of failure, which creates a cycle of avoidance that reinforces procrastination (Visser et al., 2018). Mood regulation becomes a priority for procrastinators, who may avoid tasks to improve their immediate emotional state, ultimately negatively impacting long-term goals (Rebetez et al., 2015).

Personality, cognitive, and emotional factors often interact in complex ways. For instance, a failure in the self-regulation process can be driven by low conscientiousness and high impulsiveness (Steel, 2007). Low self-esteem can trigger pessimistic cognitive appraisals. Thus, procrastination is a complex behaviour with several factors that can trigger it. Understanding and recognizing these interconnections can help in developing effective interventions for procrastination.

Electronic devices

The extensive use of electronic devices, including laptops, tablets, and smartphones, has considerably affected people's lives in various ways (Kutzhan et al., 2023). In university, electronic devices are considered essential tools for studying, and they can bring various benefits. However, due to the increase in their use and dependence on the devices, concerns

have been expressed regarding potential consequences on students' psychological well-being and academic performance (Salguero-Pazos, 2024). Students are exposed to an environment that allows them to interact with their devices for longer periods, which might lead to a device or social network addiction (Salguero-Pazos, 2024). Students' use of social media causes them to spend much time online, ignoring other important aspects of their lives, including their education, jobs, relationships, and family. The lack of control over their use of electronics can lead to poor academic performance since they may experience difficulties concentrating and completing their academic responsibility (Salguero-Pazos, 2024). Therefore, the accessibility of social media and other forms of digital entertainment has led to increased procrastination, directly affecting students' academic performance. Hence, electronic devices can also be related to one of the antecedents, *temptations and distractions,* from Svartdal and Løkke's ABC model (2022).

According to He (2017), procrastination in academic settings rises in parallel with the amount of time spent on the Internet. Moreover, strong correlations are found between excessive use of electronic devices and psychological variables that are related to procrastination. Specifically, high screen use is associated with lower levels of self-regulation, self-efficacy, and self-esteem and higher levels of anxiety (Salguero-Pazos, 2024).

Students have tried to reduce their procrastination behaviour by using various time-tracking tools and applications to monitor their device usage, as they believe that increasing awareness will increase the likelihood of behaviour change (Tseng et al., 2019). Additionally, individuals use solutions that limit access to specific websites or apps at specific periods of the day or upon user request (Tseng et al., 2019). Although individuals who procrastinate are more likely to want to change their behaviour, they often find it challenging to do so (van Eerde & Klingsieck, 2018). It emphasizes the need for attention to developing educational strategies and coping mechanisms that can support and encourage students to use electronic devices in a

balanced and healthy way. This can create learning environments that promote their psychological well-being and academic success (Hailikari et al., 2021).

Current study

While research has expanded our understanding of procrastination, many questions remain about its underlying causes, maintenance mechanisms, and the role of environmental factors (Yan & Zhang, 2022). It is challenging to fully comprehend the phenomenon of procrastination since procrastination research frequently lacks a cogent, theoretical explanation of the behaviour. Furthermore, not many studies have been done on the effect of digitalization on academic procrastination, and the majority of those that have been done focus on this problem using quantitative and survey-based methods (Salguero-Pazos, 2024). However, there is a lack of comprehensive knowledge on how electronic devices specifically affect procrastinating behaviour.

The literature demonstrates that the use of electronic devices has encouraged students' procrastination behaviour and provided various negative impacts on both academic and well-being aspects (Hidalgo-Fuentes, 2022). Therefore, continued and further research into the effect of electronic devices on academic procrastination should not be delayed. Thus, this study focuses on the relationship between procrastination and the use of electronic devices. It investigates the extent to which digital device use affects students' procrastination levels. It also aims to investigate what students do to cope with academic procrastination in relation to digital device use. Hence, the research questions are formulated as follows: *How do electronic devices affect students' academic procrastination?* And *What are strategies students use to cope with academic procrastination resulting from electronic device use?* To achieve the goals of the study, an exploratory study will be conducted using focus group interviews.

Methods

Participants

The sample of this study included 31 university students of a mid-sized university in the Netherlands. The mean age of the participants was 20.71 (SD = 2.77, range 18 -31). The sample included mainly female participants (90.3%) and represented a diverse range of nationalities, including 14 Germans, 7 Dutch, 3 Spaniards, 2 Indians, and one individual each from Kazakhstan, Russia, Bulgaria, Romania, and Greece. Furthermore, they were from various academic years, including 15 first-year, 5 second-year, 3 third-year, 7 fourth-year bachelor's students, and one master's student.

The participants were recruited using convenience sampling, specifically snowball sampling (Johnson, 2014). This method was chosen for its effectiveness in identifying and engaging individuals from the university (Naderifar et al., 2017). The recruitment process started by selecting a few initial volunteers who met the study criteria – university students who use electronic devices in their daily lives. Those initial volunteers were asked to sign up through the online Experiment Management System. They were then requested to recommend others who met the same criteria. After being referred, students were invited to participate in the study. This process was repeated until the desired sample size was achieved.

Six focus groups, each consisting of five or six students, were formed based on the participants' availability to attend to the focus group interviews. After receiving comprehensive information regarding the study, the participants signed the consent form (see Appendix 1). The participants were also aware that the study was approved by an ethical committee. Some students received credits (Test Subject Hours) as compensation for their participation.

Material

Based on the work of Wilhelm and Nijman (2023), the interview setting and questions were developed. The interview protocol was designed to guide the focus group discussion (see Appendix 2). Three main questions were created to answer the research questions.

The first question asked participants about their experiences with academic procrastination to to make sure that all students shared an interpretation of what procrastination is. The second question encouraged participants to consider the role of digital devices they use in their daily lives and whether these devices affect their procrastination in their studies. The third question focused on the coping strategies that participants use to mitigate their academic procrastination resulting from the use of electronic devices. However, in the case that the students did not feel they could cope with it yet, an alternative question was asked regarding what individuals would need to manage procrastination caused by device usage.

Follow-up questions were prepared in case participants experienced difficulty in answering the questions (see Appendix 2). However, the researcher avoided asking the follow-up question to ensure the main questions remained open and encouraged them to share about their experiences.

Each session was recorded by a laptop connected to a microphone via Microsoft Teams.

Procedure

The focus group interview lasted approximately one hour to complete the discussion. Each group of five or six students was invited to a reserved meeting room at the university to create a supportive and welcoming atmosphere for group interaction. Before the focus group interview, participants were informed about the aim of the study, consent and confidentiality, and the structure of the interview. They were also notified of several key rules, such as respecting others' ideas and ensuring that only one person speaks at a time. Moreover, they were provided with the participant consent form for data collection and recording. They

declared their consent by signing the document. To ensure they had enough time to read through and understand the consent form, a maximum of five minutes was reserved.

The interviews took place by asking the questions in the order of the protocol. Furthermore, if participants needed clarification, the questions were repeated or paraphrased to improve their understanding. Participants were encouraged to engage in open discussion, collectively exploring each topic. It was ensured that every student could contribute equally to the discussion by encouraging them to answer the questions through both verbal responses and nonverbal cues, such as eye contact and nodding. At the end of the interview, participants were asked to share their thoughts on how they experienced the interview. They were also asked if they wanted to be informed about the results of the study. If they agreed, their contact information was collected for follow-up.

Data Analysis

All recorded interview files were transcribed using the automatic transcription function in Microsoft Teams. The transcriptions were carefully reviewed by listening to the audio files. Unclear translations were corrected to ensure all statements were clear and appropriate for coding.

To analyse the data, a hybrid coding approach, which combines inductive and deductive methods, was applied after thoroughly reviewing the transcripts (Swain, 2018). The deductive approach was guided by Svartdal and Løkke' s ABC model (Svartdal & Løkke, 2022). Drawing from *task aversion*, one of the antecedents in the ABC model, two specific codes - *Task Difficulty* and *Avoiding Boredom or Discomfort* - were developed under the category of *Task-Related Factors Driving Electronic Device Use* (see Table 1). The remaining antecedents, such as temptations and lack of energy, were not included in the deductive coding approach because digital devices themselves served as a source of temptation, and lack of energy was not directly relevant to the research objectives.

The rest of codes were developed based on the data following an inductive approach. After carefully reading and reviewing the interview transcript, the codes emerged based on the discovered patterns. These codes were then grouped into categories based on their similarities. To address the first research question (*How do electronic devices affect students' academic procrastination?*), the categories were identified as follows (see Table 1): *Device-Related Distraction, Content Consumption Behaviour*, *Habitual and Automatic Behaviour*, *Task-Related Factors Driving Electronic Device Use*, and *Time Management.*

Table 1

Categories and Codes for Research Question 1

Categories	Codes
Device-Related Distraction	Phone as a Major Distraction
	Phone Proximity
	Notification Disruption
Content Consumption Behaviour	Short-Form Video Scrolling
	Watching Videos/ TV shows/ Series
	Binge Watching Series/ Movies
Habitual and Automatic Behaviour	Automatic Phone Use
	Unconscious/ Habitual App Engagement
Task-Related Factors Driving Electronic Device Use	Task Difficulty
	Avoiding Boredom or Discomfort
	Digitalized Academic Environment
Time Management	Break Extension

To answer the second research question (*What are strategies students use to cope with academic procrastination resulting from electronic device use?*), the categories were identified as follows (see Table 2): *Managing Digital Distractions* and *Enhancing Productivity.*

Table 2

Categories and Codes for Research Question 2

Categories	Codes
Managing Digital Distractions	
Device Management and Boundaries	Deleting or Restricting Social Media Access
	Using Device Setting
	Physical Separation from Devices
	Device-Specific Use
Break Management	Non-Digital Breaks
Social and Environmental Influence	Feeling observed
	Fear of Judgement/ Peer Pressure
External Productivity Aids	Using Supportive Apps
	Pomodoro Method
Enhancing Productivity	
Planning and Goal Setting	Setting Deadlines/Goals/Plans
	Cross-Off Tasks for Satisfaction
	Setting Pressure
Background Noise Management	Preference for Silence
	Playing Music/Noise
Emotional Management	Self-Compassion and Acceptance

For each research question, a coding scheme, including categories, codes, descriptions, and representative quotes, was developed. Participants' quotes supported each category and code to provide depth and understanding of the findings.

Results

How do electronic devices affect students' academic procrastination? (RQ1)

The first research question focused on the impacts of electronic devices on students' academic procrastination.

Device-Related Distraction

From the data, it was recognizable that all students experienced academic procrastination and distraction caused by their electronic devices, especially their phones. The findings showed that students provide three different reasons for experiencing academic procrastination due to their phones.

Phone as a Major Distraction

All students stated that their phones were their main source of distraction and they used them regularly while studying, which led to their academic procrastination. One student shared: *"I always have problems with the phone"*, and another stated: *"It is way easier to procrastinate with your phone than with other technical devices."* The students also added that phones provide a lot of functions, entertainment, an easy escape, and communication, making it challenging to focus on studying. For instance, one student mentioned: *"Because on the phone, there are all the social media and everything that could be distracting my concentration."* The students perceived their phones as a highly tempting, enjoyable tool that is difficult to set aside while studying.

Phone Proximity

Most students (87%) mentioned that keeping the phone close to hand or easily within reach increased the risk of distraction and encouraged frequent checking, which caused

academic procrastination. One student expressed: *"If my phone is near where I'm working, I'm just always looking at it,"* and another noted: *"When my phone is beside me, that's what distracts me literally the most."* Their phone played a significant role as a temptation, and these distractions made it more challenging for the students to resist engaging in procrastination.

Notification Disruption

All students experienced notifications from social media or communications distracting their attention from studying. Students felt compelled to check their phones whenever they received a notification. This often diverted their attention from academic tasks, leading to prolonged delays in returning to work as they became absorbed in social media or messaging apps. One student stated: *"If I see a notification, I always check it… It makes me really distracted."* Another commented: *"For me it's if I want to start a task and I get a notification immediately I feel like now I have to answer it immediately."*

Content Consumption Behaviour

The data showed that consuming digital content on electronic devices, particularly short-form videos and streaming media, significantly contributed to academic procrastination among students.

Short-Form Video Scrolling

Almost all students (96%) admitted that watching short-form videos such as Reels, TikTok, and Shorts caused them to lose track of time which affected students' study starting time the most. They mentioned that these platforms encouraged a 'vicious cycle'. One student explained: *"It's like when you start, you're like, oh, this is funny, and probably the next one is also funny, and you keep scrolling... then you realize two hours have gone by."*

Watching Videos/ TV shows/ Series

Most students (77%) reported that they would open tabs on their laptops to stream videos or shows to avoid studying. A few students (16%) also described watching TV shows and

YouTube videos as a common contributor to procrastination. While this behaviour was less intense than binge-watching, students still found it challenging to resist watching the videos while studying. One student shared: *"When there's a TV show on in the living room, and I'm trying to study, I usually catch myself watching the TV show."*

Binge Watching Series/ Movies

Half of the students (50%) reported that they experienced binge-watching films or series, which caused their study sessions to be significantly delayed. They found it difficult to stop watching it in the middle of a series or movie. One student noted: *"If I start a show, I can't just stop in the middle of it and start writing an essay."* while another added: *"If I start a series and it's interesting, I can't stop... I just need to finish the episode."* Moreover, it appeared that binge-watching not only directly disrupts academic work progress but also has a long-term effect on concentration and productivity since it causes a lack of rest. One student reflected: *"I also feel it's really hard to cut off binge-watching. Also, watching series late until after your normal sleep schedule will also affect that you're tired the next day, so you're less likely to be productive that day."*

Habitual and Automatic Behaviour

The analysis of data highlighted the role of automatic, habitual device use in academic procrastination. It demonstrated how routine, unintended interactions with electronic devices contribute to delays in academic work**.**

Automatic Phone Use

Students (80%) reported that they had developed unconscious, automatic behaviour of checking or using the phone, often without conscious thought or intent. Opening the phone has become a reflexive action. One student stated: "*I feel like I got into a habit of just opening my phone."* Such behaviour can easily disrupt academic tasks, as students repeatedly engage with their phones out of habit, leading to procrastination and loss of study time.

Unconscious/ Habitual App Engagement

While many students use their phones without any intentional or conscious thought (Automatic Phone Use), most students (87%) also often engage with social media apps like Instagram or TikTok, doing so automatically and out of habit. This led to extended periods of unplanned scrolling. One student stated: *"I sometimes almost automatically go to Instagram… and then getting off Instagram takes me at least 10 minutes, which is not even longer."* Another noted: *"I have the habit of opening TikTok after I closed Instagram… I forget that I'm actually doing something, and then the computer is just sitting there waiting."* This habitual engagement demonstrated how students are often drawn to these apps against their will. This often led to a significant amount of time lost that could have been spent on academic work. Moreover, students found it challenging to resume academic work once they became distracted, and they found it difficult to break the habit and refocus on their studies.

Furthermore, some students highlighted how they intended to perform a specific task, such as looking up information or using the calculator, but would become distracted and spend time on other apps instead. One student described: *"I grabbed my phone calculator and the moment I'm like I do my calculation... then I go to Instagram and then I go to TikTok... and then you're lost for like 30 minutes because I tried to do one calculation."* This unintended engagement with various apps diverts attention from academic tasks, leading to procrastination as students become absorbed in unrelated content.

Task-Related Factors Driving Electronic Device Use

The data showed that certain types of academic tasks and environments play an important role in triggering students to use electronic devices while studying. They often relied on electronic devices to delay or avoid academic responsibilities. This category was developed through a deductive approach based on Svartdal and Løkke' s ABC model (Svartdal & Løkke,

2022), specifically focusing on how task aversiveness contributes to the use of electronic devices while completing tasks, leading to procrastination.

Task Difficulty

Most students (71%) reported that they tend to procrastinate by opening their social media app when they perceive a task as complex or feel unsure of how to start. One student shared: *"I use Reels a lot like every time I get stuck, I would probably open Instagram and watch some Reels... but then I'm already out of focus."* Another student stated: *"If you don't know where to start… then I go on my phone, but then I start scrolling."* So, students seem to intentionally use their phones as an escape when they feel stuck, leading to a loss of focus and momentum that makes it even harder to resume the task.

Avoiding Boredom or Discomfort

All students admitted to using their devices to avoid feelings of boredom, stress, or discomfort associated with their studies by distracting themselves with more stimulating activities. They stated that they turned to their phones or other devices to relieve boredom, particularly during passive tasks like listening to a lecture. For instance, one student explained: *"I just let the lecture play and then I do online shopping or something... just watching lectures, sitting there, watching, it's so boring."* Furthermore, students shared that they use their phones for entertainment when they lose interest in the study materials. Since students are more attracted to entertaining information on their electronic devices than to studying, this promotes procrastination.

Digitalized Academic Environment

One of the commonly mentioned elements among students (64%) was the digitalized academic environment. They found it challenging to separate their academic work from other activities on their electronic devices. They often struggled to avoid non-academic distractions since they needed their laptops and phones for assignments, research, or communications with

classmates. One student noted: *"You always need your phone. You cannot just simply go to the library and leave your phone at home because you need it if you need to sign in again."* Students also shared that having access to a laptop during class also led to unrelated activities. One student stated*: "During class, we're allowed to have our laptop and sometimes I'm like, oh, I need to check the news or see if this T-shirt is on sale."* Furthermore, students noted that the digital nature of their study materials exposed them to notifications and other online content, making it easy to lose focus. One student remarked: *"You have way too much on it... it's so easy to switch a tab or get a notification on there."* This constant digital exposure decreases focused study sessions.

Time Management (Break Extension)

The data showed that the use of digital devices influenced students' time management and productivity by extending planned short breaks. This often led to cycles of prolonged distraction and academic procrastination.

All students reported that although they planned brief breaks to relax or recharge, this often turned into extended periods of unproductive time by engaging platforms like TikTok or Instagram. This resulted in prolonged distractions that delayed the completion of academic tasks. One student shared: *"I grab my phone for a short little break, and then it goes long again."* They also reported feeling caught in a loop where each extended break on their phone led to a need for further breaks, creating a cycle of ongoing procrastination. One student explained: *"When I take a break and I start scrolling through TikTok, I say only five minutes, and then it brings me into a cycle of I can't stop... now I need to study but now I need a break and the break is longer than the study period."*

Miscellaneous Findings

The study revealed several insights into the effects of modern digital habits on students' cognitive and behavioural patterns. These findings extend beyond the original scope of the

investigation into academic procrastination, yet they can help understand how digital content consumption impacts student engagement. The findings provide perspective on how the pervasive use of short-form content and emerging technologies can influence individuals' focus, attention span, and academic engagement.

Approximately half of the students (45%) highlighted that they felt their attention spans have been reduced due to the nature of the content they interact with. They shared that apps like TikTok, Instagram, and YouTube provide fast, highly stimulating content and stated that their ability to focus on longer and more demanding tasks has decreased as they find themselves craving constant, quick dopamine hits. Students also reported difficulty concentrating even on brief tasks, such as watching a 30-second video. Prolonged exposure to such short-form content might reinforce impatience, further reducing the ability to sustain focus over time. One student shared: *"The problem is they are already so short videos like maybe not even 30 seconds, but I can't even concentrate on these 30 seconds."*

Students also expressed frustration with their inability to watch full-length videos, read long chapters, or study without feeling 'bored' quickly. As one student stated: *"It's harder for me to focus for a longer time on the task or the studying than when I would watch like the small video."* Furthermore, the use of AI tools to summarize content reflected the dependency on shortcuts, driven by a reduced capacity for attention. One student explained: *"The Reels and stuff short on your attention span like by a lot used to be it was like I read long texts and stuff. I just throw it into Chat GPT say oh, summarize into at maximum 100 words. And I am not looking forward to reading the whole chapter only if I'm really interested in it."*

What are strategies students use to cope with academic procrastination resulting from electronic device use? (RQ2)

The second research question aimed at gaining insight into students' coping strategies for academic procrastination resulting from electronic device use. The analysis revealed two

main types of strategies: 1) reducing distractions from electronic devices and 2) enhancing productivity. Students often combine both approaches in their daily lives; however, some strategies sometimes backfire, inadvertently leading to more procrastination and distraction. Moreover, one student expressed a feeling of inadequacy in managing these distractions, pointing out that she does not yet feel capable of successfully coping with them.

Managing Digital Distractions

Device Management and Boundaries

All students reported that they tried various approaches to managing their device usage and establishing boundaries with their devices, focusing on lowering the temptation to procrastinate and minimizing distractions. Four common methods were identified.

Deleting or Restricting Social Media Access Approximately one-third of the students (35%) highlighted deleting or restricting social media applications to restrain procrastination. Removing apps such as TikTok and Instagram was described as an effective distraction reduction method. One student shared: *"I deleted Instagram and TikTok, and that worked wondrous. I barely used my phone, and it really helped me."* Another noted: *"I didn't realize how much mental peace I had until I deleted Instagram."* Furthermore, students (67%) stated that they avoided using social messaging apps such as WhatsApp Web on their laptops to maintain focus. One student explained: *"I try to not use WhatsApp Web on the laptop because I feel like that's terrible. You could be in the middle of something, and once you hear it, you immediately switch."*

Using Device Settings All students mentioned using device settings such as 'Do Not Disturb' mode or notification silencing to manage interruptions. One student shared: *"I silence most of my group chats except the one with my parents. If my parents or someone important calls me, I'll get a notification, but I'm not always reachable otherwise."* Another student stated: *"I set my limit for an hour on Instagram because I still want to look at the stories, but*

it reminds me to stop." However, some students expressed challenges with maintaining these boundaries as settings like 'ignore limit' could undermine their efforts. They admitted that they often press the button, allowing themselves to engage more with their devices.

Physical Separation from Devices Students (42%) frequently shared that physically distancing themselves from their devices, specifically their phones, helped prevent interruptions and impulsive usage. They usually kept phones out of sight or in a separate room during study sessions. One student explained: *"I put my phone away on the other side of the room or in my jacket so that I don't see it."* Another shared: *"If you see it, it's over. I try to put it in my bag or outside the room entirely."* By eliminating the visual presence of devices, students reduced their tendency to check them reflexively.

Device-Specific Use Approximately half of the students (52%) reported using their devices deliberately and specifically to minimize distraction. They mentioned that laptops were primarily used for academic-related work, with entertainment and social media excluded. One student stated: *"I don't have any social media or Netflix on my laptop. It's more like this is now working."* Similarly, they described configuring their study devices to reinforce focus. One student shared: *"I always have tabs open with my research papers, so even if I try to watch YouTube, I get reminded of my study."* These device setups help reduce procrastination.

Backfire Effect of Digital Self-Regulation Strategies Most students (71%) reported difficulties implementing device management and establishing boundaries effectively. Many described using settings such as 'Do Not Disturb' mode or app time limits but admitted bypassing them. One student shared: *"When I study or in general, I have my phone on Do Not Disturb, but I tell myself, just take my phone and look, oh maybe I have a notification."* They also struggled to manage distractions by switching devices, such as using Instagram on their laptops after deleting it from their phones or turning to YouTube. One student explained: *"I've tried deleting the apps that distracted me the most, but I always find a way of distracting myself."*

Furthermore, some participants avoided screen time tracking features due to feelings of guilt and anxiety, disabling tools intended to promote self-regulation. One student stated: *"I turned off the function that records how many hours you're on your phone a day because it made me so anxious."*

Break Management (Non-Digital Breaks)

Students often try to manage their time and minimize procrastination in between their study sessions. One common approach found was engaging in non-digital breaks. Students (42%) reported that they tried to do something else rather than being on their phones or other devices during the break to avoid excessive stimulation and reduce reliance on electronic devices. Many students consciously chose activities that did not involve screens, such as cleaning or going outside. One student noted: *"When I take a break from studying, I wouldn't go just on my phone and screening because then I have, there's no limit."* Another shared: *"I do also use cleaning as a procrastination tool. Yeah, because it's productive."* Furthermore, several students emphasized the benefits of spending outdoors during breaks. As one student explained: *"A big coping mechanism is getting fresh air instead of my phone. Then I'm getting a bit calmer instead of stimulated by like my phone, and then it's easier to get stimulated by work."*

Social and Environmental Influence

The findings show that social and environmental factors play an important role in coping with academic procrastination due to the use of electronic devices.

Feeling Observed It was commonly reported by students (40%) that studying in public places like libraries or universities makes them more self-aware as they feel they are more likely to remain focused. Students appeared to be discouraged from using phones when they felt like they were being watched, which motivated them to concentrate on their studies. One student explained: *"When I study in the library, they probably are looking at me when I am on*

my phone." Another shared: *"I also feel like sometimes because if I'm studying in the library…* *everyone is kind of going to see that I'm not doing any work."* Students expressed the discomfort of using electronic devices in a public setting.

Fear of Judgement/ Peer Pressure Students (39%) expressed a strong fear of judgment from peers regarding their use of phones during study sessions. The external social judgement and peer pressure often increases students' motivation to stay focused. They perceive that phone use during studying was socially unacceptable in environments such as the library. One student shared: *"I feel like they will judge me if I'm on my phone like it's not allowed."* The pressure to focus on work in these seats was often described as motivating, with students noting that being surrounded by others working created a sense of urgency. One student explained: *"For me, it's also helpful to just study with other people… if I go to the library here, I see everybody is studying, and then I think if I'm on my phone, I'm the only one that's terrible."* Moreover, peer influence and social pressures were often mentioned. One student stated: *"When I go to the library, and I take out my phone… peer pressure gets to be because I start thinking everyone's working and I'm here like taking up space."*

In addition, it was observed that when students worked with others, peer pressure tended to enhance focus. One student shared: *"If you're working together as in real-time together, it feels like more, oh you're helping each other, you know, and stuff like that. Yeah, the pressure is real. You see someone type in the same document, and you're like, oh, I need to type more."*

Backfire Effect of Social and Environmental Influences While students tried to study around others, they (35%) found that it frequently led to socializing and procrastinating. They reported that when others were around, there was a tendency to engage in non-academic activities. One student shared: *"My roommates do something else on their phone and I hear it and what are you watching? Can you show me? I get distracted."* Furthermore, observing other

people use their phones contributed to the normalization of distraction. Participants expressed that it was easier to justify their phone use while studying when they saw others using their phones. As one student stated: *"When other people are around and use their phone, it makes it easier to get distracted and makes you feel it is allowed to use the phone."*

External Productivity Aids

Students identified several external productivity aids as effective tools for managing their procrastination and enhancing concentration. Two methods were often mentioned.

Using Supportive Apps Some students (13%) stated that they use supportive apps, especially the Forest app. The app encourages users to remain off their phones by growing virtual trees representing their productivity. The students highlighted that the Forest app helped manage their phone usage while studying. One student shared: *"I put that on for an hour and then I just cannot reach any app and open any app I can get notification."* Moreover, students mentioned that the design of the app encourages their motivation to avoid accessing their phone. As one student explained: *"It grows through a plant, which I think is kind of a very cute concept and I want to grow my plant, and that does help me a lot because you just can't access your phone at all because then the timer stops, and your plant doesn't grow."* Another student mentioned: *"I also don't let the tree die when I don't use my phone and I can actually do something for nature. Basically, that kind of helped us."* Additionally, students felt more able to stay focused since they could structure their study time. One student explained: *"After 45 minutes, the tree is grown, and then I can access my phone... and for me, that works really nice."*

Pomodoro Method Students (67%) mentioned using the Pomodoro method, a time-management technique that helps maintain focus and build a rhythm that discourages procrastination. The students found the structured approach helpful in maintaining focus and reducing distractions. One student shared: *"Like Pomodoro technique being like, okay, I'm only*

working for 45 minutes, and I have a 15-minute break... it's still like an end in sight which makes it easier to say, okay then I can stop for a second." Furthermore, participants felt more able to stick to the planned break without extension. One student explained: *"Of course, you don't want to just doom scroll... as soon as the break hits, but it's still like an end in sight."*

Ineffectiveness of Pomodoro Method While many students referred to the Pomodoro method as a productive strategy, some students (35%) reported its limitations, particularly during prolonged study sessions or when experiencing mental fatigue. They mentioned that the rigid structure of the technique could disrupt their focus and render the approach less effective. As one student explained, *"I don't think it works for me to do a 20-minute study session and then a five-minute break... It's cutting my hyper-focus too much."* For some participants, longer uninterrupted study periods were more effective than taking a break after studying for a short time.

Furthermore, they also reported that the Pomodoro method failed to maintain their motivation or concentration throughout the session. One student shared: *"If my concentration is gone, I can just... not do anything. So, if I'm going to study for one hour and then take a 20-minute break... my concentration is gone like for 40 minutes, and the rest of the time I'm not going to do anything productive."* They described how the Pomodoro methods' effectiveness depended heavily on their current mental state.

Enhancing Productivity

Planning and Goal Setting

Every student stated that they make plans before studying and set goals to be more organized and enhance their motivation. They mentioned that this helps prevent using phones or being distracted by their devices. Three common ways were identified.

Setting Deadlines/Goals/Plans All students reported that to manage their time and stay focused on academic tasks, they kept a list of important dates to visualize upcoming tasks and

establish clear goals. They mentioned that they felt more organised and motivated by keeping track of deadlines and setting specific, measurable objectives. One student explained: *"I make myself kind of like a goal, okay I finished this page and then I go on my phone."* They also described using planners or writing down daily tasks to guide their efforts. one student stated: *"I just made a to-do planner for the day... I write down a lot of tasks, but at least I get a lot of things done."* In addition, having a routine or a fixed schedule was referred to as crucial for maintaining focus and avoiding distraction. One student explained: *"What helped was when you have a fixed schedule... you have to keep a routine; otherwise, you get lost."*

Ineffective Planning (Fixation on Perfect Start Times) Although students tried to plan for their academic work, they (32%) reported struggling with a fixation on perfect start times. They set idealized starting points for tasks, with even minor deviations leading to delays and further procrastination. One student shared: *"When you're like, I'll do whatever until like 7 o'clock, and then the 7 o'clock hits, and it's like 7:05... it's like you've got to wait until 8 now."* This fixation perpetuated procrastination, as the cycle of waiting for the next perfect starting point repeated itself. Students also linked this behaviour to distractions caused by their devices. One student explained: *"When I watch shows on my laptop, it's always just like I could study, but then it's 5:31, and now I can't study, and I've got to do it at 6."*

Cross-Off Tasks for Satisfaction Some students (30%) stated that marking tasks as completed is a motivational strategy and found the act of crossing off tasks rewarding and satisfying. One student shared: *"I like checking things off because sometimes I literally just have to write it to my agenda... then I ticked it off as I did it, and I did it."* Another student explained: *"I put it on a piece of paper with how many hours I have, and then I scratch it off every time it's over... it really helps me. Yeah, it's satisfying."* This sense of accomplishment encouraged students to continue working and maintain their productivity.

Setting Pressure Almost half of the students (52%) described the pressure of upcoming deadlines as a source of motivation. They were driven to stick to the plans because they were aware that procrastination would result in a heavier workload later. One student stated: *"I had plans for the weekend, so I was like if I don't do them now, everything's going to fall on Sunday, and I don't want to do it all on Sunday."* Another student explained: *"I have to study before this and this or after this and this. Otherwise, I don't have the time to complete it until my deadline or something."*

Background Noise Management

Students also reported trying to manage background noise to enhance focus and mitigate procrastination and distractions while studying. Two different ways of noise management were observed.

Preference for Silence Some students (30%) preferred silence to maintain concentration. One student stated: *"For me, it has to be like dead silence"* They emphasized that any auditory input, particularly music with lyrics, would be distracting. As one student explained: *"I can't study listening to music because... I will get distracted, especially with songs where you just start singing."*

Playing Music/Noise While silence works for some of them, many students (40%) reported using background music or ambient noise as a strategy to improve their focus and memory retention during study sessions. One student explained: *"I'm just trying to focus more with music or something with noises like showers or rain... just to be in a bubble with my stuff to learn."* Music without lyrics was particularly favoured as it minimized the likelihood of cognitive distractions. As one student mentioned: *"I usually pick white noise, just music without lyrics, or classical music... because if there are lyrics, I won't concentrate."*

Some of them also reported that listening to music helped them study by reducing intrusive thoughts and feelings of loneliness. One student stated: *"I feel like if I study with*

music, I don't feel like a loner... it's like there's something" Furthermore, they described creating a connection between specific songs and studying, using repetition to reinforce focus. One student shared: *"I have one song that I play on repeat... I made a connection in my head that when it's on, I'm studying."* In addition, they often mentioned that they use music as a tool for memory retention. One student stated: *"I'll listen to the same songs... I want them to be very specific... so that I can actually move to them and remember the material."*

Backfire Effect of Playing Music/Noise Although many students reported that music helped enhance concentration and memory retention, background music often became a distraction, leading to procrastination. Switching songs emerged as one of the most significant distractions, 48% of students described how once they picked up their phones to change the music, they often became side-tracked by other apps or notifications on their devices. One student explained: *"If I get tired of a song, then I have to go on my phone, and it's never just to skip the song. I will always just... okay, now that I'm at it, who is texting me? I'm going to text someone or check if someone texted me."* Another student shared: *"If I'm listening to music, I'm going to it. I don't know if I don't like this music. Let me skip it. So, I'm going to go on my phone and change the music until I find a song I like."*

Furthermore, several students reported that music, especially with lyrics or changes in tempo, diverted their attention from academic tasks rather than enhancing focus. They also observed that certain types of music exacerbated distractions rather than mitigating them. One student noted: *"I have music on, but if it's too energetic, then the music distracts me so much... I have my stuff in front of me, but I'm not able to do it at all."*

Emotional Management (Self-Compassion and Acceptance)

A few students (6%) emphasized the role of emotional management in coping with academic procrastination caused using electronic devices. Specifically, practising self-

compassion and acceptance emerged as a critical way to manage the emotional impacts of procrastination and distractions.

They described how accepting minor distractions without self-judgment helped them manage procrastination. As one student explained: *"Self-compassion has helped me as well because when I procrastinate, I tend to feel bad about myself and then I will procrastinate even more because I feel bad, and I want to feel better."* This cycle of self-criticism often led to further avoidance behaviours such as playing video games. However, students found solace in forgiving themselves after realising that devices are designed to catch attention. One student shared: *"It helps me to realize like, okay, you know, it's okay if you get distracted for a few minutes; like I don't have to be so strict."*

Discussion

This study aimed to investigate the extent to which the use of digital devices affects students' level of procrastination and to gain deeper insights into their coping strategies. The findings indicated that electronic devices have influenced students' academic procrastination in several ways. Smartphones were identified as the main source of distraction for all students. Their multifunctionality and accessibility to social media made students hard to ignore while studying. Moreover, electronic devices encouraged habits like binge-watching and mindless scrolling. This often caused students to struggle with time management and maintaining focus. The accessibility and engaging nature of these devices often delayed the start and resumption of study sessions. Furthermore, the devices were often used as an escape from challenging or tedious tasks, which led to further procrastination. Short breaks involving electronic devices frequently turned into extended distractions, ultimately undermining time management and study readiness to engage in academic work.

To cope with academic procrastination caused by using electronic devices, students tried diverse strategies, specifically aimed at managing digital distractions and enhancing

productivity. The methods of digital self-regulation often included limiting or removing access to social media, and physically separating themselves from devices. However, students often encountered challenges in maintaining these boundaries. Social and environmental factors, such as studying in public or with peers, helped to foster self-awareness and accountability. However, this occasionally contributed to normalization of distraction, leading to further procrastination. Students also managed their time by incorporating non-digital breaks and setting goals to boost motivation. This reflected students' awareness of their procrastination triggers and efforts to mitigate them. Furthermore, noise management strategies highlighted individual differences in approaches to maintaining focus. A few students also employed emotional self-management by embracing self-compassion and understanding the nature of digital temptations. This helped to reduce the cycle of guilt-driven procrastination. The result showed that although students have been tried to cope with the academic procrastination resulting from the use of electronic devices, some strategies occasionally backfired, leading to further distraction or reduced effectiveness.

Interpretations

The findings of this study showed the complex interplay of technological, psychological, and social factors influencing academic procrastination and coping strategies among university students.

Role of Smartphones in Procrastination

The results highlighted that smartphone played the most significant role in triggering students' academic procrastination and distraction among electronic devices. The accessibility and multifunctionality functioned as a main source of temptation and distraction. This encouraged students to engage with them frequently during study session, leading to academic procrastination. One of the main features, constant notification was identified as a significant distraction as students felt compelled to check them immediately. This was often driven by the

fear of missing out and curiosity about the message (Gupta & Sharma, 2021). Young adults often experience the fear of missing important information, trends, or social connections. This can cause students to regularly check their phones or social media, distracting their attention from their academic work. Over time, these repeated distractions can accumulate, leading to prolonged delays in completing their work. This cycle often reduces effective time management and reinforce habitual procrastination as students struggle to resist the instant entertainment provided by their devices.

Moreover, students' automatic, habitual device use played a significant role in academic procrastination by unintended interactions with electronic devices. According to Meier et al. (2023), media habits arise from cognitive associations between cues (e.g., notifications, boredom) and rewarded responses (e.g., receiving likes). Repetition of these behaviours creates habitual scripts that are characterized by automaticity – acting without many thoughts and depending on triggers. Although automaticity and frequency differ, regular repetition can strengthen habit automaticity over time. Smartphones, as the main devices for accessing social media, offer a consistent environment for forming these behaviours. Checking the phones for messages represents both the habitual behaviour of social media use and the social desire for connection (Meier et al., 2023). This habitual behaviour tends to divert students' focus from studying. This results in inadvertent prolonged procrastination and a decrease in productivity.

These findings also align with Svartdal and Løkke's ABC model (Svartdal & Løkke, 2022). Smartphones functioned as one of the antecedents, *temptations and distractions* contributing to procrastination behaviour (Svartdal & Løkke, 2022). Their accessibility and multifunctionality made it particularly difficult for students to resist engaging with them. Two other antecedents also emerged in the findings. Students tended to open their social media when they perceived a task as difficult. Furthermore, all students used their devices to avoid

unpleasant emotions related to their studies by distracting themselves with more stimulating activates. These patterns highlighted how *task aversion* serves as an antecedent, triggering procrastination behaviour.

Moreover, it was recognized that backfire effects of the Pomodoro method align with *lack of energy,* another antecedent in Svartdal and Løkke's ABC model (Svartdal & Løkke, 2022). While students often used the Pomodoro method to enhance concentration and productivity, they encountered difficulties during study sessions. Specifically, if their concentration decreased during a study session, they tended to spend the remaining time being unproductive. The effectiveness of the Pomodoro technique was described to depend on an individual's current mental state. This result aligns with that low energy can reduce self-control, making individuals more vulnerable to external distractions and temptation.

Mindless Scrolling

One of the most frequently mentioned experiences among students was procrastination caused by mindless scrolling. Many students shared that they often underestimate the amount of time they spend on social media. The phenomenon of mindless scrolling has arisen with the advent of algorithms (Sinha et al., 2023). These algorithms have expanded searching to aimless scrolling, exposing individuals to topics that may not actively seek but that align with their interests.

Scrolling syndrome refers to the compulsive habit of engaging in mindless scrolling without a specific goal or clear benefits. There are various causes of scrolling syndrome, one of which is related to mood modification. Individuals often attempt to avoid real-world difficulties and unpleasant emotions by diverting their attention to the virtual world, a behaviour commonly referred to as escapism (Sinha et al., 2023). This tendency was also demonstrated in this study that when students faced with difficult tasks, they frequently turned to social media as a way to escape from the current challenges.

Mindless scrolling is also closely associated with the fear of missing out. As aforementioned, young adults often experience anxiety over missing important information, trend, or social connections (Gupta & Sharma, 2021). They may experience persistent worry that others might be enjoying gratifying experiences from which they are excluded (Sinha et al., 2023). Consequently, individuals tend to feel anxiety when they are not actively engaging with social media since they feel disconnected from their social ties. This, in turn, can trigger the scrolling behaviour in users to offer relief from this feeling.

The design of social media platforms also plays a role in contributing to scrolling syndrome. Research shows that when using the page format rather than the scrolling style, people performed more deliberate actions, moved around more, and demonstrated better quality cognitive processing. They also exhibited greater control over the information they consumed. On the other hands, mindless scrolling is related to automatic processing, with can lead to the selection of information that reinforces pre-existing beliefs and biases (Sinha et al., 2023).

This phenomenon aligns with one of the coping strategies identified by participants: self-compassion and acceptance. They reported finding solace in forgiving themselves upon recognizing that digital platforms are intentionally designed to capture and retain their attention. By adopting this mindset, they could prevent further procrastination and reduce the feeling of guilt.

Segovia Vicente et al. (2023) also demonstrate that mindless scrolling is related to self-control. Individuals with low self-control often struggle to regulate their social media use, making them more susceptible to goal conflicts. This also aligns with one of the factors that trigger procrastination behaviour. Gökalp et al. (2022) emphasize that individuals with lower self-control face greater difficulty resisting their impulses, which increases their vulnerability to developing multi-screen addiction. This can exacerbate procrastination tendencies.

Students' Awareness of Procrastination Triggers

The findings demonstrated that students were not only aware of the triggers of their procrastination but also actively employed strategies to mitigate them. One notable approach was engaging in non-digital breaks. They often reported that the use of digital devices extended scheduled brief breaks, resulting in cycles of prolonged academic procrastination and distraction. As Özyer and Altınsoy (2023) highlighted, frequent use of digital media for non-academic purposes, such as engaging in short-form content, disrupts students' ability to manage time effectively and resume academic tasks, leading to delays in completing academic tasks. To cope with this, students tried to engage in alternative activities such as reading, stretching, or walking rather than using their phones or other devices. This approach not only mitigates excessive stimulation but also helps to reduce dependence on digital media during breaks. These efforts reflect students' growing awareness of their distractors and their proactive attempts to combat procrastination.

Social and Environmental Factors in Coping Strategies

The findings also highlighted the role of social and environmental factors in reducing academic procrastination. Many students reported their preference for studying in public spaces such as libraries, where they experienced feeling observed by others. Feeling observed functioned as a psychological trigger that reduces off-task behaviour such as excessive phone use. Furthermore, students perceived that using phones while studying was socially unacceptable in public environments. This aligns with Bandura's social learning theory (Nabavi & Bijandi, 2012), which emphasizes the influence of social factors on individuals' behaviour. Feeling observed discourages phone usage and encourages adherence to social norms that enhance productivity. This can increase self-awareness that encourages students to manage their behaviour consciously and conform to social norms which helps to reduce procrastination and foster academic engagement. However, this sometimes backfired, as

students struggled to keep their concentration when others were around. When distractions became normalized in learning environments, phone use became less problematic. As a result, students found it easier to procrastinate, feeling less guilty because their peers were engaging in similar distractions.

Psychological Mechanisms

It was observed that although students made plans and set goals before studying to become more organized and reduce procrastination, they often encountered ineffective planning due to a fixation on perfect start times. This highlights underlying factors that contribute to procrastination behaviour. As aforementioned, procrastination conceptually represents low conscientiousness and a failure of self-regulation (Steel, 2007). Organization, the ability to order, structure, and plan, is a core component of conscientiousness and serves as a vital self-regulatory technique. Similarly, time management as a key aspect of self-regulation is crucial for planning, prioritizing, organizing, and monitoring time to complete tasks effectively and efficiently (van Eerde & Klingsieck, 2018). However, procrastinators often struggle with these skills, leading to challenges in following the plan they made.

Steel (2007) also demonstrated that perfectionism plays an important role in procrastination. Specifically, maladaptive perfectionism is associated with procrastination, indicating that individuals with perfectionistic tendencies may delay tasks due to their high standards and fear of failure (Sederlund et al., 2020). Moreover, procrastinators, especially those with perfectionistic traits, often feel the need for a structured plan. This perfectionist mindset can create a situation where minor deviations from the ideal starting point led to unnecessary delays. This process can lead to cognitive dissonance between their actions and their intended plans. Therefore, to resolve this discomfort, individuals might rationalize their behaviour to align with their current desires (Dilakshini & Kumar, 2020). They might justify procrastination by convincing themselves that engaging with electronic devices is a way to

relax or recharge, thus making procrastination seem necessary. This phenomenon was also observed in this study. Students often found themselves trapped in a loop. Using their phone and engaging with their social media during study break led to the need for additional breaks, creating a cycle of ongoing procrastination.

To address this issue, individuals can adopt more strict time limit strategies for breaks and the use of social media. Furthermore, reflecting on their behaviour and how procrastination aligns with their long-term goals, can help reduce reliance on rationalizations (Steel, 2007). In addition, as a few students mentioned, practicing self-compassion can help by accepting minor imperfections in their plans, reducing the likelihood of procrastination caused by perceived failure to start perfectly (Sirois, 2013).

Challenges in Self-Regulation and Distraction Management

The findings suggested students' challenges in regulating their use of digital devices. They also pointed to potential limitations in the effectiveness of digital management tools, such as Do Not Disturb mode and app time limits, particularly for students who struggle with device dependency. While these tools are designed to support focused work and minimize distractions, many students experienced difficulties sticking to them. This suggests a gap between the intended functions of these technological solutions and the students' ability or willingness to use them effectively, possibly reflecting underlying self-regulation challenges (Steel, 2007).

Moreover, students tended to switch between devices to continue engaging in distracting activities, such as opening Instagram on a laptop after deleting it from their phones. This pattern suggests that while students are aware of the need to manage distractions, they frequently devise alternative creative ways to bypass restrictions to continue engaging with distractions. Several interrelated factors may contribute to this pattern. Device addiction, a form of behavioural addiction characterized by excessive and compulsive use of digital devices, may play a role here. It is often driven from the dopaminergic responses triggered by digital

interactions (Montag et al., 2019). These rewards can reinforce compulsive behaviours and make it harder to resist engaging with devices even when management tools are active. Furthermore, psychological factors, such as fear of missing out and escapism may also play a role. The need for social validation and the fear of missing out compel individuals to stay connected, frequently bypassing tools designed to limit access to their devices. The devices often become a source of comfort and escape from stress or boredom (Sinha et al., 2023). Moreover, individuals with lower self-control may find it hard to resist bypassing these tools since using a device feels more rewarding in the moment than avoiding distractions (Segovia Vicente et al., 2023).

Another notable finding was the emotional response associated with screen time tracking features. Although such tools aim to increase awareness and encourage behaviour change (Tseng et al., 2019), many students avoided using them due to feelings of guilt and anxiety. These tools often heightened awareness of undesirable usage patterns, leading to negative emotional experiences such as increased distress and self-criticism with the feeling of guilt.

These findings suggest that digital management tools alone are insufficient for reducing distraction caused using electronic devices. The outcomes highlight the critical need to enhance students' self-regulation skills and develop personalized, adaptive solutions that account for their emotional responses and behaviour tendencies. It is crucial to support students in overcoming device dependency and fostering more effective distraction management strategies.

Limitations

The study has a few limitations. The first concerns the sample's representativeness. The participants were recruited through snowball sampling, one of the non-probabilistic methods, which indicates that participants were not randomly selected. This could lead to a certain bias

because participants were likely from the same social networks and may share similar characteristics. This similarity and possible bias can reduce diversity within the sample and limit the representation of broader perspectives (Atkinson & Flint, 2001). In addition, individuals who chose to participate might have had a particular interest in the topic or viewed procrastination as a significant issue in their lives, which could further influence the findings. This suggests that the sample may not fully cover the diverse perspectives or experiences.

Moreover, the sample revealed a notable gender imbalance, with 90.3% female and 9.7% male participants. According to Lu et al. (2022), males tend to procrastinate more than females in their academic work because they have a lower level of self-control, which is a significant cause of procrastination. Since self-control affects an individual's ability to manage time and resist distraction, it is a crucial factor in academic procrastination. Steel (2007) demonstrated no significant gender difference in general procrastination tendencies, stating that procrastination is influenced more by individual personality traits, such as conscientiousness and impulsiveness, than by gender. These findings suggest that procrastination behaviours depend more on psychological and situational factors than demographic aspects. Therefore, in this study, while the sample does not adequately represent the gender distribution of university students (with 90.3% female participants), this gender imbalance may not significantly affect findings. However, due to the gender imbalance in the sample, the study could not explore potential gender differences in the types of activities individuals engage in when procrastinating.

The data also reflected students' procrastination at a single moment of time. This may not capture fluctuations in students' procrastination behaviour across different times of the academic year. For instance, students tend to have higher motivation at the beginning of an academic semester or a new period of academics (Dai et al., 2014). This phenomenon is related to the temporal landmarks that provide a sense of renewal and an opportunity to set fresh goals.

Individuals tend to be more motivated to pursue goals as they psychologically distance themselves from past failures and identify the moment as a new starting point (Dai et al., 2014). This variation in motivation is significant because motivation is one of the key predictors of academic procrastination. Research has found that the higher the motivation for success, the lower the students' academic procrastination tendency (Serdar & Demirel, 2021). Conversely, when this motivation level is low, students are more likely to delay their academic tasks.

Implications

The findings suggest several implications for addressing procrastination at both individual and educational institutional aspects. As aforementioned, in university, electronic devices are considered essential tools in the learning process (Salguero-Pazos, 2024). However, the findings of this study revealed that digitalized academic environment increased the reliance on electronic devices for academic purposes. This reliance can blur the line between productive work and unrelated online activities and creates more opportunities for procrastination, especially when students feel disengaged from their current academic responsibility.

It is essential for educational institutions to recognize their role in shaping this reliance. The use of platforms such as Canvas, although it provides valuable tools for academic management, it also requires students to remain in digital environments that often foster distractions. Therefore, it is important that institutions explore ways to limit unnecessary screen time by designing systems and workflows that minimize exposure to potentially distracting environments. For instance, institutions can provide tools to block non-educational websites during study periods. In addition, they can consider introducing device-free classroom, learning environments where students are not allowed to use personal electronic devices during class. While acknowledging that some classwork or activities require the use of electronic devices, especially their laptop, implementing device-free days or sessions at least once or twice a week

could still minimize distractions, encourage active participation with instructors and peers, and foster greater focus on learning. Furthermore, such practices can encourage students to take notes by hand. This can enhance memory retention and cognitive processing compared to typing (Mueller & Oppenheimer, 2014).

Additionally, to improve students' motivation and task engagement, institutions can try a gamification system. Incorporating gamified elements such as points, badges, or rewards for completing tasks on time or as planned and maintaining focus can enhance academic progress and reduce procrastination (Tatlı et al., 2023). Platforms designed to track students' learning outcomes while rewarding focused behaviour can create a more effective and engaging academic environment. This can ultimately promote greater task completion and sustained academic progress.

It is important that educational institutions support students to develop healthier ways of using electronic devices. It is crucial to enhance students' responsibility, developing critical thinking towards using digital devices, and learning to structure time. Self-regulation training can encourage students to develop healthier habits (Magalhães et al., 2020). It is essential that students recognize the unconscious habits of using their phones and implement mindful strategies to disrupt these patterns. Furthermore, fostering self-awareness is crucial for avoiding academic disengagement and potential dropout (Berei & Pusztai, 2022).

Recommendations for Future Study

Based on the limitations of the study and the miscellaneous findings, several recommendations for future research are suggested. As aforementioned, the current study reflects students' procrastination at a single moment in time. To address this limitation, future studies could investigate how students' academic procrastination varies across the academic calendar and how it relates to motivational factors and temporal landmarks. A longitudinal study design could provide deeper insights into the dynamic nature of procrastination and

motivation. Based on the outcomes, tailored interventions that could help students mitigate procrastination and enhance their performance can be developed.

As miscellaneous finding of this study is that students expressed that various contents provided by electronic devices have influenced their attention spans. Xie et al. (2023) demonstrated that short-form video addiction has a direct impact on academic procrastination but also indirectly affected attentional control. They suggest that exposure to highly arousing, fast-paced videos may make it more challenging to focus on other tasks (Xie et al., 2023). Intense excitement from highly arousing content usually causes the brain to allocate more cognitive resources to processing information and alter attentional focus more frequently. Hence, instead of being used for task-related cognitive processes, the cognitive resources are focused on visual and affective inputs. This resource diversion can reduce the amount of attention that is given to the current task. Short-form videos are intrinsically more stimulating than television due to their rapid rate of information transmission. This may lead to greater levels of attentional control dysfunction (Peng et al., 2018). Therefore, a potential future study could explore the effects of short-form content consumption on students' attention spans and academic performance. This could provide valuable insights into the cognitive mechanism underlying this phenomenon and its broader impacts on students' concentration.

Conclusion

This study has provided insights into the impacts of the use of electronic devices on students' academic procrastination, as well as their coping strategies to reduce it. Electronic devices negatively affected students' academic procrastination in several ways. The use of the devices fostered distraction, promoted time-wasting behaviour, and provided a tempting escape from academic challenges. The most common pattern found was that electronic devices affected students' starting and restarting time. This created a vicious cycle of procrastination,

where the delays not only hindered academic progress but also induced feelings of guilt and frustration, which, in turn, triggered further procrastination.

Based on students' awareness of their procrastination triggers, they developed coping strategies such as digital detoxing, physical separation from devices, and productivity-enhancing techniques. However, some of the strategies backfired, interrupting their academic progress. This emphasizes the complexity of managing procrastination in digital environments.

The study highlighted the psychological complexity of procrastination, suggesting that it might be driven not just by external distraction, but also by internal factors like perfectionism and low-self regulation. Furthermore, fear of missing out and escapism also played a role in students' dependence on digital devices, further hindering their ability to implement effective coping strategies.

Since academic procrastination negatively influences both students' well-being and academic performance, it is important to gain deeper understanding of the factors contributing to the failure of students' coping strategies and to identify ways to address these challenges effectively. Moreover, it is crucial to develop interventions to help students better manage their academic responsibilities and minimize procrastination. Rather than eliminating electronic devices, it is important to focus on learning to manage their use effectively and responsibly. By recognizing procrastination patterns and taking proactive, strategic steps, students can overcome procrastination and stay on track to achieve their academic goals.

References

Amarnath, A., Ozmen, S., Struijs, S. Y., de Wit, L., & Cuijpers, P. (2023). Effectiveness of a guided internet-based intervention for procrastination among university students: A randomized controlled trial study protocol. *Internet Interventions, 32*, 100612. https://doi.org/10.1016/j.invent.2023.100612

American Psychological Association. (2018a). *APA Dictionary of Psychology*. https://dictionary.apa.org/self-report-bias

American Psychological Association. (2018b, April 19). *APA Dictionary of Psychology*. https://dictionary.apa.org/self-regulation

Atkinson, R., & Flint, J. (2001, January). Accessing hidden and hard-to-reach populations: Snowball research strategies. *ResearchGate*. https://www.researchgate.net/publication/46214232_Accessing_Hidden_and_Hard-to-Reach_Populations_Snowball_Research_Strategies

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science, 16*(6), 351–355. https://doi.org/10.1111/j.1467-8721.2007.00534.x

Berber Çelik, Ç. (2016). Educational intervention for reducing internet addiction tendencies. *Addicta: The Turkish Journal on Addictions, 3*(3) https://doi.org/10.15805/addicta.2016.3.0021

Berei, E. B., & Pusztai, G. (2022). Learning through digital devices—Academic risks and responsibilities. *Education Sciences, 12*(7), 480. https://doi.org/10.3390/educsci12070480

Blunt, A. K., & Pychyl, T. A. (2000). Task aversiveness and procrastination: A multi

dimensional approach to task aversiveness across stages of personal projects. *Personality and Individual Differences, 28*(1), 153–167. https://doi.org/10.1016/s0191-8869(99)00091-4

Dai, H., Milkman, K. L., & Riis, J. (2014). The fresh start effect: Temporal landmarks motivate aspirational behavior. *Management Science, 60*(10), 2563–2582. https://doi.org/10.1287/mnsc.2014.1901

Dilakshini, V. L., & Kumar, S. M. (2020). Cognitive dissonance: A psychological unrest. *Current Journal of Applied Science and Technology, 39*(30), 54–60. https://doi.org/10.9734/cjast/2020/v39i3030970

Dionne, F. (2016). Using acceptance and mindfulness to reduce procrastination among university students: Results from a pilot study. *Revista Prâksis, 1*, 8–20. https://doi.org/10.25112/rp.v1i0.431

Elizondo, K., Valenzuela, R., José Vicente Pestana, & Codina, N. (2023). Self-regulation and procrastination in college students: A tale of motivation, strategy, and perseverance. *Psychology in the Schools, 61*(3). https://doi.org/10.1002/pits.23088

Elvers, G. C., Polzella, D. J., & Graetz, K. (2003). Procrastination in online courses: Performance and attitudinal differences. *Teaching of Psychology, 30*(2), 159–162. https://doi.org/0.1207/S15328023TOP3002_13

Faulhaber, M. E., Lee, J. E., & Gentile, D. A. (2023). The effect of self-monitoring limited social media use on psychological well-being. *Technology, Mind, and Behavior, 4*(2). https://doi.org/10.1037/tmb0000111

González-Brignardello, M. P., Sánchez-Elvira Paniagua, A., & López-González, M. Á. (2023). Academic procrastination in children and adolescents: A scoping review. *Children, 10*(6), 1016. https://doi.org/10.3390/children10061016

Grunschel, C., & Schopenhauer, L. (2015). Why are students (not) motivated to change

academic procrastination? An investigation based on the transtheoretical model of change. *Journal of College Student Development, 56*(2), 187–200. https://doi.org/10.1353/csd.2015.0012

Gupta, M., & Sharma, A. (2021). Fear of missing out: A brief overview of origin, theoretical underpinnings, and relationship with mental health. *World Journal of Clinical Cases, 9*(19), 4881–4889. https://doi.org/10.12998/wjcc.v9.i19.4881

Hailikari, T., Katajavuori, N., & Asikainen, H. (2021). Understanding procrastination: A case of a study skills course. *Social Psychology of Education, 24*(2). https://doi.org/10.1007/s11218-021-09621-2

He, S. (2017). A multivariate investigation into academic procrastination of university students. *Open Journal of Social Sciences, 5*(10), 12–24. https://doi.org/10.4236/jss.2017.510002

Johnson, T. P. (2014). Snowball sampling: Introduction. In *Wiley StatsRef: Statistics Reference Online*. Wiley. https://doi.org/10.1002/9781118445112.stat05720

Kim, K. R., & Seo, E. H. (2015). The relationship between procrastination and academic performance: A meta-analysis. *Personality and Individual Differences, 82*, 26–33. https://doi.org/10.1016/j.paid.2015.02.038

Klingsieck, K. B. (2013). Procrastination: When good things don't come to those who wait. *European Psychologist, 18*(1), 24–34. https://doi.org/10.1027/1016-9040/a000138

Kutzhan, A., Shaikym, A., & Sadyk, U. (2023). A comparative study of the impact of electronic devices on university students' academic performance. *Typeset.io*, 1–4. https://doi.org/10.1109/ICECCO58239.2023.10147158

Lu, D., He, Y., & Tan, Y. (2022). Gender, socioeconomic status, cultural differences,

education, family size and procrastination: A sociodemographic meta-analysis.

Frontiers in Psychology, 12. https://doi.org/10.3389/fpsyg.2021.719425

Magalhães, P., Silva, C., Pereira, B., Figueiredo, G., Guimarães, A., Pereira, A., & Rosário, P.(2020). An online-based intervention to promote healthy eating through self-regulation among children: Study protocol for a randomized controlled trial. *Trials, 21*(1). https://doi.org/10.1186/s13063-020-04685-5

Meier, A., Beyens, I., Siebers, T., Pouwels, J. L., & Valkenburg, P. M. (2023). Habitual social media and smartphone use are linked to task delay for some, but not all, adolescents. *Journal of Computer-Mediated Communication, 28*(3). https://doi.org/10.1093/jcmc/zmad008

Montag, C., Lachmann, B., Herrlich, M., & Zweig, K. (2019). Addictive features of social media/messenger platforms and freemium games against the background of psychological and economic theories. *International Journal of Environmental Research and Public Health, 16*(14), 2612. https://doi.org/10.3390/ijerph16142612

Mueller, P. A., & Oppenheimer, D. M. (2014). The pen is mightier than the keyboard: Advantages of longhand over laptop note taking. *Psychological Science, 25*(6), 1159–1168. https://doi.org/10.1177/0956797614524581

Nabavi, R. T. (2012). Bandura's social learning theory & social cognitive learning theory. *Journal of Personality and Social Psychology, 1*, 589. https://www.scirp.org/reference/referencespapers?referenceid=3029693

Naderifar, M., Goli, H., & Ghaljaie, F. (2017). Snowball sampling: A purposeful method of sampling in qualitative research. *Strides in Development of Medical Education, 14*(3). https://doi.org/10.5812/sdme.67670

Peng, M., Chen, X., Zhao, Q., & Zhou, Z. (2018). Attentional scope is reduced by internet use: A behavior and ERP study. *PLOS ONE, 13*(6), e0198543.

https://doi.org/10.1371/journal.pone.0198543

Rebetez, M. M. L., Rochat, L., & Van der Linden, M. (2015). Cognitive, emotional, and

motivational factors related to procrastination: A cluster analytic approach.

Personality and Individual Differences, 76, 1–6.

https://doi.org/10.1016/j.paid.2014.11.044

Rozental, A., Forsström, D., Hussoon, A., & Klingsieck, K. B. (2022). Procrastination

among university students: Differentiating severe cases in need of support from less

severe cases. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.783570

Salguero-Pazos, M. (2024). Exploring the impact of the use of electronic devices on

academic procrastination among university students.

https://doi.org/10.20944/preprints202407.2313.v1

Salguero-Pazos, M. R., & Reyes-de-Cózar, S. (2023). Interventions to reduce academic

procrastination: A systematic review. *International Journal of Educational Research,*

121, 102228. https://doi.org/10.1016/j.ijer.2023.102228

Sederlund, A., Burns, L., & Rogers, W. (2020). Multidimensional models of perfectionism

and procrastination: Seeking determinants of both. *International Journal of*

Environmental Research and Public Health, 17(14), 5099.

https://doi.org/10.3390/ijerph17145099

Segovia Vicente, D., Van Gaeveren, K., Murphy, S. L., & Vanden, P. (2023). Does mindless

scrolling hamper well-being? Combining ESM and log-data to examine the link

between mindless scrolling, goal conflict, guilt, and daily well-being. *Journal of*

Computer-Mediated Communication, 29(1). https://doi.org/10.1093/jcmc/zmad056

Serdar, E., & Demirel, M. (2021). The relationship between academic procrastination,

academic motivation and perfectionism: A study on teacher candidates. *The Turkish*

Online Journal of Educational Technology, 20.

https://files.eric.ed.gov/fulltext/EJ1313519.pdf

Sinha, S., Sharma, M. K., Tadpatrikar, A., Anand, N., & Kumar, R. (2023). Scrolling

mindlessly: Emerging mental health implications of social networking sites. *Journal*

of Public Health and Primary Care, 4(3), 179–181.

https://doi.org/10.4103/jphpc.jphpc_41_22

Sirois, F. M. (2013). Procrastination and stress: Exploring the role of self-compassion. *Self*

and Identity, 13(2), 128–145. https://doi.org/10.1080/15298868.2013.763404

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of

quintessential self-regulatory failure. *Psychological Bulletin, 133*(1), 65–94.

https://doi.org/10.1037/0033-2909.133.1.65

Steel, P., Svartdal, F., Thundiyil, T., & Brothen, T. (2018). Examining procrastination

across multiple goal stages: A longitudinal study of temporal motivation theory.

Frontiers in Psychology, 9. https://doi.org/10.3389/fpsyg.2018.00327

Svartdal, F., & Løkke, J. A. (2022). The ABC of academic procrastination: Functional

analysis of a detrimental habit. *Frontiers in Psychology, 13*.

https://doi.org/10.3389/fpsyg.2022.1019261

Swain, J. (2018). A hybrid approach to thematic analysis in qualitative research: Using a

practical example. *Sage Research Methods*. https://doi.org/10.4135/9781526435477

Tatlı, Z., Gülay, A., & Mert, A. (2023). Impact of gamification applications on students'

attitudes towards lesson and procrastination behaviors. *International Journal of*

Contemporary Educational Research, 10(2), 522–534.

https://doi.org/10.52380/ijcer.2023.10.2.387

Tseng, V. W.-S., Lee, M. L., Denoue, L., & Avrahami, D. (2019). Overcoming

distractions during transitions from break to work using a conversational website-blocking system. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems - CHI '19*, 467, 1–13. https://doi.org/10.1145/3290605.3300697

van Eerde, W., & Klingsieck, K. B. (2018). Overcoming procrastination? A meta-analysis of intervention studies. *Educational Research Review, 25*, 73–85. https://doi.org/10.1016/j.edurev.2018.09.002

Visser, L., Korthagen, F. A. J., & Schoonenboom, J. (2018). Differences in learning characteristics between students with high, average, and low levels of academic procrastination: Students' views on factors influencing their learning. *Frontiers in Psychology, 9*. https://doi.org/10.3389/fpsyg.2018.00808

Xie, J., Xu, X., Zhang, Y., Tan, Y., Wu, D., Min, S., & Huang, H. (2023). The effect of short-form video addiction on undergraduates' academic procrastination: A moderated mediation model. *Frontiers in Psychology, 14*(14). https://doi.org/10.3389/fpsyg.2023.1298361

Wilhelm, P., & Nijman, J. (2023). Academic procrastination in engineering students. *European Society for Engineering Education (SEFI)*, doi: 10.21427/T0KH-SG55

Yan, B., & Zhang, X. (2022). What research has been conducted on procrastination? Evidence from a systematical bibliometric analysis. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.809044

Appendix 1

Participant Consent Form

Procrastination and the Use of Electronic Devices

Brief Summary of Project:

The research is about the extent to which the use of digital devices affects students' level of procrastination. Furthermore, it focuses to gain insights of what students do to cope with academic procrastination resulting from electronic device use. In the case of the current research, groups of five students will be asked to answer 3 relevant questions and discuss the questions together. If needed, the question will be repeated. When there is no more information that could be shared, the next question will be introduced. The audio will be recorded to be able to analysis the data.

In order to participate in this study, we need to ensure that you understand the nature of the research. Please tick the boxes to indicate that you understand and agree to the following conditions:

- I confirm that I have read the participant information sheet for this study. I have had the opportunity to consider the information and have had these answered satisfactorily.
- I understand that to take part in this study, I should be at least 18 years old and have a sufficient level of English and be a __student. Furthermore, I should not be deaf and/or mute.
- I understand that personal data about me will be collected for the purposes of the research study including gender and nationality, and that these will be processed in accordance with data protection regulations.
- I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected.
- I understand that my data is anonymous and will be stored on secure university servers. I understand that it will only be used by the investigators for research purposes and that there is a possibility this research will be presented at conferences or published in journal publications.
- I understand that the audio from this interview will be recorded via Dictaphone.
- I agree to take part in this study.
- You may contact to the email address any time you have questions about the research.

_____   _____
Signature of participant   date

Appendix 2

Interview Protocol

Welcome! Thanks for taking your time to participate in this study to talk about the impact of electronic devices on academic procrastination. My name is __and I will be leading today's discussion.

My research aims to see the extent to which the use of digital devices affects academic procrastination and to gain insights into ways to cope with this.

You were invited because you are a university student and use electronic devices in your daily life.
There will be 3 questions and you will discuss the questions together. When needed, the questions will be repeated. When there is no more information that could be shared, the next question will be introduced.

If you feel uncomfortable during the meeting, you have the right to leave or to pass on any question.

There are no wrong answers but rather different points of views. Please feel free to share your views even if it differs from what others have said.

Everyone's idea will be respected.

One person talks at time.

The audio will be recorded to be able to analyse the data.

The data will be treated confidentially and analysed anonymously.
My supervisors and I will have exclusive access to the data, which will be stored on my laptop. However, it will be deleted later.

It will take approximately 1 hour to complete the discussion.

Does anybody have any questions?

Let's start by having each of you briefly introduce yourself.

Before we dive into the first question, I would like to ask if you are familiar with the term 'academic procrastination'
- Procrastination/<u>delay</u> of study-related activities such as writing an essay and studying for an exam. (Mostly people are aware that it might have negative consequences)

First, we are going to discuss your experience with academic procrastination, and then we will also talk about what you do to cope with it.

Q1. What are your experiences with academic procrastination?
- Start-up question (Keep it short)

Q2. Consider all digital devices you use in your daily life (e.g., your laptop, phone, tablet, smartwatch), do they affect your procrastination in your studies? How?
- If they do: Can you give some examples? (Experiences)
    o Follow-up questions (Only if needed)
        ▪ How do different types of tasks influence your tendency to procrastinate or get distracted by your devices?
        ▪ How do your mood and energy affect your tendency to procrastinate or get distracted by your devices?

Q3. What do you do to cope with procrastination resulting from the use of electronic devices?
- In case they do not feel they are capable of successfully coping with it yet
    o What would you need to cope with procrastination due to the use of your devices?
- **Only** if they need some suggestions:
    o Do you use any tools or apps to help manage your time or limit distractions while studying? How effective have they been?
    o What changes in your study environment, if any, help you minimize distractions from devices?

Before we wrap up, is there anything else you would like to add about the effects of electronic devices on your procrastination?

Thank you all for your time and valuable opinions.

I will follow up with you if I need any clarification, and once again, everything shared here will be remain confidential.

If you have any questions in the future, feel free to reach out to me via email.

+ if have time: how did you experience the interview?

Thank all for participating.