



## The impact of smartphone addiction and self-control on phubbing behavior of students at universitas Muslim nusantara, Medan

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### Abstract

This study investigates the impact of smartphone addiction and self-control on phubbing behavior among 149 undergraduate students at Universitas Muslim Nusantara Medan using a cross-sectional survey. Results show a significant positive correlation between smartphone addiction (mean SAS score 40.5) and phubbing behavior, indicating higher addiction leads to increased phubbing. Conversely, higher self-control (mean SCS score 38.2) negatively correlates with phubbing, suggesting better self-control reduces phubbing tendencies. Multiple regression analysis confirms both smartphone addiction and self-control significantly predict phubbing ( $R^2 = 0.54$ ). Students with low self-control exhibit significantly more phubbing behavior ( $t(147) = -7.89, p < 0.001$ ). Findings underscore the need for interventions promoting healthier smartphone use and enhancing self-regulation to mitigate phubbing. Educational campaigns and supportive environments fostering face-to-face interactions are recommended. Addressing these factors can improve social interactions and academic outcomes among university students, emphasizing the importance of managing smartphone use and enhancing self-control.

**Keywords:** Smartphone addiction, self-control, phubbing behavior

### Introduction

In this digital era, smartphones have become an indispensable part of everyday life (Abdel-Aziz *et al.*, 2016) [1]. Their ubiquitous presence has revolutionized the way we communicate, access information, and entertain ourselves (Hampton, 2016) [13]. However, alongside these benefits, smartphones have also introduced new challenges and behavioral patterns that can have negative implications, particularly among young adults and university students. One such behavior is phubbing, a term derived from "phone" and "snubbing," which refers to the act of ignoring someone in favor of using a smartphone. Phubbing has become increasingly prevalent among university students, including those at Universitas Muslim Nusantara Medan. This behavior is often driven by smartphone addiction, a condition where individuals find it difficult to limit their smartphone use despite knowing its negative consequences. Smartphone addiction can interfere with academic performance, reduce face-to-face social interactions, and negatively impact mental health.

The prevalence of smartphone addiction among students is a growing concern (Al-Barashdi *et al.*, 2015) [3]. Studies have shown that excessive smartphone use is associated with a range of psychological issues, including anxiety, depression, and reduced attention span. Additionally, the constant need to check notifications and stay connected online can lead to poor sleep quality and increased stress levels. Self-control plays a critical role in managing smartphone use and mitigating its negative effects. Self-control refers to the ability to regulate one's thoughts, emotions, and behaviors in the face of temptations and impulses. Students with high levels of self-control are better equipped to manage their smartphone use, prioritize their academic responsibilities, and maintain healthy social interactions.

To understand the extent of smartphone addiction and phubbing among students, a preliminary survey was

conducted at Universitas Muslim Nusantara Medan. The results are summarized in the table below:

**Table: 1** Data on Smartphone Addiction and Phubbing among Students at Muslim Nusantara University, Medan

Category	Percentage (%)
Students addicted to smartphones	65
Students who frequently phub	70
Students with low self-control	55
Students with high self-control	45

The data reveals that a significant majority of students are addicted to their smartphones and frequently engage in phubbing. Additionally, over half of the students exhibit low self-control, which can exacerbate the negative impacts of smartphone addiction and phubbing behavior. The implications of these findings are profound. Phubbing not only disrupts social interactions and weakens relationships but also fosters a sense of isolation and loneliness among students. It can lead to a vicious cycle where increased smartphone use further diminishes real-world social connections, reinforcing the reliance on digital interactions. This study aims to delve deeper into the relationship between smartphone addiction, self-control, and phubbing behavior among students at Universitas Muslim Nusantara Medan. By examining these variables, the research seeks to provide insights into the underlying factors contributing to phubbing and identify potential strategies to address this issue. Understanding the dynamics of smartphone addiction and self-control can inform interventions designed to promote healthier smartphone use and enhance students' overall well-being. In conclusion, the pervasive use of smartphones and the resultant behavior of phubbing pose significant challenges to the social and academic lives of university students. This study aims to shed light on these challenges and explore ways to foster better self-control and healthier smartphone usage habits among students. Through

this research, it is hoped that strategies can be developed to mitigate the adverse effects of smartphone addiction and phubbing, ultimately contributing to a more balanced and fulfilling student experience.

## Literature Review

The phenomenon of smartphone addiction and its implications for phubbing behavior has been the subject of extensive research in recent years. This section reviews the existing literature on smartphone addiction, phubbing, and the role of self-control in mitigating these behaviors, providing a comprehensive understanding of the underlying factors and consequences.

### 1. Smartphone Addiction

Smartphone addiction, often referred to as problematic smartphone use, is characterized by an inability to control smartphone use, leading to significant impairment in daily life. Research by (Baggio *et al.*, 2018) <sup>[5]</sup> identified several dimensions of smartphone addiction, including loss of control, preoccupation, and withdrawal symptoms. Studies have shown that smartphone addiction is linked to various negative outcomes, such as increased anxiety, depression, and decreased academic performance (Matar Boumosleh & Jaalouk, 2017) <sup>[17]</sup>.

### 2. Phubbing

Phubbing, a portmanteau of "phone" and "snubbing," was first conceptualized by (Chotpitayasonondh & Douglas, 2016) <sup>[8]</sup> as the act of ignoring someone in favor of engaging with a smartphone. This behavior has been found to adversely affect interpersonal relationships and social interactions. According to a study by (Chotpitayasonondh & Douglas, 2018) <sup>[9]</sup>, phubbing can lead to feelings of social exclusion and lower relationship satisfaction. Furthermore, phubbing has been linked to decreased face-to-face communication quality and increased conflict in relationships (Al-Saggaf & O'Donnell, 2019) <sup>[4]</sup>.

### 3. Self-Control and Smartphone Use

Self-control, defined as the ability to regulate one's emotions, thoughts, and behaviors in the face of temptations, plays a crucial role in managing smartphone use. Research by Duckworth *et al.* (2014) indicates that individuals with higher self-control are better equipped to resist the urge to use smartphones excessively and are less likely to develop addictive behaviors. Moreover, self-control has been associated with better academic performance, healthier social relationships, and improved psychological well-being (Tangney *et al.*, 2004).

### 4. Impact of Smartphone Addiction on Phubbing Behavior

Several studies have explored the relationship between smartphone addiction and phubbing. A study by (Xie *et al.*, 2019) <sup>[22]</sup> found that individuals with higher levels of smartphone addiction are more likely to engage in phubbing behavior. This relationship is mediated by the increased need for instant gratification and the constant search for online social interactions, which can overshadow real-world interactions (Sheldon *et al.*, 2019) <sup>[20]</sup>.

### 5. Moderating Role of Self-Control

Self-control serves as a moderating factor in the relationship between smartphone addiction and phubbing. Individuals

with high self-control are better able to regulate their smartphone use, thereby reducing the likelihood of engaging in phubbing. Research by (Brevers & Turel, 2019) <sup>[7]</sup> suggests that enhancing self-control can be an effective strategy in mitigating the negative effects of smartphone addiction. Interventions aimed at improving self-control, such as mindfulness training and cognitive-behavioral strategies, have shown promise in reducing problematic smartphone use (Regan *et al.*, 2020) <sup>[18]</sup>.

## 6. Theoretical Frameworks

Several theoretical frameworks have been proposed to understand smartphone addiction and phubbing. The Uses and Gratifications Theory (Haridakis & Humphries, 2019) <sup>[14]</sup> posits that individuals use smartphones to fulfill various psychological needs, such as social interaction, entertainment, and information seeking. This theory helps explain why excessive smartphone use can lead to addiction and phubbing behavior. Another relevant framework is the Self-Determination Theory (Ryan & Vansteenkiste, 2023) <sup>[19]</sup>, which emphasizes the role of intrinsic motivation and self-regulation in behavior. According to this theory, individuals who lack self-determination and intrinsic motivation are more likely to develop addictive behaviors and engage in phubbing as a way to compensate for unmet psychological needs.

## Method

This section outlines the research methodology employed to analyze the impact of smartphone addiction and self-control on phubbing behavior among students at Universitas Muslim Nusantara Medan. The methodology includes the research design, population and sample, data collection methods, research instruments, and data analysis techniques, including relevant formulas for sample size determination and statistical analysis.

### 1. Research Design

This study uses a quantitative research design with a cross-sectional survey method. The quantitative approach allows for the systematic collection and analysis of data to identify patterns and relationships between smartphone addiction, self-control, and phubbing behavior (Bambang Sudaryana *et al.*, 2022) <sup>[6]</sup>. The cross-sectional design provides a snapshot of the current situation among the student population at a single point in time.

### 2. Population and Sample

#### Population

The population for this study consists of all undergraduate students enrolled at Universitas Muslim Nusantara Medan during the academic year 2023-2024. This population is chosen due to the high prevalence of smartphone usage among university students and its potential impact on their social and academic lives.

#### Sample

A sample of 149 students will be selected using a stratified random sampling technique to ensure representation from different faculties and year levels. The sample size is determined based on statistical power analysis.

Sample Size Determination Formula:

$$n = \frac{N \cdot Z^2 \cdot p \cdot (1-p)}{(N-1) \cdot E^2 + Z^2 \cdot p \cdot (1-p)}$$

Where:

- n= required sample size
- N= population size (estimated at 1000 students)
- Z = Z-value (e.g., 1.96 for a 95% confidence level)
- p= estimated proportion of the population (0.5 for maximum variability)
- E = margin of error (0.05)

Given practical considerations and ensuring robust analysis, the sample size is reduced to 149 to maintain feasibility while still providing sufficient power for the study.

### 3. Data Collection Methods

#### Survey

Data will be collected using a structured self-administered questionnaire. The questionnaire will be distributed both online and in printed form to accommodate different student preferences and increase response rates.

#### Pilot Study

A pilot study will be conducted with 30 students to test the reliability and validity of the questionnaire. The feedback from the pilot study will be used to refine the questionnaire.

#### Research Instruments

The questionnaire consists of four sections:

- Demographic Information: This section collects data on respondents' age, gender, faculty, year of study, and daily smartphone usage.
- Smartphone Addiction Scale (SAS): The SAS, developed by (Akpunne, 2018) [2], will measure the level of smartphone addiction. The scale consists of 10 items rated on a 6-point Likert scale ranging from "strongly disagree" to "strongly agree." Higher scores indicate higher levels of addiction.
- Self-Control Scale (SCS): The SCS, developed by (Unger *et al.*, 2016) [21], will assess self-control levels. This scale includes 13 items rated on a 5-point Likert scale ranging from "not at all like me" to "very much like me." Higher scores indicate higher self-control.
- Phubbing Scale: A modified version of the Phubbing Scale developed by Roberts and David (2016) will measure the frequency and impact of phubbing behavior. This scale consists of 8 items rated on a 5-point Likert scale ranging from "never" to "always."

### 4. Data Analysis Techniques

- a. Descriptive Statistics will summarize the demographic characteristics of the respondents and the distribution of scores on the smartphone addiction, self-control, and phubbing scales. Measures of central tendency (mean, median) and variability (standard deviation) will be reported.
- b. Inferential statistical methods will be employed to test the research hypotheses:
  - Pearson Correlation Coefficient (Zhou *et al.*, 2016) [23]: To examine the relationship between smartphone addiction and phubbing behavior, and between self-control and phubbing behavior.

$$r = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2}}$$

- **Multiple Regression Analysis** (Keith, 2019): To determine the extent to which smartphone addiction and self-control predict phubbing behavior, controlling for demographic variables.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \epsilon$$

- **Independent Samples t-Test** (Gerald, 2018): To compare phubbing behavior between students with high and low levels of self-control.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

- **ANOVA (Analysis of Variance)** (Connelly, 2021): To compare smartphone addiction, self-control, and phubbing behavior across different demographic groups (e.g., faculties, year levels).

$$F = \frac{\text{Between-group variability}}{\text{Within-group variability}} = \frac{\sum n_i (\bar{X}_i - \bar{X})^2}{\frac{\sum (X_{ij} - \bar{X}_i)^2}{N-k}}$$

## Results and Discussion

### Result

This section presents the results of the study on the impact of smartphone addiction and self-control on phubbing behavior among students at Universitas Muslim Nusantara Medan. The data was analyzed using descriptive statistics, Pearson correlation, multiple regression analysis, independent samples t-test, and ANOVA. A total of 149 students participated in the study. The demographic characteristics of the respondents are summarized below:

- Age: The average age of the respondents was 20.5 years (SD = 1.3).
- Gender: 60% were female and 40% were male.
- Faculty: The respondents were distributed across various faculties, with the majority from the Faculty of Social Sciences (35%), followed by the Faculty of Engineering (30%), and the Faculty of Health Sciences (25%).
- Year of Study: 40% were in their first year, 30% in their second year, 20% in their third year, and 10% in their fourth year.
- The average daily smartphone usage was 5.5 hours (SD = 1.8).

The average score on the SAS was 40.5 (SD = 8.4), indicating a moderate level of smartphone addiction among the respondents. The average score on the SCS was 38.2 (SD = 7.6), suggesting moderate levels of self-control among the respondents. The average score on the Phubbing Scale was 28.7 (SD = 6.2), indicating a moderate frequency of phubbing behavior.

### Inferential Statistics

The Pearson correlation coefficient was calculated to examine the relationships between smartphone addiction, self-control, and phubbing behavior.

- **Smartphone Addiction and Phubbing Behavior**  
r=0.65, p<0.001

This positive correlation indicates that higher levels of smartphone addiction are associated with more frequent phubbing behavior.

#### ▪ Self-Control and Phubbing Behavior

$r=-0.52, p<0.001$

This negative correlation suggests that higher levels of self-control are associated with less frequent phubbing behavior.

#### Multiple Regression Analysis

Multiple regression analysis was conducted to determine the extent to which smartphone addiction and self-control predict phubbing behavior, controlling for demographic variables.

Phubbing Behavior =  $\beta_0 + \beta_1(\text{Smartphone Addiction}) + \beta_2(\text{Self-Control}) + \epsilon$

Results:

- Constant ( $\beta_0$ ): 12.34
- Smartphone Addiction ( $\beta_1$ ): 0.45,  $t=6.78, p<0.001$
- Self-Control ( $\beta_2$ ): -0.37,  $t=-5.43, p<0.001$

The results indicate that both smartphone addiction and self-control are significant predictors of phubbing behavior. The regression model explains 54% of the variance in phubbing behavior ( $R^2 = 0.54$ ).

#### Independent Samples t-Test

An independent samples t-test was conducted to compare phubbing behavior between students with high and low levels of self-control.

- High Self-Control: SCS score above the median (39).
- Low Self-Control: SCS score below the median (39).
- High Self-Control:  $M=25.4, SD=5.2$
- Low Self-Control:  $M=32.1, SD=5.8$
- $t(147) = -7.89, p < 0.001$

Students with low self-control exhibited significantly higher levels of phubbing behavior compared to students with high self-control.

#### ANOVA (Analysis of Variance)

ANOVA was used to compare smartphone addiction, self-control, and phubbing behavior across different faculties and year levels.

Faculty

- No significant differences were found in smartphone addiction, self-control, and phubbing behavior across different faculties.

#### Year of Study

- A significant difference was found in smartphone addiction across year levels ( $F(3,145)=4.32, p<0.01$ ). Post-hoc analysis (Tukey's HSD) revealed that first-year students had significantly higher levels of smartphone addiction compared to fourth-year students.
- No significant differences were found in self-control and phubbing behavior across year levels.

#### Discussion

This section discusses the findings of the study on the impact of smartphone addiction and self-control on phubbing behavior among students at Universitas Muslim Nusantara Medan. The discussion will cover the

implications of the results, the relationship between the variables, and the potential strategies to mitigate phubbing behavior.

#### 1. Smartphone Addiction and Phubbing Behavior

The study found a significant positive correlation between smartphone addiction and phubbing behavior. This suggests that students who are more addicted to their smartphones are more likely to engage in phubbing. This finding aligns with previous research indicating that excessive smartphone use can lead to neglect of face-to-face interactions in favor of virtual engagements (Mantere, 2022) <sup>[16]</sup>. The high levels of smartphone addiction observed in this study (average SAS score of 40.5) indicate that many students are heavily reliant on their smartphones. This reliance can be attributed to various factors, such as the convenience of accessing information, social media, and entertainment. However, this dependency can have detrimental effects on their social interactions and academic performance. The constant urge to check notifications and engage in online activities can disrupt real-world interactions, leading to phubbing behavior and potentially damaging relationships with peers and family members.

#### 2. Self-Control and Phubbing Behavior

The study also found a significant negative correlation between self-control and phubbing behavior. Students with higher levels of self-control were less likely to engage in phubbing. This finding is consistent with the literature suggesting that self-control plays a crucial role in regulating smartphone use and preventing addictive behaviors (Gao *et al.*, 2021) <sup>[21]</sup>. The average SCS score of 38.2 indicates moderate levels of self-control among the respondents. Students with higher self-control can resist the temptation to use their smartphones excessively, prioritize their academic responsibilities, and engage more in face-to-face interactions. This ability to self-regulate is essential for maintaining a balanced and healthy lifestyle, particularly in a digital age where distractions are ubiquitous.

#### 3. Predictors of Phubbing Behavior

The multiple regression analysis revealed that both smartphone addiction and self-control are significant predictors of phubbing behavior. Smartphone addiction positively predicted phubbing behavior, while self-control negatively predicted it. These findings highlight the complex interplay between addictive behaviors and self-regulation in shaping students' social interactions. The regression model explained 54% of the variance in phubbing behavior, indicating that these factors substantially impact students' likelihood to engage in phubbing. This suggests that interventions aimed at reducing smartphone addiction and enhancing self-control could be effective in mitigating phubbing behavior among university students.

#### 4. Differences in Phubbing Behavior

The independent samples t-test showed that students with low self-control exhibited significantly higher levels of phubbing behavior compared to those with high self-control. This finding emphasizes the importance of self-control in managing smartphone use and maintaining healthy social interactions. Additionally, the ANOVA results indicated significant differences in smartphone addiction across year

levels, with first-year students showing higher levels of addiction compared to fourth-year students. This could be due to the initial adjustment period to university life, where first-year students may rely more on their smartphones for social support and information.

### 5. Implications for Interventions

The findings of this study have several implications for developing interventions to reduce phubbing behavior among university students. Given the significant role of self-control in regulating smartphone use, interventions could focus on enhancing self-regulation skills. Programs that incorporate mindfulness training, cognitive-behavioral techniques, and time management strategies could help students develop better self-control and reduce their dependence on smartphones. Additionally, educational campaigns that raise awareness about the negative impacts of smartphone addiction and phubbing on social relationships and academic performance could motivate students to adopt healthier smartphone usage habits. Creating a supportive university environment that encourages face-to-face interactions and provides alternative forms of social engagement can also help mitigate the prevalence of phubbing behavior.

### Conclusion

This study investigated the impact of smartphone addiction and self-control on phubbing behavior among students at Universitas Muslim Nusantara Medan. Data was collected from 149 students using a cross-sectional survey method. The findings revealed a significant positive relationship between smartphone addiction and phubbing behavior, indicating that students with higher levels of smartphone addiction are more likely to engage in phubbing. The average score on the Smartphone Addiction Scale (SAS) was 40.5. Conversely, a significant negative relationship was found between self-control and phubbing behavior, suggesting that students with higher self-control are less likely to engage in phubbing. The average score on the Self-Control Scale (SCS) was 38.2. Multiple regression analysis showed that both smartphone addiction and self-control are significant predictors of phubbing behavior, explaining 54% of the variance. Specifically, smartphone addiction positively predicts phubbing behavior, while self-control negatively predicts it. An independent samples t-test confirmed that students with low self-control exhibit higher levels of phubbing behavior compared to those with high self-control. ANOVA results indicated that first-year students have higher levels of smartphone addiction compared to fourth-year students. These findings underscore the need for interventions to manage smartphone use and enhance self-control among students. Strategies such as mindfulness training, cognitive-behavioral techniques, and educational campaigns about the negative impacts of smartphone addiction could help reduce phubbing behavior. Creating a supportive university environment that encourages face-to-face interactions can also be beneficial. In summary, addressing smartphone addiction and enhancing self-control are crucial steps in mitigating phubbing behavior and improving students' social and academic experiences. Future research should explore the

effectiveness of intervention programs aimed at promoting healthier smartphone use and better self-regulation among university students.

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