



The Relationship between *Smartphone* Dependence and *Nomophobia (No Mobile Phone)* Anxiety at SMA Negeri 1 Tapa, Bone Bolango Regency

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ABSTRACT

The increasing use of *smartphones* among teenagers has the potential to cause dependency and psychological disorders, one of which is *nomophobia anxiety (no mobile phone phobia)*. This study aims to determine the relationship between *smartphone* dependence and *nomophobia* anxiety in students of SMA Negeri 1 Tapa, Bone Bolango Regency. This study uses a *crosssectional design*. The sample amounted to 52 students who were selected using *the proportionate stratified random sampling* technique. The instruments used were *the Smartphone Addiction Scale (SAS)* and *the Nomophobia Questionnaire (NMP-Q)*. The results showed that most of the respondents experienced *smartphone* dependency in the high category, namely 46 students (82%), while the low category was 6 students (12%). This study concludes that wise management of *smartphone* use is necessary to prevent *nomophobia anxiety* in adolescents.

INTRODUCTION

Advances in information and communication technology have shown a great impact on human life, especially among adolescents. One of the tangible manifestations of this technological development is the increasing use of smartphones in the community, especially in adolescents and students. Smartphones not only function as a means of communication, but also as a means of entertainment, learning, and easy and fast access to information. This phenomenon has significantly changed the patterns of social interaction and individual behavior, especially in high school students who are in the adolescent phase with a high level of curiosity and good technological adaptability. Teenagers are the largest age group in Indonesia who actively use smartphones, which offer a similar experience to the internet through its various features (Kamaruddin, 2022).

The prevalence of nomophobia among students and college students in recent years shows a fairly high number. A quantitative study conducted by Sharma et al. (2023) found that more than half of adolescent and young adult respondents were in the category of moderate to severe nomophobia. This condition shows that smartphone dependence has developed into a significant psychosocial phenomenon in the productive age group. The results of the study confirmed that the more intense the use of smartphones, the higher the level of anxiety that arises when individuals cannot access their devices.

Similar findings were reported by Ozdemir et al. (2022) which showed that the prevalence of nomophobia in college students was above 50% in the medium to high category. The study also identified a strong association between smartphone addiction and nomophobia scores, thus reinforcing the assumption that excessive use is a major risk factor for the emergence of digital anxiety. In addition, longitudinal research by Rudolf (2024) shows that intensive smartphone use in adolescents correlates with mental health indicators, including anxiety related to loss of access to digital communication.

Furthermore, a psychometric evaluation of the Nomophobia Questionnaire in the Indonesian student population by Yildirim (2025) shows that this phenomenon consistently appears in various gender groups and smartphone use levels. The study confirms that nomophobia is not just a habit of using technology, but a form of real anxiety response when individuals feel disconnected from their digital social networks. Thus, the latest studies confirm that the prevalence of nomophobia in students and students is relatively high and requires attention in the context of adolescent mental health.

Data from the Indonesian Internet Service Providers Association (APJII) in 2025 shows that the internet penetration rate in Indonesia has reached 80.66% of the total population, with the majority of access being done through smartphones. This phenomenon indicates that smartphones have been deeply integrated into the daily routines of Indonesian people, including among students. Although the use of smartphones provides significant benefits such as ease of access to information, expansion of social networks, and support for distance learning, excessive use actually triggers various problems, one of which is the emergence of nomophobia (no mobile phone phobia), which is characterized by excessive anxiety when individuals cannot access smartphones.

A survey by the Central Statistics Agency (BPS) in 2022 revealed that more than 90% of students in Indonesia own smartphones, and about 70% of them use them for non-academic activities such as playing games, accessing social media, and watching videos. The high level of ownership and use of smartphones shows that dependence on these devices has become part of the lifestyle of today's teenagers. If not managed properly, this dependence has the potential to increase the risk of nomophobia anxiety.

The significantly increased use of smartphones among adolescents has the potential to cause a form of digital behavioral dependence, not just substance dependence. This dependence includes the use of the internet, social media applications, digital games, and smartphones themselves, which are often accompanied by symptoms of withdrawal, craving, and disruption of daily activities as the main indicators of *behavioral addiction*. International studies have found that the intensity of internet and smartphone use has a significant relationship with psychological distress and mental distress in adolescents, suggesting that uncontrolled digital behavior can adversely affect well-being (Bukhori, 2024). In addition, research on the school population shows a high prevalence of *smartphone addiction* and its relationship with environmental factors and parenting style, which also affects the mental state of adolescents (Parmar, 2024). Other findings suggest that digital behavioral addiction including internet and smartphone use has increased significantly in the pandemic period, reinforcing its status as a public health problem for young age groups (Akdağ et al., 2023). This is in line with the findings that smartphone use correlates with digital anxiety such as nomophobia, which is another manifestation of digital behavioral dependence (Hussain, 2022). Many adolescents have difficulty controlling the intensity of smartphone use due to developmental characteristics that are still vulnerable to environmental influences and high interest in smartphone features (Fadhool Riyadi et al., 2023).

Nomophobia is a form of modern anxiety that is closely related to smartphone dependence and can have a negative impact on adolescents' mental health and social behavior. Recent research shows that the phenomenon of *nomophobia* is not only related to technology dependence, but also has a significant impact on various aspects of psychosocial functioning of adolescents and young adults. Arfian (2025) Excessive smartphone use is closely related to sleep pattern disorders, which in turn can reduce the ability to concentrate while studying or working; This condition is documented in the study of Suroyah (2025) which found a link between the level of nomophobia and decreased sleep quality among adolescents, which in turn affects their daily focus and productivity. Another study by Gezgin (2021) also showed a positive relationship between the level of smartphone dependence and nomophobia anxiety, where the higher the intensity of smartphone use, the greater the risk of nomophobia.

These findings are reinforced by recent research showing that excessive smartphone use has a significant positive relationship with rates of nomophobia, in which individuals with high dependency show fear, anxiety, and discomfort when separated from smartphones (Rosa-Rodríguez et al., 2023). In addition, other studies have also found that the need for social connectivity and constant access to information are the main factors driving the emergence of nomophobia anxiety in adolescents with compulsive patterns of smartphone use (Papagianopoulos, 2023). This dependence not only has an impact on psychological health, but also physical health such as sleep disorders, decreased concentration, and decreased academic achievement. (Yildirim 2021)

Research by Aprilia et al. (2024) shows that the prevalence of smartphone use in Gorontalo continues to increase, with 362,752 active users aged 15–25 years, reflecting the high penetration of digital technology among adolescents and young adults. This increase in use has implications for the emergence of various psychological impacts, one of which is nomophobia. These findings are reinforced by recent research that states that the high frequency and dependence of smartphone use is significantly related to an increased risk of nomophobia, especially in young age groups who are highly dependent on digital devices for communication, information access, and daily activities (Rosa-Rodríguez et al., 2023). In addition, other open access studies also report that increased smartphone penetration among adolescents correlates with a high prevalence of nomophobia, which is characterized by anxiety and psychological discomfort when disconnected from digital connectivity (Papagianopoulos, 2023). Individuals with nomophobia tendencies tend to always prioritize smartphones in various situations, even when socializing. (Musharyadi 2024) They exhibit behaviors such as constantly checking smartphones, feeling restless when they lose signals, and having difficulty separating from their devices. This

condition is generally experienced by individuals aged 17-25 years and is characterized by excessive feelings of anxiety about losing smartphone access (Febriyanti, 2024).

Until now, there has been no study that specifically examines the relationship between smartphone dependence and nomophobia anxiety in SMA Negeri 1 Tapa students. The difference between ideal conditions and reality forms a research gap, namely that although smartphones are expected to support adolescent learning and development, excessive use actually triggers dependence and anxiety of nomophobia. Therefore, this research is important to be conducted.

Purpose of the Study: To find out the relationship between *smartphone* dependence and *nomophobia* anxiety in students of SMA Negeri 1 Tapa, Bone Bolango Regency

RESEARCH METHODS

This study uses a correlational quantitative approach with a *cross-sectional design* to measure the relationships between variables at a single point in time without treatment or manipulation of variables. *Cross-sectional design* is commonly used in digital behavior research because it is able to efficiently describe the actual condition of respondents at a given moment and provide data on the relationship between relevant variables (Surya Aulia et al., 2023). For example, Rahman et al.'s (2023) study that measured the level of nomophobia in college students used this approach to understand the prevalence and characteristics of nomophobia in a given population. Furthermore, the study Terzi et al. (2024) applied a *cross-sectional design* in examining nomophobia and eHealth literacy in high school adolescents, showing that this design was effective for research among students. Another study by Thomas et al. (2024) also utilized the same design to evaluate the prevalence of nomophobia in the student environment, thus further strengthening the relevance of this method in the study of the phenomenon of smartphone use and its psychological effects.

The research was carried out at SMA Negeri 1 Tapa, Bone Bolango Regency in November-December 2025. The population in this study is all students in grades X and XI who actively use smartphones, with a population of 60 students. To determine the representative sample count of the population, the researchers used the Slovin formula with an error rate of 5%. The Slovin formula is a common method that is often used to determine sample sizes when a population is known and a certain level of accuracy is desired. By including the number of population (N) and the error tolerance limit (e), the required sample number of 52 respondents was obtained, thus providing statistically robust enough data to be further processed. Comon (2024).

The independent variable in this study was smartphone dependence, while the dependent variable was nomophobia anxiety.

Smartphone dependency measurement was carried out using the Smartphone Addiction Scale-Short Version (SAS-SV), which consists of 10 statement items with a Likert scale. This instrument is widely used in digital behavior research because it has undergone a validation process and has been proven to have good reliability and validity in various populations. For example, a study by Wulandari (2025) shows that SAS-SV has a consistent factor structure and a high reliability coefficient when applied to Indonesian adolescents. Furthermore, the research of Felix et al. (2025) also confirmed that SAS-SV is valid and reliable in measuring smartphone dependence in young adults in India. In addition, Wong et al. (2023) found that SAS-SV is able to accurately measure smartphone dependence in Malaysian students, making it an appropriate measurement tool for adolescent and young adult research in educational contexts. The SAS-SV score is then categorized into low and high dependency according to applicable measurement guidelines.

Nomophobia anxiety in this study was measured using the Nomophobia Questionnaire (NMP-Q) which consisted of 20 statement items on a Likert scale and included four main dimensions, namely inability to communicate, loss of connectivity, inability to access information, and loss of comfort. The instrument has been widely used in international research and exhibits a consistent factor structure as well as high internal reliability (Gezgin, 2022). In Indonesia, an adapted version of NMP-Q has also been tested in adolescent populations and shows a high Cronbach's Alpha value, so it is considered valid and reliable to measure the level of nomophobia anxiety in high school students (Rahmawati 2023; Therefore, the NMP-Q instrument is suitable for use in this study to comprehensively measure the level of nomophobia anxiety. Sons (2024)

The data used in this study consisted of primary data obtained directly through filling out questionnaires by respondents, as well as secondary data derived from school documentation and supporting literature. The use of primary data in the design of cross sectional surveys is considered effective in describing the actual condition of respondents at a certain time (Setiawan, 2022).

Data analysis was carried out through univariate analysis to describe the frequency and percentage distribution of each variable, as well as bivariate analysis using the Chi-Square (χ^2) test to determine the relationship between smartphone dependence and nomophobia anxiety. The Chi-Square test was chosen because both variables are categorically scaled and this method is widely used in research on adolescent behavior and digital addiction to test the relationship between categorical variables (Yunita, 2024).

The significance level used in this study is $\alpha = 0.05$, which means that the relationship between variables is declared significant if the *p* value < 0.05 . This study has paid attention to the ethical principles of research, including providing informed consent to respondents, maintaining anonymity by not including personal identities,

RESULTS AND DISCUSSION

Table 1. Respondent Characteristics

Characteristics	Frequency (f)	Presentation (%)
Gender		
Male	17	33%
Women	35	67%
Total	52	100.0

Premiere date 2025

Based on table 1. Above, we can see that the gender characteristics of the respondents with the most are women with 35 people with a percentage of 67% and the least are men with 17 people with a percentage of 33%.

These field findings are in line with theories that explain that women have a stronger emotional connection with *smartphones* than men. Putri et al. (2024). This difference can also be explained through theories about gender-based smartphone usage patterns. According to Putri et al. (2024), *smartphones* for women are not only a means of communication, but a means of self-expression, strengthening social relationships, and gaining recognition from peers. Therefore, women tend to use *smartphones* with higher intensity and longer than men.

Emotional attachment to smartphones further explains why women are more susceptible to experiencing symptoms of nomophobia anxiety, as the use of smartphones not only serves as a communication tool but also as a source of strong emotional comfort. Research by Hapsari et al. (2022) shows that women have higher rates of nomophobia because they rely heavily on smartphones as a medium of daily social communication and as a primary tool for maintaining interpersonal connections (Hapsari et al., 2022).

These findings are in line with the results of recent quantitative studies showing that women report higher nomophobia scores than men, which is thought to be related to emotional dependence on communication functions and social connections provided by smart devices (Naz et al., 2025). In addition, other studies also noted that gender differences reflect variations in the way smartphones are used, where women tend to use these devices more intensively for social interaction than men, thus increasing anxiety when access to smartphones is cut off (Alodhua et al., 2025). These studies confirm that emotional attachment to smartphones plays an important role in the manifestation of nomophobia, especially in women who rely heavily on these devices to meet their social and emotional needs

This can increase the risk of dependency because smartphones for women are often used to meet the need for social connection. Research by Hapsari et al. (2022) shows that adolescent girls have higher levels of nomophobia anxiety than boys due to their tendency to engage in intense communication through social media. These findings are supported by research results showing that women tend to have higher nomophobia scores than men in the context of smartphone use, which is thought to be related to the use of social media to maintain social relationships and get information constantly (Naz, , 2025). In addition, other quantitative research also reported a positive relationship between the intensity of social media use and the rate of nomophobia in adolescents, where students with a high intensity of social media use experienced moderate to severe nomophobia, which reflects the role of social media use in increasing anxiety when not digitally connected (Lestari et al., 2024). This is consistent with the findings of this study, where the more dominant distribution of female students allowed for the emergence of higher levels of nomophobia anxiety.

Table 2. Data Based on Smartphone Dependency

Characteristics of Smartphone Dependence	Frequency (f)	Presentation (%)
Low	6	12%
Height	46	82%
Total	52	100%

Premiere date 2025

Based on the results of the univariate analysis contained in table 2. Smartphone dependence was most common in the high category with 46 and 82% presentation, and the Low category was 6 respondents with a percentage of 12%.

These patterns of behavior are also widely found in recent research, which shows that adolescents with high intensity of smartphone use tend to show difficulty controlling use, anxiety when not holding the device, as well as a tendency to constantly check smartphones without a clear purpose (Rosa-Rodríguez et al., 2023). In addition, other studies report that behaviors such as always carrying a *charger* or *power bank* as well as the inability to refrain from using smartphones during study time are common manifestations of smartphone addiction tendencies in high school students (Martins 2023). These findings corroborate the results of this study, where most of the indicators of smartphone dependence were seen in students of SMA Negeri 1 Tapa.

The results of this study are also in line with the research of Fadhil Riyadi et al. (2023) which found that adolescents tend to have low self-control and high curiosity about *smartphones* so that they are easily addicted. In addition, according to Sulian (2020's) research, high exposure to media and student activities through cellphones (games, music, social media) is a trigger for increased dependence. The condition of SMA Negeri 1 Tapa students is similar, where *smartphones* are no longer used as just a means of communication, but have become a social need, entertainment, and even a place to escape when they feel bored of studying.

The number of 46 respondents who are in the high dependency category shows that *smartphones* have a big role in

The daily life of teenagers at school, to the point of potentially disrupting their concentration, social interaction, and study hours. This illustrates that students of SMA Negeri 1 Tapa are in a digital era that makes *smartphones* no longer used only as a means of communication, but also as a means of entertainment, learning, information searching, and social activities.

Meanwhile, the low dependency category was only found in 6 respondents (12%). This distribution illustrates that *smartphones* have become an important part of adolescents' lives so they tend to increase the risk of excessive use behavior. When collecting data, students who fall into this low category generally have more regular smartphone use habits. In brief interviews, some of them said that they use *smartphones* only when necessary, such as doing tasks, communicating with family, or looking for certain information. There are also students who say that parents limit cellphone use hours at home, so they are not used to using it for too long.

These findings corroborate that although most students tend to rely on *smartphones*, there are still small groups that are able to control their use. This is in accordance with the theory of self-control in the aspect of gadget dependence, where individuals who have high self-control will be better able to limit the use of *smartphones* and avoid excessive use.

Table 3. data based on Anxiety Nomophobia

Characteristics of Nomophobia Anxiety	Frequency (f)	Presentation (%)
Lightweight	5	10%
Medium	16	30%
Weight/Height	31	60%
Total	52	100%

Premiere date 2025

Nomophobia *Anxiety* is based on the results of the univariate analysis in table 4.2, with the most frequency in Severe Anxiety as many as 31 respondents with a percentage of 60%, and Moderate Anxiety 16 respondents with a percentage of 30% and the least is Mild Anxiety with a total of 5 respondents and a percentage of 10%. And in the severe *nomophobia emergency category*, there were 31 respondents

Recent research shows that adolescents have a greater level of emotional dependence on smartphones than the adult age group, mainly due to the use of social media as a means of building self-image and gaining social recognition (Al-Balhan et al., 2021). Another study has also found that the need for social connectivity constantly increases the risk of anxiety arising when individuals are unable to access smartphones (Gezgin, 2022). Thus, the high number of students in this category illustrates that smartphones have become an important part of the daily lives of SMA Negeri 1 Tapa students, to the point of causing excessive anxiety when they cannot access it.

Then in moderate anxiety as many as 16 respondents (30%), although they did not show anxiety as intense as the severe category, this group still showed discomfort when not holding a *smartphone*, such as anxiety when not being able to access the internet or not being able to check messages. Over the course of the study, students in this category appeared to be less panicked when asked to move away from *their smartphones*, but still exhibited behaviors of seeking opportunities to check their devices. This condition is also reflected in the students of SMA Negeri 1 Tapa, where smartphones are no longer used just as a means of communication, but have transformed into a means of meeting social needs, entertainment, and escape media when students feel bored or pressured by learning activities. These findings are in line with recent research showing that smartphone use for entertainment and social media is a major predictor of addictive behavior in adolescents, as it provides instant gratification and distraction from academic demands (Almeida et al., 2024). Research (Novrika 2022) also supports this finding, where most high school students experience *nomophobia anxiety* in the moderate to severe category because smartphones are their main tools for entertainment, communication, and information access. (August 2022)

mild anxiety as many as 5 respondents (10%) When collecting data, students in this category tended to be more relaxed and less attached to *smartphones*. From the interview, they said that they don't use smartphones too often and admitted that they only use cellphones for communication, schoolwork, or other important things. One of the students even said that he could leave his cellphone at home without worrying.

Table 4 Analysis of the relationship between Smartphone Dependence and Nomophobia Anxiety

Nomophobia Anxiety	Smartphone Dependence				Total	P Value
	Low		Height			
	f	%	f	%		
Lightweight	5	9	0	0	5	0.000
Medium	1	3	15	29	16	
Weight	0	0	31	59	31	
Total	6	12	46	88	52	

Premiere date 2025

Based on table 4, there were 5 respondents who experienced mild anxiety, including 5 respondents with low smartphone dependence, and 0 respondents with high smartphone dependence. Furthermore, there were 16 respondents who experienced moderate nomophobia anxiety, consisting of 1 low dependency respondent and 15 respondents with high smartphone dependence and in the nomophobia anxiety category. There were 31 respondents, consisting of 0 respondents with low dependence, 3 respondents with moderate dependence, and 31 respondents with high smartphone dependence.

Based on the results of the study, it was found that there were 5 respondents who experienced mild anxiety, including 5 respondents with low smartphone dependence, and 0 respondents with high smartphone dependence. The findings of these results show that students who are not too dependent on smartphones tend to have the ability to control themselves when separated from their digital devices. During the field study, students from this category appeared calmer and showed no symptoms of agitation when asked to put their smartphones away during questionnaire filling. They are able to focus on working on the instrument without often turning their heads towards their smartphones. This is in accordance with the theory (Asiyah 2021) that individuals with low dependency have more stable digital self-control so that the risk of *nomophobia anxiety* is much smaller. In addition, adolescent developmental theory explains that adolescents who are less attached to smartphones usually have a balanced social support between the real and digital worlds, so they do not experience excessive fear when not connected. (Fathoni 2021)

The findings also indicate a negative relationship between the level of smartphone dependence and the level of anxiety (nomophobia), where the lower the dependence on smartphones, the lower the level of anxiety experienced by students. This condition shows that smartphone dependence plays a role as a risk factor for anxiety when individuals are separated from their digital devices. Students with low dependency tend to have better emotion regulation skills and do not use smartphones as the only source of psychological comfort, so they do not show excessive anxious reactions when access to smartphones is restricted.

These results are in line with research (Asiyah, 2021) which states that good digital self-control contributes significantly to low levels of nomophobia anxiety in adolescents. Other findings also showed that adolescents with low to moderate intensity of smartphone use had lower levels of anxiety compared to adolescents who exhibited patterns of compulsive use. Recent research also supports a negative association between self-control and nomophobia tendencies in adolescents, where higher levels of self-control tend to be associated with lower nomophobia tendencies, although the strength of the relationship varies between studies (Rahmah et al., 2025). In addition, a national literature review found that high intensity of smartphone use was associated with increased nomophobia anxiety among adolescents, suggesting that more intensive use of devices contributes to anxiety symptoms when smartphones are not available (Lailiyah, 2024). These findings reinforce the important role of self-control and intensity of use in understanding variations in the level of anxiety of nomophobia among adolescents. This is due to the individual's ability to distract themselves, interact directly with the surrounding environment, and not experience emotional dependence on digital devices.

Thus, the low dependence on smartphones allows adolescents to develop coping mechanisms that are more adaptive in dealing with situations without digital devices. Overall, the findings of this study reinforce that smartphone dependence has a positive correlation with anxiety levels, particularly nomophobia-related anxiety. This means that the higher the dependence on smartphones, the greater the potential for anxiety when individuals are separated from the device. On the other hand, students with low levels of dependence show milder anxiety tendencies, so it can be concluded that controlling smartphone use is one of the important strategies in reducing the risk of anxiety in adolescents.

CONCLUSION

Based on the results of univariate analysis, it is known that most students are in the category of high smartphone dependence, namely 46 students (82%), while students with low dependency only amount to 6 students (12%). These findings show that the use of smartphones in SMA Negeri 1 Tapa students in Bone Bolango Regency is classified as very high and tends to be excessive, so that it has the potential to cause various psychological impacts, especially anxiety when separated from digital devices.

The results of the study also showed that the majority of students experienced nomophobia anxiety in the severe or high category, namely 31 students (60%). Meanwhile, 16 students (30%) were in the category of moderate anxiety, and only 5 students (10%) experienced mild anxiety. This condition illustrates that students' emotional dependence on smartphones is quite significant, where most students feel uncomfortable, restless, or anxious when they are unable to access the device.

Based on the results of a statistical test using Chi-Square, a p-value = 0.000 ($p < 0.05$) was obtained, which showed that there was a significant relationship between the level of smartphone dependence and the level of nomophobia anxiety in students. The direction of the relationship found shows that the higher the level of smartphone dependence, the higher the level of nomophobia anxiety experienced by students. Thus, it can be concluded that smartphone dependence is one of the important factors that contribute to the emergence of nomophobia anxiety in adolescents.

Based on the results of the research and the conclusions that have been obtained, several suggestions can be given as an effort to prevent and overcome smartphone dependence and nomophobia anxiety in students.

SUGGESTION

For the school, it is hoped that it can tighten regulations on the use of smartphones during teaching and learning activities, especially during class hours. In addition, schools are also advised to provide education and socialization about the healthy and wise use of smartphones so that students understand the negative impacts of excessive use and are able to control their digital behavior independently.

For students, it is hoped that they can be better able to regulate the duration of smartphone use, limit unuseful activities, and increase self-awareness of the risks of dependence and anxiety that can arise from excessive smartphone use. The development of positive activities outside of smartphone use, such as direct social interaction and extracurricular activities, is also expected to help students reduce their dependence on digital devices.

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